

A conceptual framework for evaluating the success of e-government from the viewpoint of citizens living with disability in Australia

AN INTERPRETIVE MULTIPLE CASE STUDY APPROACH

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Dedication

*In memory of my niece Meagan Leza Bell, a loving soul who helped me
recognise abilities rather than disabilities in people living with physical and
intellectual challenges. I will be forever grateful. ■*

Declaration

I, Gary Keith Sterrenberg, hereby declare that:

- a) I am the sole author of this thesis, except where due acknowledgement has been made,
- b) the work has not been submitted previously, in whole or in part, to qualify for any other academic award, and
- c) the content of this thesis is the result of work that has been carried out since the official commencement date of the approved research program.

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April 2020

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■

Abstract

The World Health Organisation estimates that 15% of the world's population has a disability (as of 2018). Australia's prevalence of disability of 17.7% is slightly higher than the global average, with approximately 4.4 million Australians living with a disability. To cope with the economic impact of the demand for services in this sector, Australia has instituted an e-government approach, employing internet-based information and communications as the default means of providing disability services. However, several widely publicised failures of e-government raised by users of the service have brought into question the efficacy of e-government services in meeting the expectations of citizens with disabilities. Confusingly, these criticisms do not align with the success metrics published by government regarding these e-government services. This raises questions concerning the appropriateness of the current frameworks used by public organisations to evaluate the success of e-government services provided to those living with disability.

This study highlights the significant challenges in evaluating e-government services as there is currently a lack of consensus of how success is defined and from which perspective(s) these services should be measured. Since e-government services are intended to deliver government policy objectives that create value for citizens, this study posits that e-government success should be evaluated within that context. Unfortunately, current evaluation frameworks of e-government services tend to reflect the perspectives of public organisations rather than those of the intended beneficiaries and are therefore inadequate to effectively evaluate e-government success from a citizen's perspective. Furthermore, current evaluation methods fall short by failing to recognise the context or situation within which e-government services are used or because the measures are too simplistic to assess the often complex social and economic objectives of government programs that support citizens living with disability.

This research addresses such shortcomings by (1) identifying the factors that influence the effective use of e-government by citizens living with disability; (2) conceptualising e-government success from the value citizens living with disability gain through their use of e-government; and (3) proposing strategies for public administrators to measure the success of e-government in delivering services to the disability sector. To achieve these objectives, this research adopts an exploratory qualitative multiple case study research design that relies on twenty cases representing citizens living with disability in Australia. Data collection was accomplished primarily through in-depth interviews.

The study reveals that citizens living with disability perceive the success of e-government on the value they gain from the broader societal outcomes created by citizens using these e-government services; referred to as public value outcomes. The findings of the study indicate that citizens living with disability evaluate the success of e-government through three public value outcomes measures: (1) efficient public services, (2) effectiveness of government agencies, and (3) improvements in social outcomes. Furthermore, the study shows that through the effective use of e-government, these citizens not only create public value outcomes but are also the legitimate arbiters (in liberal democracies) in the judgment of the value of these outcomes.

This research contributes to existing theory on e-government evaluations by delivering an evaluation framework that incorporates public value outcomes in the assessment of the success of e-government from the perspective of citizens living with disability. The study extends current approaches applied in evaluation frameworks by focusing on the outcomes created for citizens through their effective use of e-government, rather than simply focusing on the use of the technology itself. This provides a new approach in evaluating e-government success by shifting the emphasis from a general definition of *use* of e-government (the number of interactions) to the *effective use* of e-government (a standard of use required to achieve goals). Linking the effective use of e-government to the achievement of outcomes for citizens firmly establishes the perceptions of citizens as genuine indicators of value, as opposed to the traditional approach that relies on indicators of success from a government agency perspective.

By applying a citizen-centric approach, this study demonstrates the methodological value of applying an interpretive qualitative multiple case study method to inquiries in information systems studies using the “lived” experiences of citizens. It also delivers a practical examination of e-government success from the perspective of Australian citizens living with disability. Further, the study highlights the central role of e-government performance evaluations in providing the Australian Government with a means to increase transparency in its service performance, gained through a clear understanding of citizen expectations. This could assist public administrators in Australia in improving the management of e-government services. ■

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Abbreviations and acronyms

ABS	:	Australian Bureau of Statistics
AGIMO	:	Australian Government Information and Management Office
ANZOG	:	Australian and New Zealand School of Government
DHS	:	Department of Human Service
D&M	:	DeLone and McLean
G2C	:	Government to Citizen
ICT	:	Information and Communication Technology
IS	:	Information Systems
NDIS	:	National Disability Insurance Scheme
NPV	:	Net Present Value
OECD	:	Organization for Economic Cooperation and Development
OGP	:	Open Government Partnership
OT	:	Occupational Therapist
ROI	:	Return on Investment
SDL	:	Service Dominant Logic
TAM	:	Technology Acceptance Model
UN	:	United Nations
UNESCO	:	United Nations Education, Scientific and Cultural Organisation
UTAT	:	Unified Theory of Acceptance and Use of Technology
WHO	:	World Health Organisation

Chapter 1

The importance of a citizen perspective in the evaluation of e-government success

1.1. Introduction

Citizens depend on government to provide effective and efficient services. In liberal democracies, citizens also expect government to demonstrate equality of opportunity, fairness, responsiveness and citizen access to services. However, governments do not always evaluate their service performance based on these values. A study by Berman (2005) found that “people judge government performance in ways that often differ markedly from the standard measures that governments use to evaluate themselves. Government is evaluating its effectiveness using one set of criteria; the public may be applying another” (p.31). Berman (2005) and Woolum (2011) suggest that citizens are interested in performance measures that extend beyond efficiency and effectiveness to include measures of social impact such as social inclusion, social equity and citizen empowerment. Although there is significant research on the evaluation of e-government performance from the perspective of public organisations (the providers of these services), scant attention has been paid to the views of citizens (the users of these services). This thesis addresses this shortcoming by exploring the evaluation of e-government service performance from the perspective of citizens.

Governments increasingly use e-government as the “default” method of delivering services to citizens in order to reduce the economic cost of service provision. This strategy has dramatically transformed how government agencies interact with citizens (Rubaii-Barrett & Wise, 2008). However, the introduction of e-government in this manner also entails a responsibility on the part of government to provide these services equitably, efficiently and effectively. Governments must therefore continuously evaluate the success of their e-government services to ensure that they meet these citizen expectations.

In this thesis, e-government is defined as *the use of information and communication technology (ICT) to provide services to citizens via the internet, in a way that transforms the relationships between citizens, government and businesses* (World Bank, 2005). An e-government service encompasses all activities required to deliver outcomes for citizens for which the service was designed and built and includes the technical infrastructure, web applications, networks, data, and integration to non-government service providers, as well as technical and application support from public service staff for these components.

Many different tools, measurements and frameworks are currently applied by governments to evaluate e-government, but their definition of “success” and the manner in which they are evaluated vary widely (Savoldelli, Misuraca, & Codagnone, 2013). A common theme, however, is that they seldom evaluate the success of e-government services from the perspective of citizens. This omission is accentuated when it comes to e-government services designed to support particularly vulnerable groups in society, such

as citizens living with disability. It is essential in these instances to consider the social and technical context within which e-government services are employed, and success measures must encompass the often complex social and economic objectives of government programs supporting citizens living with disability.

In Australia, the failure of e-government services for citizens living with disability has been widely reported (Australian Government, Senate Estimates, 2016, 2018) and has begun to erode confidence in these services, in turn undermining citizens' trust in government. This increases the urgency for government to develop a consistent, appropriate and transparent means of evaluating e-government in order to ensure that these services meet citizens' expectations or face the consequences from an increasingly vocal public at the ballot box.

1.2. Research background

E-government services are commonly evaluated by public organisations using a variety of frameworks, including measurements of success through levels of system adoption, citizen satisfaction, net benefits, value for money, and public value. However, as noted by Gable, Sedera, and Chan (2008), many of these frameworks measure what is easy, rather than what needs to be measured. Petter, DeLone and McLean (2012) argue that most performance measurements focus only on the benefits to public organisations and fail to measure the benefits to citizens. Gable et al. (2008) conclude that this makes it challenging to properly assess the performance goals of government programs, particularly when the outcomes from these programs are intended to benefit citizens.

Despite these impediments in measuring e-government success, significant investments continue to be made annually in e-government across the globe, with an increasing proportion of these investments directed at sustaining and improving their ongoing success (World Bank, 2018). These investments are frequently carefully rationalised in advance, but they are rarely evaluated post-implementation (ANZSOG, 2019). When a post-implementation review does occur, the measures often lack comparability or credibility (Gable et al., 2008).

There is a wealth of global research on e-government performance from a range of perspectives, generally focusing on specific criteria for evaluating the success of these services. For example, Moon (2002) conducted an experimental study focused on effectiveness, using the influence of size and level of government on e-government performance at the local municipality level in North America. Irani, Love, Elliman, Jones, and Themistocleous (2005) analysed the influences on the performance of local municipal e-governments in the United Kingdom. The United Nations (2008) used a web evaluation framework to assess the readiness of its member countries for e-government. Each study sheds light on a particular aspect of performance evaluation, but they do not adequately incorporate citizens' perspectives in the evaluation (Wang & Liao, 2008), which is arguably the fundamental criterion against which the success of e-government services should be judged (Yu, 2008).

There are inherent limitations in all of the frameworks in the current literature (e.g., DeLone & McLean's IS Success Model) that claim to evaluate the ongoing success of e-government (Heeks, 2008; Petter et al., 2012). Some are biased towards administration tasks or emphasise the supply-side of e-government (Heeks, 2008). They

rarely focus on the outcomes for citizens (Scott, DeLone, & Golden, 2016; Wang & Liao, 2008), nor do they adequately consider the goal of improving social outcomes (Bannister, 2001), which are vital criteria against which government services should be evaluated (Jones, 2008; Scott et al., 2016). Current evaluation frameworks tend to replicate those of the private sector, concentrating on delivery against functional outcomes or on benefit measures such as return on investment and cost reduction (Irani & Love, 2008). However, e-government services differ from those used in the private sector in that they "frequently encompass strategic goals that go beyond efficiency, effectiveness, and economy, and include political and social objectives such as trust in government [and] social inclusion" (Grimsley & Meehan, 2007, p.134).

Past research into e-government, as noted by Scott et al. (2016), takes a narrow functional focus for the measurement of success with "a tendency to utilise user satisfaction as a surrogate for success" (p.187). This "user satisfaction" dimension is especially problematic for studies of e-government, where citizens are paramount, where usage is not always a choice, and where the outcome of transacting with e-government may be the rejection of a benefit. This has the potential to skew citizens' views regarding their "satisfaction" with the service. In the case of e-government, success measures need to include more sophisticated value perceptions.

These measurement challenges stem from the nature and complexities involved in evaluating success. Heeks (2002) contends that any attempt to evaluate e-government success must start with a definition of what is meant by success. Isaac (2007) states that success in public organisations is often defined simply as the accomplishment of a goal. Applying this definition to e-government success would involve undertaking a

comparative analysis of progress against the goals the program was designed to deliver. This is consistent with the view of the Intergovernmental Advisory Board (2003) that the best measure of e-government success is evaluating performance against achievement of the program objectives themselves. This notion of linking performance to program objectives is important, as part of the challenge in developing performance evaluation frameworks for e-government is in determining what constitutes success, from whose perspective and in what context success is considered, and how ongoing success is measured (DeLone & McLean, 2016; Heeks, 2008; Petter et al., 2012).

Although the different evaluation frameworks have been tested in a variety of contexts – primarily by private sector organisations – there has been limited research on identifying the fundamental measures for determining the success of e-government from the viewpoint of citizens. Wang and Liao (2008) note that citizens are increasingly using e-government, making it essential to evaluate e-government success from citizens' perspective. Walsham (2006) concurs and claims there are insufficient interpretive evaluation frameworks focused on identifying the crucial value measures that are fundamental in determining the success of e-government from the standpoint of citizens. This lack of focus on value to citizens highlights shortcomings in the research and the need for research concentrating on e-government success measures that examine value from a citizen's viewpoint.

1.3. Research problem statement

As described above, past studies evaluating e-government success have been limited, despite the significant impact of e-government on the way public services have

been delivered in recent years. Such evaluations tend to reflect the perspectives of public organisations, rather than those of citizens. When views have been sought from citizens regarding e-government performance, the measures used are often too simplistic and do not reflect the context in which e-government service is employed. For example, in utilising e-government services to provide a benefit payment or for compliance measures, citizen satisfaction is a poor surrogate for success given the power imbalance between benefit recipients and the provider.

In the Australian context, e-government success measures are enshrined in legislation as part of the Australian Government Technology Policies. The Australian government, which provides the e-government service considered in this thesis, currently applies four key performance metrics to determine the ongoing success of e-government: user satisfaction, cost per transaction, digital take-up, and completion rate (Digital Transformation Agency (DTA), 2018a); refer Table 1.1.

Performance category	Description of measure
User satisfaction	● The overall satisfaction rate with the service
Cost per transaction	● The estimated cost to the government, per transaction, for administering the service
Digital take-up	● The adoption rate for the digital service
Completion rate	● The overall rate of completion for users of the service

Table 1.1. Success metrics used by the Australian Government

Although these individual measures are useful when introduced in the proper context, they fall short of fully capturing citizens' expectations of e-government. This was

highlighted in a Government Senate Estimates Inquiry by the Joint Standing Committee into e-government services supporting Australians living with disability, which found that citizens view e-government services as a failure as reported to the Senate estimates committees (Australian Government, Senate Estimates, 2016, 2018), while the public organisations providing services consider them a success according to an independent report to Government on e-government evaluation against legislated success measures (PricewaterhouseCoopers (PWC), 2016). This dichotomy highlights the problematic nature of performance evaluation frameworks currently employed by Australian public sector organisations, particularly a lack of understanding on the part of government regarding citizens' perspectives on which elements should be included when evaluating the success of e-government services. To address this existing research shortcoming, the current study focuses on understanding e-government success by listening to the voices of the citizens who actually use these services.

A key challenge facing e-government is that once implemented, citizens' use of e-government services does not always last (Zhang, Guo, & Chen, 2010) due to the failure of government to take citizens' expectations into account (Dwivedi, Henriksen, & Wastell, 2013), thereby creating social inequities for the most vulnerable members of society by unintentionally denying them access to these services (Makoza & Chigona, 2013). Since e-government services are typically monopolistic (Leist & Smith, 2014), the cost of excluding citizens living with disability rises as governments provide increasingly sophisticated services online (Cumbie & Kar, 2016). This is particularly crucial for citizens living with disability, who tend to be marginalised from the mainstream population as a result of not being integrated into the digital society (Makoza & Chigona, 2013). E-government serves as the "default" channel to deliver government services,

making it essential to understand the expectations of citizens in their use of e-government and to determine the success of e-government performance from their perspective.

1.4. Motivation for the research

It is clear from the foregoing discussion that current evaluation frameworks require further development, as they do not take into account the perspectives of citizens. Burton-Jones (as cited in Tate, Sedera, McLean, & Burton-Jones, 2011) suggests that this weakness could be addressed by refocussing the evaluation of success from information processing and task performance to the “lived” experiences of citizens in supporting their life activities through information systems. He contends that “we may wish to be more specific and examine the perspectives of individual users of [e-government], and understand what success means in the context of everyday life” (p.9). Petter et al. (2012) believe that e-government success evaluations should capture the intangible and subjective benefits based on functional, economic and social outcomes, thus reflecting the complexities of citizens’ online interactions in the determination of success. Tate (as cited in Tate et al., 2011) contends that understanding the antecedents of quality and value expectations of citizens “is likely to yield valuable insights into how to improve perceived quality and consequent outcomes” (p.6). According to DeLone and McLean (2016), it is therefore impossible to evaluate success without first defining the context or frame of reference for the evaluation of e-government.

The above challenges highlight the lack of research focussing on the perspectives of citizens in the evaluation of e-government performance and the absence of a comprehensive evaluation framework to assess the success of e-government. An

appropriate evaluation framework should recognise that citizens' value perceptions are contextual, must include economic and social measures, and must include the contributions of all parties to the outcomes involved in delivering public service, including non-government parties. These challenges will require a complete rethink of ways to evaluate the success of e-government.

These research shortcomings provide the primary motivation for this study; i.e., to develop an approach to e-government performance evaluation that considers the perspectives of citizens. This would constitute a significant contribution to existing research, given the prevalence of disability in the world and the comparative lack of e-government services designed to support this group of citizens (Rubaii-Barrett & Wise, 2008). Such an approach needs to encapsulate the value citizens gain from the broader societal outcomes created by their use of these e-government services, referred to as *public value outcomes*.

1.5. Research purpose and objectives

The purpose of this research is to conceptualise e-government success from the viewpoint of citizens living with disability in Australia. The focus is on achieving five research objectives to accomplish this purpose:

- (1) To define e-government success from the public value outcomes created from citizens using e-government services.
 - (2) To identify the crucial qualities that influence the success of e-government from the perspective of citizens living with disability in Australia.
-

- (3) To analyse the impact of citizens' "lived experiences" (context and situation) on whether they perceive the quality of e-government resources as essential to their effective use of the service.
- (4) To propose a conceptual framework to evaluate the success of e-government from the perspective of citizens living with disability.
- (5) To recommend strategies to public administrators in Australia on the application of a public value-based framework to evaluate the performance of e-government.

1.6. Research Questions

The following central research question needs to be answered to accomplish the research purpose:

How should the success of e-government be evaluated from the perspective of citizens living with disability in Australia?

The following subsidiary questions align with the research objectives and assist in answering the central research question:

- a) What are the crucial qualities of e-government that influence success from the viewpoint of citizens living with disability?
 - b) How are public value outcomes successfully created for citizens living with disability through their use of e-government?
-

- c) How do citizens' "lived experiences" using e-government (context and situation) impact on their perceptions of success through their effective use of e-government?

1.7. Approach to the research

Evaluating the success of e-government is difficult, as it crosses several research domains, such as public administration, information systems and economics (Walsham, 2006). However, this complexity creates the potential for an inter-disciplinary approach, as it allows researchers to draw on the knowledge bases of several academic disciplines in order to examine the phenomenon from different perspectives. This research combines theoretical concepts of (1) public value theory from the domain of public administration and (2) representation theory from the domain of information systems in order to develop a conceptual framework for evaluating success from the perspective of citizens living with disability. This approach addresses the challenges of including the broader value measures that determine success from the use of e-government from the perspective of citizens.

Public value theory holds that value to citizens should guide the operations of public organisations in the delivery of public services (Moore, 1995). The concept of public value, which includes a balance of economic and social measures, provides the necessary outcomes dimensions needed to evaluate the success of e-government.

Representation theory (Wand & Weber, 1995), on the other hand, illustrates how the effective use of an information system achieves goals. These theories in tandem provide a conceptual framework for this study. Representation theory provides the theoretical concepts required to model the process of goal attainment using e-government technology,

while public value theory adds a conjectural base from which to theorise the broad categories of e-government success outcomes from the viewpoint of citizens. In this respect, the process of citizens using e-government defines the context of the research, and citizens' perceptions of public value outcomes created through this use subsequently determine the success outcomes, thus delineating the research objectives.

In order to provide a real-world setting and frame of reference for the research design, this study focusses on citizens living with disability in Australia and their use of e-government to support their daily living (see Section 1.9 for the research context on citizens living with disability as the focus for this research).

1.8. Research design

This research employs a qualitative exploratory multiple case study approach to examine how to most effectively evaluate the success of e-government. Individual citizens living with disability constitute the cases and serve as the unit of analysis. The recent experiences of these citizens with e-government to support their daily living provide the context and parameters for the cases. It is meaningful that citizens who actually use e-government services were selected as the focus of this research given the shortcomings in existing research concerning the perspectives of this group in the evaluation of e-government success.

The choice of a multiple case study approach was deliberate. Yin (2014) suggests that case studies are appropriate when the objective is to study contemporary events and there is no need to control behavioural events or variables. A multiple case study design in particular ensures that a richness and depth of information can be drawn from multiple

events in order to understand the phenomenon of interest (Anaf, Sheppard, & Drummond, 2007; Stake, 2006) and facilitates the exploration of complex situations. A multiple case study approach allows multiple perspectives to be gathered from a range of sources, including contextual information (Lauckner, Paterson, & Krupa, 2012). It is also particularly useful to analyse a process that is compatible with the research objectives (Lauckner et al., 2012; Stake, 2006). Benbasat, Goldstein, and Mead (1987) identify three main strengths of case study research when employed in information systems studies:

- (1) Information systems can be studied in a natural setting;
- (2) A deep understanding of the complexity and nature of the phenomenon can be acquired through this approach; and
- (3) Valuable insights can be gained through observation when using case studies.

This research aims to explore the experience of citizens using e-government to support their daily living, which provides a natural setting for the study, as well as to reveal the perceptions of these citizens concerning success, acquired through descriptions of their “lived” experiences using e-government to achieve goals. Incorporation of citizens’ lived experiences is a key aspect of this research, given the subjectivity of individuals’ perceptions of success. This approach allows a view of success through the lens of citizens’ actual experiences, rather than a generic view of how they might define success, thus providing a context within which success is framed. Such circumscription of the research effectively facilitates examination of the end-to-end process and the ultimate goals citizens hope to achieve through their use of e-government, making the case study method ideal for this research.

Data for this study was collected from multiple sources to enhance data credibility (Patton, 1990; Yin, 2014). The research methods used to gather primary data were interviews, while secondary data sources include published government documentation, Senate committee reports and government websites.

The primary contribution of this research relates to how success is conceptualised and evaluated from the perspective of citizens living with disability. In this thesis, representation theory and public value theory are combined to develop a framework to evaluate the success of e-government, with the ultimate determinant of success being the public value outcomes created for citizens living with disability, as opposed to simply assessing success from the perspective of the technology use itself.

1.9. Research context

To position this study within a real-world context, cases from within the disability community in Australia were chosen. Disability support is the one area of government servicing with a broad impact across the Australian population and with inter-connectivity with multiple other government and non-government service providers, making it an ideal setting for the research.

1.9.1. Citizens living with disability as the focus for this research

Disability is universally defined as any condition that restricts a person's mental, sensory or mobility functions, which may be caused by disease, genetics, trauma or accident (Young, Pyke, Maharaj, Rasmussen, & Jones, 2018). An estimated 15% of the world's population has a disability (UNESCO, 2018; WHO, 2018). In Australia, 4.4

million Australians live with a disability, of whom 475,000 live with a severe or profound disability (Productivity Commission, 2017). Table 1.2. provides a snapshot of disability in Australia.

Prevalence of disability in Australia
• Almost one in five Australian citizens is living with disability (17.7%). • The majority (76.8%) of Australians living with disability have a physical condition. The remaining 23.2% have either behavioural or mental disorders. • 17.8% of women and 17.6% of men in Australia are living with disability • 11.4% of those with a severe or profound disability are working full-time.

Table 1.2. Prevalence of disability in Australia
Source: ABS, 2018

Citizens living with disability in Australia are a diverse population that uses a range of e-government services (e.g.; for social welfare support, medical care support, and disability support), so understanding what constitutes success from their perspective may be transferable to other groups and across other services. As an often-disadvantaged group on the margins of society, these citizens also provide a valuable case study of how public value is created from their use of e-government.

Citizens living with disability face unique challenges in using and accessing technology, and the need to interact with technology is often vital to support social inclusion outcomes for these citizens (Boys, 2014; Pullin, 2009;). Therefore, they constitute an ideal sample population from which to gain a deep understanding of the

social impacts from the use of e-government and an important context for this study on its success.

1.9.2. Disability in the Australian context

To deal with the challenges facing citizens living with disability, the Australian government launched the National Disability Strategy (“the strategy”) on 13 February 2011, setting out a ten-year national plan to improve the lives of Australians living with disability. In doing so, they established a vision “for an inclusive Australian society that enables people with disability to fulfil their potential as equal citizens” (Australian Government, National Disability Strategy, 2011, p.8).

A key premise of the strategy was an acknowledgement by the Australian government of the economic imperative for social inclusion of citizens living with disability. The projected demographic changes over the coming years show an aging population and an urgent need to maximise the potential of all Australians. This demographic change raises a compelling argument for the removal of barriers that limit the contributions to society of citizens living with disability, either in an employed capacity or through self-management, thus freeing up capacity (Productivity Commission, 2017).

One means of removing or reducing these barriers to social and economic inclusion for citizens living with disability is the potential contribution of technology. The influence of technology in achieving the goal of “inclusive and accessible communities” was explicitly referenced in Policy Direction 5 of the strategy:

Policy Direction 5: The provision of communication and information systems that are accessible, reliable, and responsive to the needs of people with disability (Australian Government, National Disability Strategy, 2011, p.15).

This policy direction was issued in response to Articles 9 and 21 in the United Nations Charter on Disability, which specifically cited the need for governments to ensure accessibility of systems “to enable persons with disabilities to live independently and participate fully in all aspects of life” (United Nations, Article 9, 2018). Specifically, the article states that governments must:

take appropriate measures to ensure that persons with disabilities have access, on an equal basis with others, [...] to information and communications technologies and systems, and other facilities and services open or provided to the public, both in urban and in rural areas (United Nations, Article 21, 2018).

In March 2013, the National Disability Insurance Scheme (NDIS) came into being to implement many of the goals of the strategy. Its primary purpose is to provide all Australians who are born with or acquire a permanent and significant disability before the age of 65 with the necessary support to live better and more socially inclusive lives. Implementation of the NDIS using e-government as a means for citizens to access disability services, across private and public sources, is crucial to achieving this purpose. This makes the NDIS an appropriate setting for the research.

1.9.3. The NDIS as the setting for this research

The NDIS is still in its implementation phase in Australia, with 338,982 people enrolled as of 31 Dec 2019 (NDIS, 2019). When the scheme is at full capacity, an

estimated 475,000 people with disability will receive individualised support, at an estimated cost of \$22 billion in the first year of full operation (Productivity Commission, 2017). Figure 1.1 shows how NDIS participants fit within the broader Australian population.

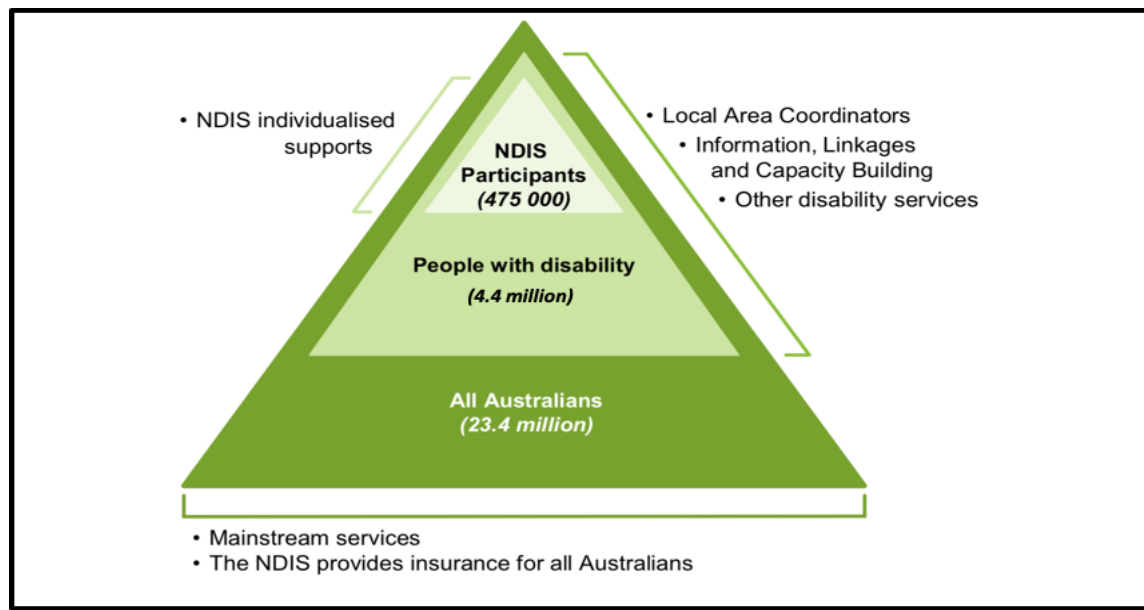


Figure 1.1. NDIS perspectives

Source: adapted from ABS, 2018

The NDIS operates on the premise that the needs of citizens living with disability are different and that citizens participating in the scheme should be able to exercise choice and control over the services and support they receive. The NDIS funds “reasonable and necessary” support for Australians with permanent and significant disability (Productivity Commission, 2017, p.3), which is defined as support that helps participants live “as ordinary a life as possible, including care and support to build their skills and capabilities so that they can engage in education, employment and community activities” (Productivity Commission, 2017, p.3). Most interactions between the NDIS and citizens living with disability are via e-government.

Citizens living with disability access government-funded disability services via an internet-based systems portal that provides functions to support them in managing their approved disability plans. The system portal is the sole citizen interface with service providers and other government systems, allowing the transfer of information seamlessly between citizens, businesses and the government. Given the nature of disability services, citizens use these services on a regular basis (daily/weekly) to request and access consumable services to support their daily living. Figure 1.2 provides an overview of the NDIS ecosystem.

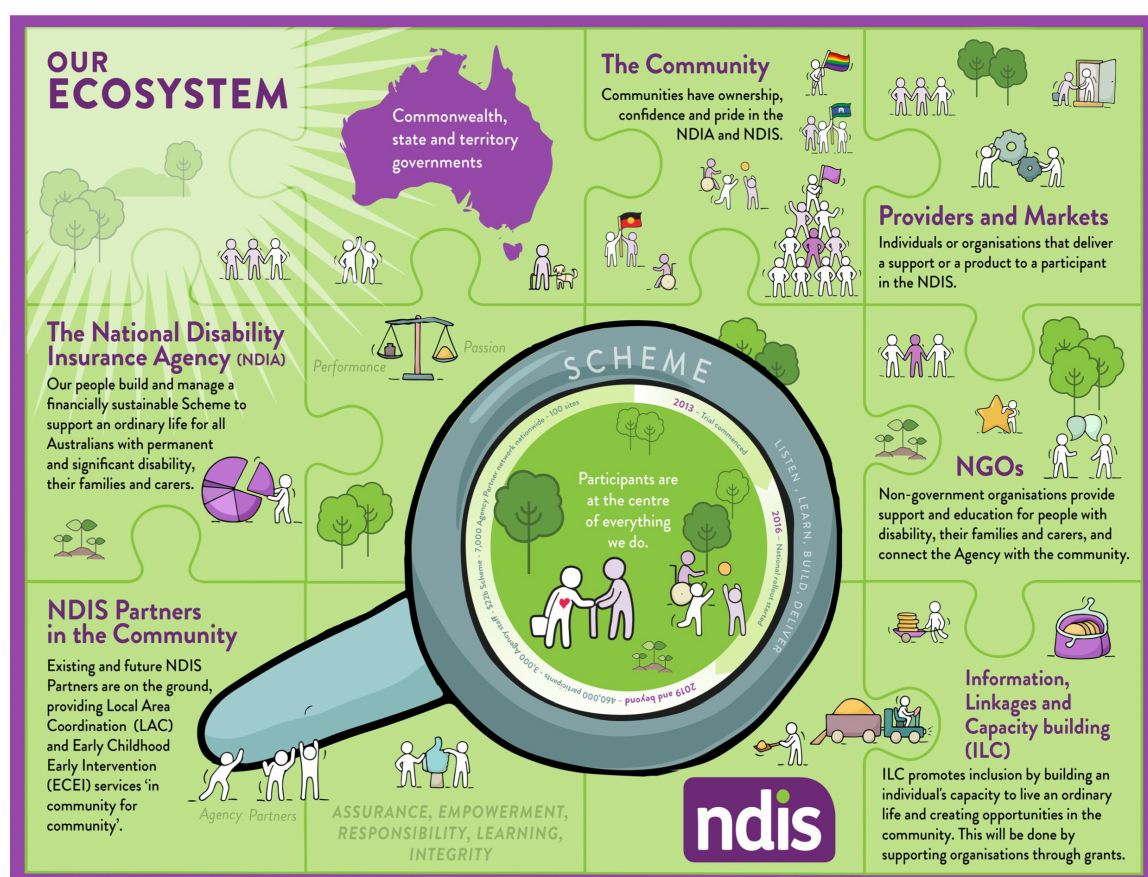


Figure 1.2 NDIS ecosystem

Source: NDIS Strategy 2015

The organisation and performance of the NDIS are not the focus of this study.

However, the NDIS provides an important context for the research in that the scheme serves citizens living with severe and profound disabilities on the outermost fringes of society, where the use of technology to support daily living is a necessity rather than a choice. In addition, the NDIS provides a clear articulation of the outcomes for which government programmes, like e-government, were intended. Finally, it provides the technology experiences for citizens through which to evaluate success. Thus, the NDIS offers a unique research setting to evaluate the success of e-government through the delivery of its stated goals from the perspective of citizens living with disability, which supports the purpose and objectives of the research.

1.10. Structure of the thesis

The structure of the thesis is as follows:

Chapter one introduces the research topic and presents the rationale for the research, identifying the research problem at the centre of the study. It also outlines the research purpose and objectives before setting out the research questions. It concludes with framing the scope and contextual parameters of the research.

Chapter two offers a comprehensive literature review on e-government, including a critical discussion of the theoretical concepts and approaches to e-government evaluation, and proposes a new conceptual framework for evaluating e-government based on 6 propositions derived from the critical discussions of representation theory and public value theory.

Chapter three sets out the ontological and epistemological assumptions of the study, followed by a comparison of the different qualitative approaches, and the rationale for choosing an interpretive multiple case study research design and methods used in the collection of the data.

Chapter four identifies and rationalises the choice of qualitative analytical methods used in the research and shows how aspects of the qualitative case study were executed to answer the research questions. The chapter also delves into the qualitative techniques and procedures used to analyse the data, including the justification for selecting thematic analysis. The results from the data analysis are then reported.

Chapter five describes the findings from the empirical fieldwork and provides a discussion that engages these findings with theoretical explanations, thereby helping to identify and reveal new knowledge that underpins the proposed conceptual framework.

Chapter six draws conclusions from the research findings and provides recommendations to the Australian government, identifying the research contribution to e-government knowledge. The relevance of the research findings and their limitations are raised with suggestions for future research in this field.

1.11. Summary

This research proposes development of a conceptual framework for defining and evaluating the success of e-government, built on the perspectives of the “lived” experiences of citizens living with disability, with the goal of addressing a shortcoming in e-government research by providing a citizen perspective on how to evaluate the success

of these services. The social and economic impacts of the failure of e-government services can have profound consequences for citizens living with disability who rely on these services to support daily living, making it vital that they meet citizen expectations through ongoing evaluation of their performance. As such, this study proposes a unique extension to prior research on e-government success and e-government use.

The following chapter offers a comprehensive and critical review of existing literature on e-government, with explicit reference to the theories and approaches to e-government evaluation. ■

Chapter 2

Literature review

2.1. Introduction

This chapter offers a detailed assessment of the literature relating to the evaluation of e-government performance. This assessment constitutes a first step in circumscribing extant knowledge and theories before ultimately addressing the central research question: *How should the success of e-government be evaluated from the perspective of citizens living with disability in Australia.* This assessment primarily involves a critical literature review to identify the inherent limitations of existing research on the evaluation of e-government performance in order to propose a theoretical framework to this study.

The following section reviews the theoretical concepts underpinning the study. Section 2.3 then describes the benefits and characteristics of e-government before examining the specific challenges of e-government in Australia. Sections 2.4, 2.5 and 2.6 provide a critical examination of e-government evaluation frameworks currently employed by public organisations, followed by a discussion in Section 2.7 of the linkage between public value and e-government. Finally, Sections 2.8 and 2.9 establish the study parameters and delineate a conceptual framework for the evaluation of e-government.

2.2. Theoretical foundation of the study

The phenomenon being studied and the context in which it arises determine the theoretical constructs to be applied to the research (Lagsten, 2011). The evaluation of

e-government performance has theoretical foundations in public administration, information systems, and economics (Walsham, 2006), which supports the application of a combination of theoretical concepts drawn from (a) representation theory and (b) public value theory used in this research. These research foundations position the study within the context of public administration performance evaluation, as illustrated in figure 2.1.

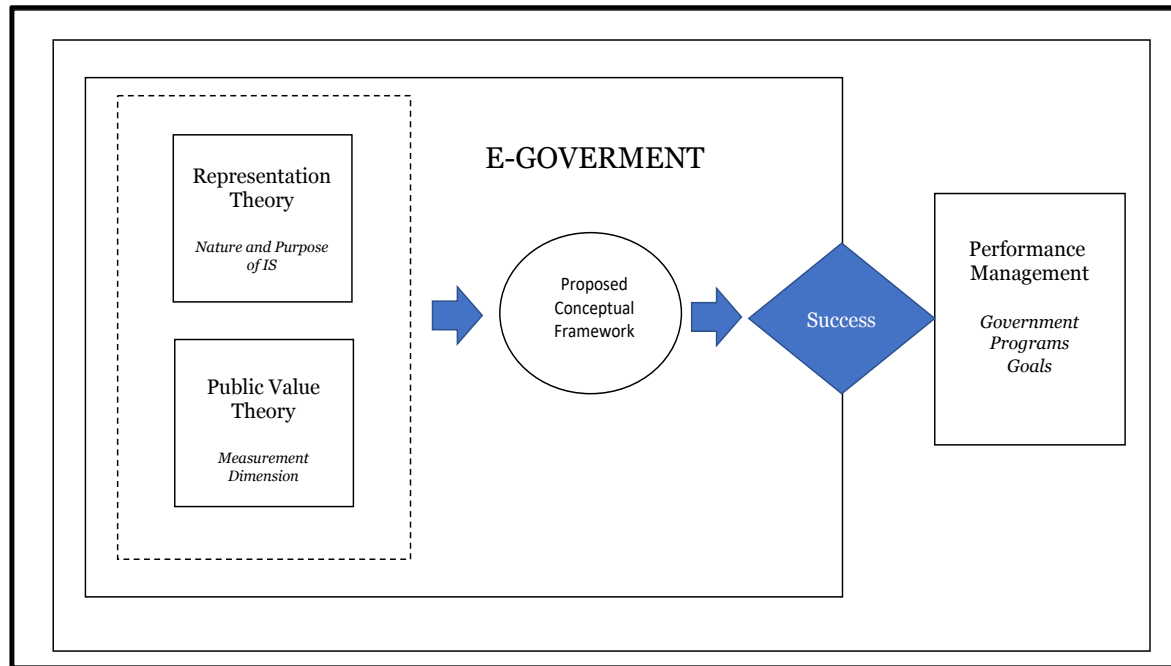


Figure 2.1. Theoretical foundations for the study

2.2.1. Representation theory

The foundations of e-government “use” encompass three primary elements: (1) the motivations and competencies of citizens utilising e-government; (2) the nature and purpose of e-government; and (3) the tasks to be undertaken using e-government (Burton-Jones & Straub, 2006). As the objective of this study is to conceptualise success from the outcomes created by citizens’ use of e-government, the focus will be on the nature and purpose of e-government, built on the foundations of an information system. Therefore,

the appropriate theoretical basis for this study would elucidate the nature and purpose of information systems.

A variety of information systems exist with a broad range of purposes, and even a single system can have multiple — and occasionally conflicting — purposes (Orlikowski, 1991). Representation theory is one of the few theories to address this issue (Wand & Weber, 1995). Representation theory illustrates how goals are achieved through the effective use of information systems, taking into account the fact that different types of systems have been developed for different purposes. The use of the term “effective” to describe how a system is used to achieve goals provides an added distinction. “Effective use” is defined as “using a system in a way that increases the potential of individuals to achieve their goals” (Burton-Jones & Grange, 2011, p.10). This distinction incorporates a necessary performance element into the evaluation of a system’s success.

The basic principle of representation theory is that an information system provides representations of real-world transactions (Wand & Weber, 1995). This assumes that the system must enable an individual to access these representations in order to exploit its benefits. The theory posits that if the system is utilised as intended, the user will attain a desired goal. Such utilisation is dependent upon “faithful representation” (Burton-Jones & Grange, 2011, p.7); i.e., the system provides the functionality that will enable a user to accomplish the essential tasks required to replicate a real-world transaction. The theory further states that use of the system will enable individuals to undertake informed actions to enhance their outcomes. Figure 2.2 illustrates the interrelationship among representation theory, effective use and goal achievement, thus providing a means of

understanding how value is created by citizens employing e-government to attain specific goals.

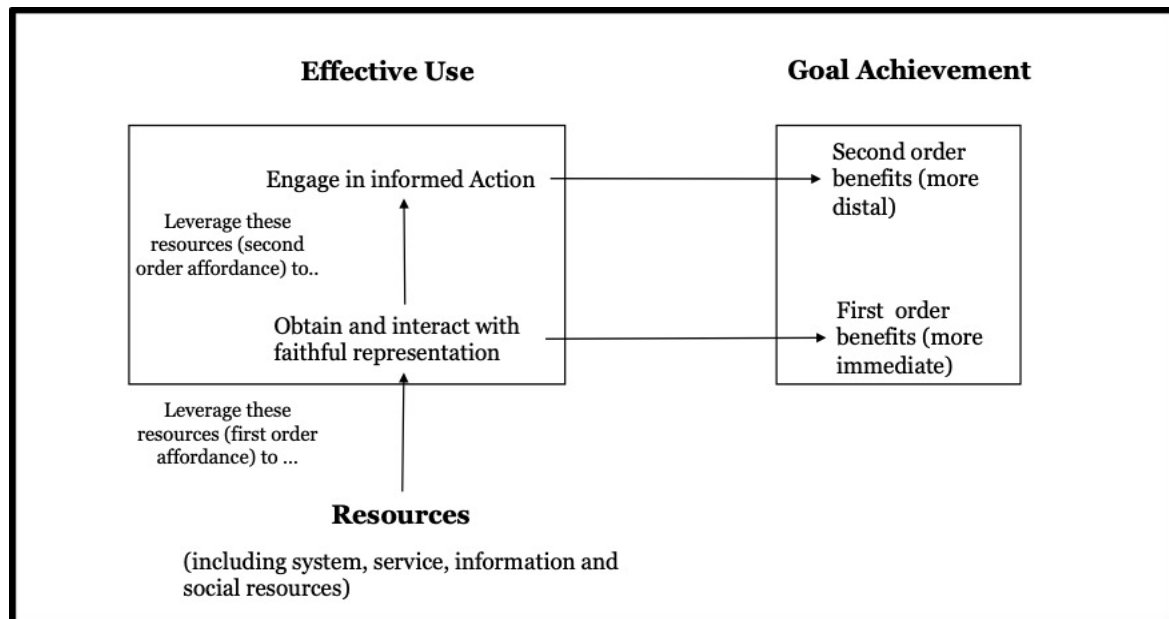


Figure 2.2. Linking representation theory, effective use and goal achievement
Source: adapted from Burton-Jones and Grange, 2011, p.9

As Figure 2.2 indicates, representation theory suggests that systems have two categories of affordances, which are properties of an object that define its possible uses (Gibson, 1977). In other words, an affordance need not be pre-defined by a particular function within e-government and instead refers to any property of e-government that enables a user to undertake tasks that achieve outcomes. The first set of affordances from e-government is realised through the resources that enable users to interact with the system, while the second set is achieved when users employ the information acquired from the system to engage in informed action to obtain maximum benefits.

Representation theory, therefore, constitutes the appropriate theoretical framework for this study based on its singular capacity to circumscribe the nature and purpose of information systems, while taking into account that different types of systems have been

developed for different purposes. As such, representation theory can be applied to any mode of e-government.

2.2.2. Public value theory

The dominant paradigm that has influenced the evaluation of government services, including e-government, can be traced to practises employed by public entities to improve efficiency in service delivery based on private sector management techniques and organisational forms (Pollitt & Bouckaert, 2000). These practices have been criticised for emphasising narrow concepts of cost effectiveness while frequently ignoring whether they improve the quality of service, as well as for their lack of focus on citizen outcomes (van der Meer, 2007).

As a result, as noted by O'Flynn (2007), experts have begun to expand their perceptions of public administration practices, in part to address these perceived shortcomings. The public value approach, initially articulated by Moore (1995), has recently garnered considerable attention as a novel approach to confront the challenges of evaluating the efficiency, accountability and equity outcomes of government policies. According to Kelly, Mulgan and Muers (2002), public value is increasing in popularity because it places greater emphasis on citizens' input and provides a balance in the assessment of outcomes between social and economic objectives.

Public value is increasingly employed to assess the aggregate value provided by government activities in terms of the net worth they create for citizens (Alford & O'Flynn, 2009). It can therefore provide a particularly beneficial tool for public entities in measuring the success of e-government from the perspective of citizens, as it serves to

delineate the actions needed to inform policies designed to enhance interactions between citizens and the government. Public value theory is therefore ideally suited to this study, as it achieves a key goal of providing a theoretical basis for measuring public service performance from the perspective of citizens. Moore (1995) states that a fundamental precept of public value is that the operations of all public organisations, and indeed the ultimate goal of public service, is to enable citizens to derive value from the consumption of their services.

A broad range of theoretical perspectives has been employed by various academic disciplines to study value over the years, including marketing, economics, and systems and network domains. In economics, value is assessed in terms of the utility of a good or service (Samuelson, 1997); in marketing, value is the extent to which a good or service is perceived by customers to meet needs or wants (Golubkov, 2012); in systems and networks, value is defined as a tangible or intangible service, knowledge or benefit that is desirable or useful to its recipients (Allee, 2000). Consistent across these interdisciplinary perspectives is the fact that value is defined from the perspective of its beneficiary. For example, Woodruff (1997) defines value as a “customer’s perceived preference for and evaluation of those [services] attributes, attribute performance, and consequences arising from use that facilitate (or block) achieving the customer’s goals and purposes in use situations” (p.139). In public administration, Horner and Hazel (2005) assert that citizens assess value through such subjective measures as improved services, enhanced trust, increased social capital, and a decrease in or eradication of social problems.

A significant challenge in defining public value resides in the differing views of the notion of “value” itself (Bryson, Crosby, & Bloomberg, 2015), including, *inter alia*:

(1) whether something is valuable for its own sake; (2) how the valuation is conducted; and (3) against which criteria the object of value is assessed (Bryson et al., 2015).

Valuation encompasses an individual's preferences, emotions and motivations in determining utility or significance (Meynhardt & Bartholomes, 2011). Applying this definition, public value is inherently subjective and contextual to the citizen receiving the service; as such, the citizen needs to be at the centre of this investigation. Public value is therefore "what the public [i.e. citizen] values" (Bennington, 2009, p.233). In other words, public services are valuable if they are perceived to be valuable by the citizens who experience public value outcomes (Alford & O'Flynn, 2009).

Kelly et al. (2002) define three components of public value: services, trust and outcomes. Public services are essential to create public value as they represent the means of ensuring fairness, equity and other social values in actual service encounters with citizens. Trust is at the core of the bond that connects the government and its citizens (Kelly et al., 2002), and trust is built over time through the actions and expectations of citizens vis-à-vis the government. Outcomes, on the other hand, are distinguishable from services in that they are experienced by both the individual and by society as a whole. As such, they are prone to less distortion in the course of individual service encounters (Grimsley & Meehan, 2007). Taken together, these components provide a distinct conceptualisation of public value within the public administration domain. Figure 2.3 illustrates three important sources of value that form the basis for the assessment of public value.

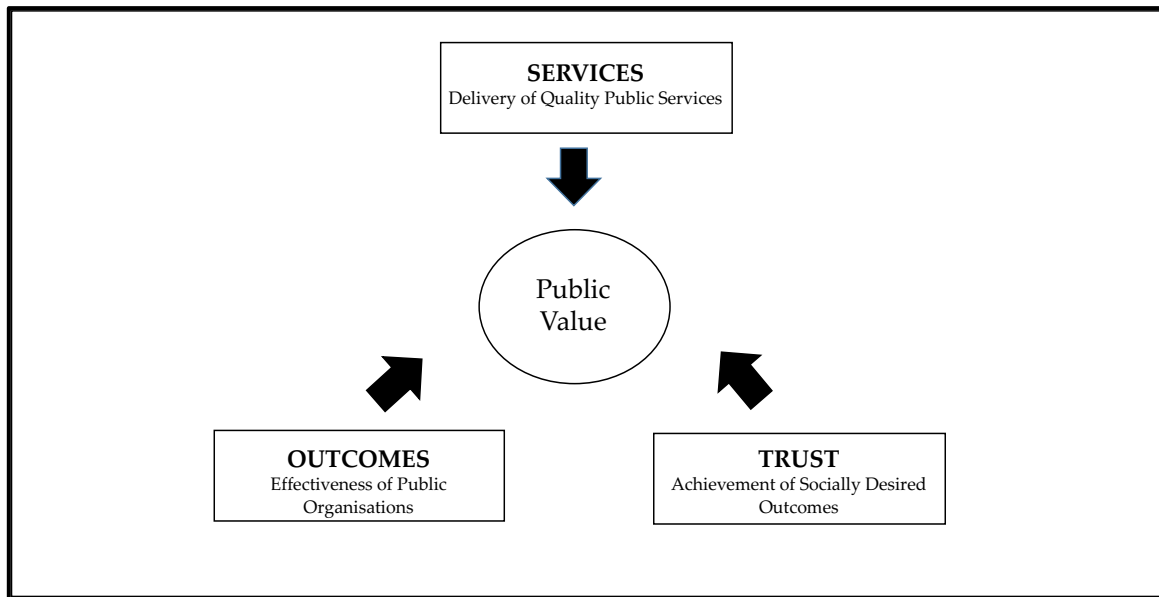


Figure 2.3. Main sources of public value

Source: adapted from Kelly et al., 2002

2.2.3. Public administration

A primary role of public administration is to deliver government economic and social programs to improve community outcomes (Isaac, 2007). In this respect, performance measures are used to critically assess program outcomes and to determine the prioritisation of investments in government programs, such as e-government, in a way that maximises future community outcomes.

The overarching objective of public administration is to create value for citizens through services, laws, regulations and other actions (Kelly et al., 2002). Enhancing government performance through technology, which is implicit in e-government, can be considered a means of increasing the value generated by public administration (Castelnovo & Simonetta, 2008). Hence, the performance of e-government can be evaluated based on its ability to increase the capacity of public administration programs to create public value (Kearns, 2004).

Alford (2002) argued that a public value-based evaluation must generally take into consideration the value citizens perceive in their interactions with public administration. Bannister (2002) contends that assessing the value created when citizens utilise technology to interact with public organisations highlights the fact that any definition of value must reflect the outcomes of such interactions. This is consistent with both the context and objective of this research, which is to assess the value created for citizens through the outcomes derived from their use of e-government.

2.3. An e-government overview

E-government has had a significant impact on public administration, transforming the environment in which public organisations operate, adding new concepts and methods to their operations, and impacting the relationships among established elements of public administration, including (1) the changed role of public administrators in delivering economic and social programs; (2) the relationships between public organisations and citizens; (3) the internal operations of public organisations; and (4) the mechanisms used by public organisations to connect with the broader environment (Brown, 2005). These impacts are especially evident in the government's relationship with its citizens.

E-government has created new vehicles for providing services to the public, emphasising self-service and citizen empowerment to a greater degree than in the past. The result is that these government services are often provided directly by non-government service providers, creating a direct relationship between citizens and external service providers, rather than with government agencies. This has placed pressure on the traditional roles of bureaucrats as intermediaries between government and the governed, which highlights the shortcomings in measuring performance from the perspective of public organisations. The

extent of these impacts can be seen through the definition of e-government, how benefits are derived from its use, and its unique characteristics.

2.3.1. Definition of e-government

The terms “e-government” and “electronic government” were initially used in the United States in 1993 in reference to efforts “to provide public services and to empower citizens and communities through information technologies, especially the internet” (Ho, 2002, p.434). Since then, a number of more nuanced delineations of e-government have been put forward in the literature.

The definition of e-government has evolved over time, from West's (2004) rather narrow designation of e-government as the mechanism to deliver public services and information through digital means, to a more expansive definition of e-government from the World Bank (2005), which characterises it as the use of ICT by public organisations “to transform the relationship between citizens, businesses and governments” (p.1). Subsequent elucidations of e-government have further broadened its scope. For instance, Schuppan (2009) describes e-government as a means of enabling the public sector to accomplish economic and social development in a country. Santos, Melo, and Paiva Dias (2013) define e-government in terms of its ability to restructure the organisation of public services by adopting mechanisms that promote communication among different entities.

This evolving interpretation of e-government from merely delivering internal government services to one supporting a more comprehensive economic and social environment has itself created challenges in measuring its performance in an effective and consistent manner. The common thread among all of these definitions is the fact that the

end goal of e-government is to create value and benefits for citizens (United Nations, 2003), which is consistent with this study's approach to evaluating the performance of e-government from the perspective of citizens.

2.3.2. Benefits of e-government

E-government has become an increasingly prevalent mode of delivery for government services globally due to its potential to generate value for citizens (Karunasena & Deng, 2012; Omar, 2015). This value can be conveyed through enriched service delivery, increased transparency of government determinations, improved responsiveness, increased efficiency of public organisations, and inspired social developments (Bertot, Jaeger, & Grimes, 2010; Schuppan, 2009; Sharifi & Manian, 2010). All of these outcomes produce substantive benefits for government, businesses and citizens.

E-government serves not only to enhance the effectiveness of public organisations and improve public service delivery, but also to achieve socially desirable outcomes (Karunasena & Deng, 2012; Omar, 2015). These citizen outcomes can include facilitating active participation in government, improving the quality of life for citizens, and reducing the disadvantage created by distance (Hanna, 2008). These potential tangible public outcomes motivate public entities around the world to advance policies and strategies to make e-government more citizen-focused (Zhao, 2011).

2.3.3. Characteristics of e-government

Although multiple definitions of e-government have been advanced owing to their various characteristics, no single definition has gained universal acceptance (Peristeras, Tsekos, & Tarabanis, 2002). It would therefore be worthwhile to examine the diverse characteristics of e-government in order to determine the appropriate definition to be applied to this study. Three primary perspectives – application, interaction and maturity – provide relevant lenses through which to view the diverse attributes of e-government and will be discussed individually in the following sections.

2.3.3.1 Application perspective of e-government

Yildiz (2007) suggests that it is meaningful to characterise e-government based on the specific application focus of e-government; i.e., from any of its functional perspectives. Figure 2.4 presents a summary of these different perspectives of e-government (Heeks, 2008; Karunasena & Deng, 2011; Prattipati, 2003).

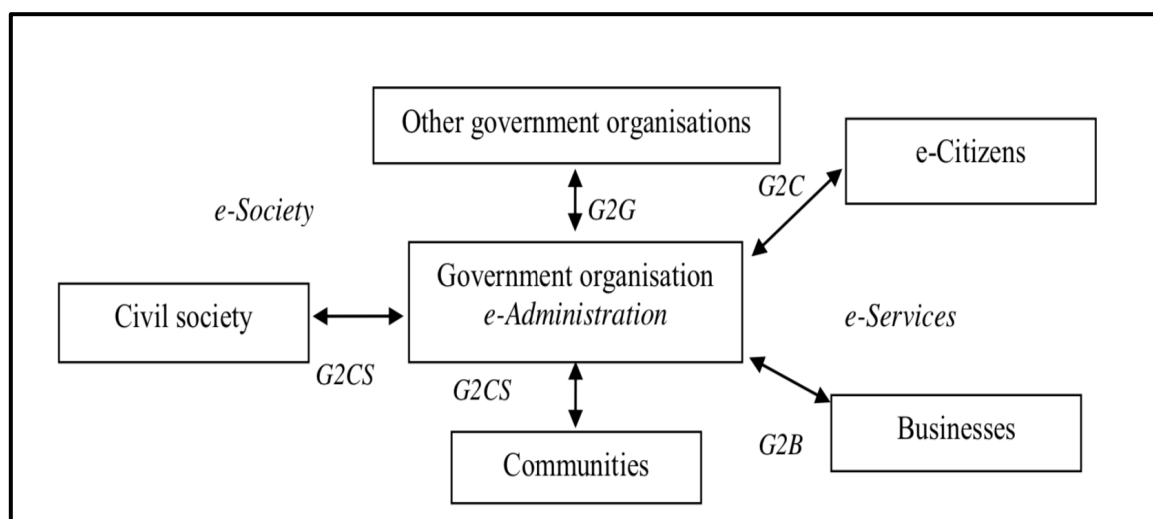


Figure 2.4 An overview of e-government perspectives
Source: Adapted from Heeks, 2008, p.261

The **e-services** approach focuses on delivering public services to citizens innovatively and efficiently (Jones, Hackney, & Irani, 2007; United Nations, 2003). The **e-citizens** approach concentrates on linking citizens to public organisations by encouraging democratic participation, supporting democracy, supporting accountability, and fostering citizens' involvement in public discourse (Heeks, 2002; Jones et al., 2007). The **e-society** approach incorporates attempts to construct relationships among public agencies, non-profit organisations and civil societies by developing local communities, enhancing coordination with non-profit organisations, and building government partnerships (Jones et al., 2007; Karunasena & Deng, 2011; Ndou, 2004). The **e-administration** approach focuses on efficiency improvements to public services by connecting public organisations, lowering capital expenditures, empowering public service employees, and eliminating redundancy and duplication (Heeks, 2008).

2.3.3.2. Interaction perspective of e-government

Public organisations engage in multiple modes of transactions with citizens and businesses, as well as among themselves. E-government can thus be characterised through the nature of such interactions. The interaction perspective of e-government delineates the manner in which e-government facilitates interactions among its principal actors: citizens, businesses and government (Kaaya, 2009). Public entities offer several categories of services to citizens and businesses via e-government that can be categorised based on the manner in which these interactions are conducted (see Table 2.1.).

Type	Description
G2C	Government to Citizen

Type	Description
G2G	Government to Government
G2B	Government to Business
G2CS	Government to Civil Society

Table 2.1. Nature of e-government systems interactions

G2C e-government enables efficient digital interaction between citizens and the government through the delivery of quality public services and by promoting citizens' participation in government activities (Evans & Yen, 2006; Kaaya, 2009). **G2G e-government** facilitates both inter-governmental and intra-governmental data exchange at the federal, state and local levels (Kaaya, 2009). This data exchange can foster the streamlining of bureaucratic procedures, avoiding duplication, enhancing communication and coordination among public organisations, and boosting efficiencies for public organisations (Siau & Long, 2005; United Nations, 2008). **G2B e-government** focuses on improvements to the effectiveness and efficiency of service delivery between government and businesses with the goal of cost reductions (Lu, Shambour, Xu, Lin, & Zhang, 2010). These systems support the government in processing online business transactions, such as payments between government and businesses for goods and services (Esteves & Joseph, 2008; Evans & Yen, 2006). **G2CS e-government** aids in developing knowledge-based societies (Al-Nagi & Hamdan, 2009; Esteves & Joseph, 2008) in order to improve the quality of life of those in the community, facilitating the development of civil societies, and delivering services to the most vulnerable segments of society, including citizens living with disability and other minorities (Al-Nagi & Hamdan, 2009).

2.3.3.3. Maturity perspective of e-government

The stage of its development constitutes a key attribute of e-government. When viewed from a maturity perspective, Esteves and Joseph (2008) contend that e-government can be characterised by the features, services and functions available on the system during each of the stages of its development. Layne and Lee (2001) depict e-government maturity as a four-stage process: (1) catalogue stage; (2) transactional stage; (3) vertical integration stage; and (4) horizontal integration stage. Figure 2.5 illustrates the maturity perspective of e-government.

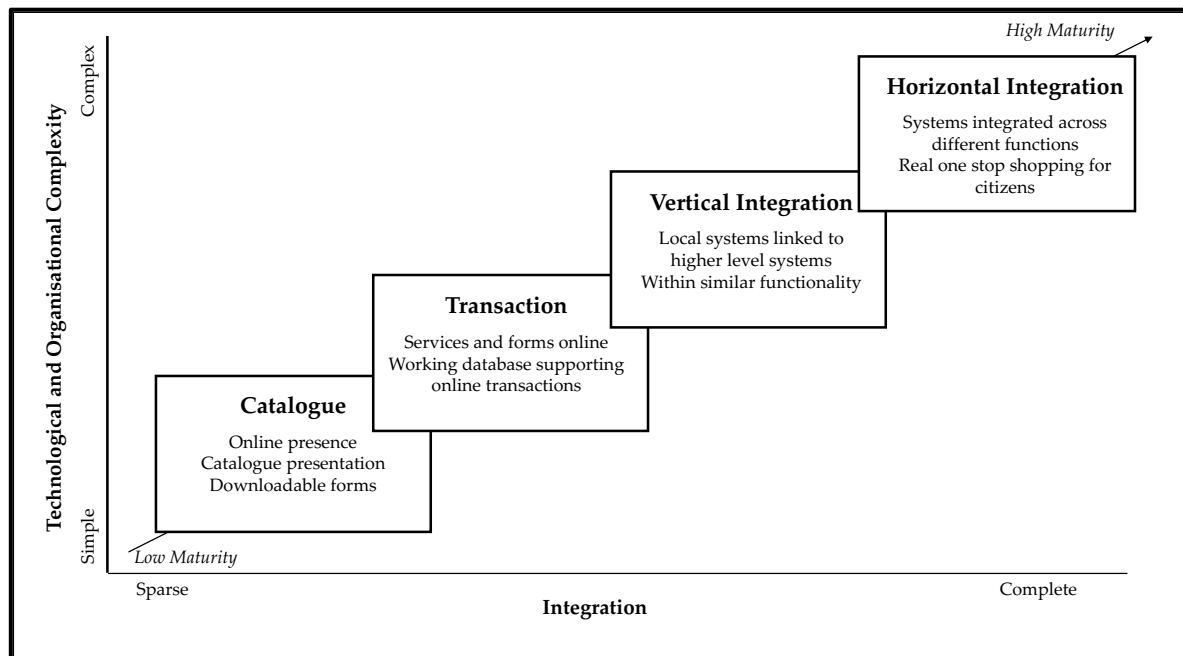


Figure 2.5 Maturity perspective of e-government

Source: Adapted from Layne & Lee, 2001, p.124

E-government passes through each stage of its life cycle, starting with the catalogue stage and progresses gradually through the transactional stage as additional applications go online. The vertical and horizontal integration stages follow as the specific

e-government system is connected to supplementary systems (Affisco & Soliman, 2006; Kaisara & Pather, 2011).

During the *catalogue stage*, the focus of e-government is on presenting information regarding government activities and public organisations online (Beynon-Davies, 2007). It is commonly displayed according to event or service category and includes features like information search resources and how to access and download online forms.

Throughout the *transactional stage*, the primary focus of e-government is enabling electronic transactions between citizens and the government (Akman, Yazici, Mishra, & Arifoglu, 2005). During this stage, citizens conduct transactions with government online, such as submitting claims, paying fees, fines and taxes, or utilising other online applications (Beynon-Davies, 2007). Such online transactions create efficiencies for citizens by saving them time and money, as they eliminate the requirement to appear in person at the offices of public entities and queue for services (Reddick, 2004). The opportunity to interact with citizens online also has a positive impact on the cost efficiencies of the public service organisations themselves.

During the *vertical integration stage*, local or state systems connect to federal e-government to enhance functionality for citizens (Layne & Lee, 2001). Vertical integration typically occurs where there is value in sharing similar functions or services of government across the different levels of government: local, state, and federal (Beynon-Davies, 2007).

In the *horizontal integration stage*, the focus of e-government is on connecting the systems of public organisations offering other services but at the same level as government in order to provide a single service delivery point for citizens (Akman et al., 2005). Such transactions executed with a particular public service organisation are made available to other government entities at the same level (e.g., federal). Citizens derive significant benefits at this stage based on their ability to access a full range of government services through a single portal (Beynon-Davies, 2007; Reddick, 2004).

2.3.3.4. Contextualising the e-government service evaluated in this research.

The e-government services supporting citizens living with disability in Australia, which constitute the focus of this research, can be characterised from an application, interaction and maturity perspective. Citizens use these e-government services to support their daily living, which puts this e-government into the e-services category (*application perspective*). This e-service provides functions that support citizens in managing their approved disability plans, accessing information about the scheme, searching for service providers, uploading supporting documentation and receiving quotes, purchasing consumables (e.g., incontinent aids, specialist cleaning materials), services (e.g., taxis, gym memberships, physio sessions) and capital goods (e.g., wheelchairs), claiming payment re-imbursements, checking medical records, and providing information for tax purposes. Citizens living with disability are the primary users and beneficiaries of these e-government services, which are highly automated through self-service functions, placing them in the C2G category (*interaction perspective*). The e-government system portal used by citizens living with disability provides a single interface and is connected to service providers and other federal government systems, thereby allowing the transfer of

information seamlessly between citizens and service providers. This places the e-government service in the category of horizontally integrated services (*maturity perspective*). See Appendix I for history of maturity progression of e-government in Australia.

These characteristics of e-government used by citizens living with disability in Australia positions such services within the definition provided by the World Bank (2005), which will also be adopted by this study; i.e., the use of ICT to transform the relationship between government, citizens and businesses. The complex nature of health, disability and social servicing frequently requires the collaboration of multiple parties from across public and private organisations in order to ensure efficient delivery of outcomes to citizens. In the majority of such interactions in this space, citizens receive a service or product from a non-governmental organisation(s) for which the government pays, creating a multi-tiered relationship among citizens, government and businesses. Citizens living with disability in Australia utilise e-government services on a regular basis to acquire the support required for the activities associated with daily living, including medical consumables, transport and specialist appointments.

This study's focus on evaluating the success of e-government from the perspective of citizens is significant based on the fact that citizens constitute the ultimate source of legitimacy for all government actions in a democracy (Moore, 1995). Citizens are also the primary beneficiaries of the value from citizen-focused e-government services. The assessment of services from the perspective of citizens is analogous to Chandler and Vargo's (2011) articulation of the principles of service-dominant logic (SDL): Value is always uniquely and phenomenologically determined by the beneficiary. This axiom

reinforces the argument that value is experiential; i.e., it is perceived and integrated differently by each citizen through consumption of e-government resources. Thus, the value outcomes generated for citizens through interfacing with e-government are also individually experienced and determined. Value must therefore be understood in terms of the holistic combination of the resources that lead to it (Chandler & Vargo, 2011). This provides a powerful argument for focusing on the citizen perspective in determining the success of e-government.

2.3.4. Challenges for e-government

The inherent challenges associated with e-government in Australia must be considered in order to properly appreciate the socio-economic context within which e-government services are provided to citizens living with disability. Australia's vast geography presents a major challenge for e-government, with high concentrations of population in certain areas and low population density throughout much of the country. Australia comprises a land area of about 7.692 million square kilometres, with an average population density of 3.3 persons per square kilometre, making it one of the most sparsely populated countries in the world (ABS, 2019). The highly urbanised population is heavily concentrated on the east coast, with 67% of the population living in metropolitan areas as of 2018 (ABS, 2019). Figure 2.6 provides a view of the vast geography of Australia and distribution of the population.

The distance between population centres in Australia and the relative isolation of those outside of urban areas have created significant financial and technical challenges for the government in deploying services to rural and remote areas. Internet penetration is

inconsistent throughout the country, leaving many citizens in remote and regional Australia with inadequate connectivity as compared with their urban counterparts.

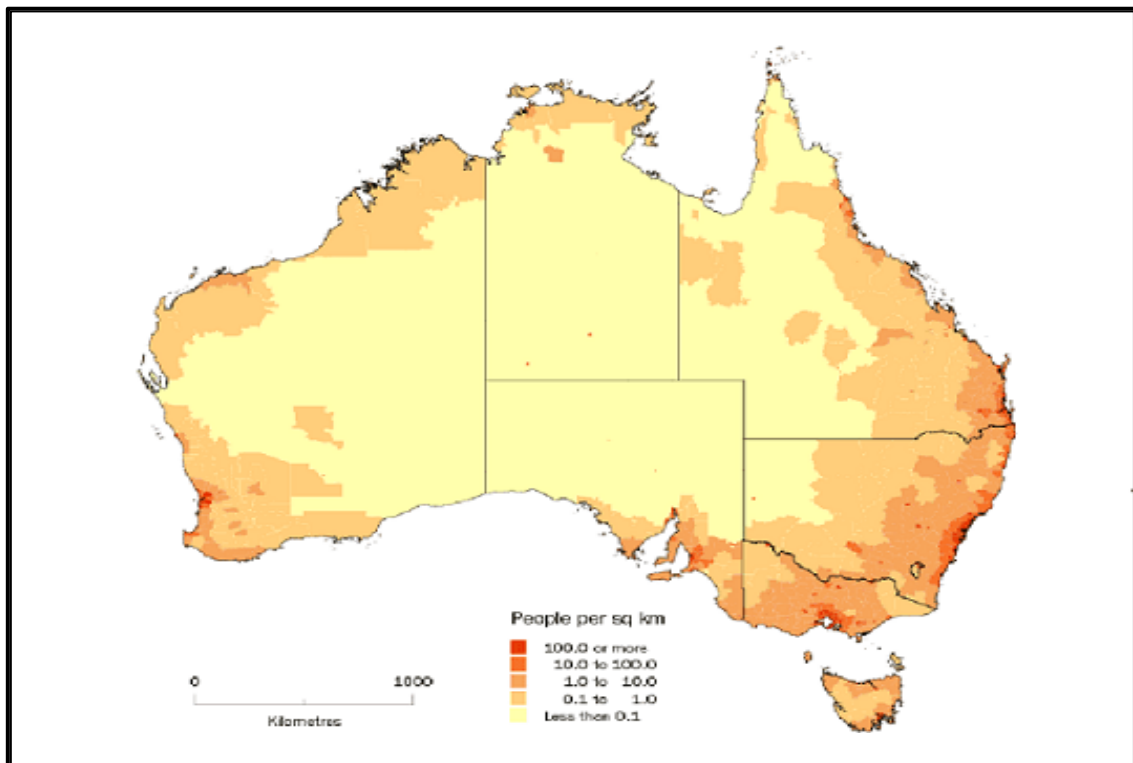


Figure 2.6. Geography of Australia showing population distribution

The demographic composition of the Australian population itself presents another impediment to consistent service delivery. While the Australian population is relatively homogeneous, those facing economic and social disadvantages have a broad range of abilities and needs when it comes to accessing digital services, particularly citizens living with disability. Furthermore, the increasingly multicultural nature of Australia's society inevitably leads to cultural and linguistic obstacles in providing information and services to citizens. These challenges have accentuated a broadening "digital divide" in which disadvantaged citizens are less likely to rely on internet support, particularly those living

with disability, thus making it imperative for the government to evaluate the extent to which e-government successfully delivers services in light of such challenges.

2.4. Approaches to evaluating the success of e-government

An increase in the global deployment of e-government services has made it imperative that their performance be empirically assessed (Petter et al., 2012), which has resulted in the emergence of several different evaluation methods (Heeks, 2008). The literature indicates four approaches employed to assess the success of e-government: (1) readiness of citizens to adopt e-government (Kunstelj & Vintar, 2004); (2) availability and maturity of e-government services (Reece, 2006); (3) user satisfaction and usage of e-government (Cheng, Cheng, & Yang, 2007); and (4) impacts of e-government on citizens and society (Scott et al., 2016); as illustrated in figure 2.7.

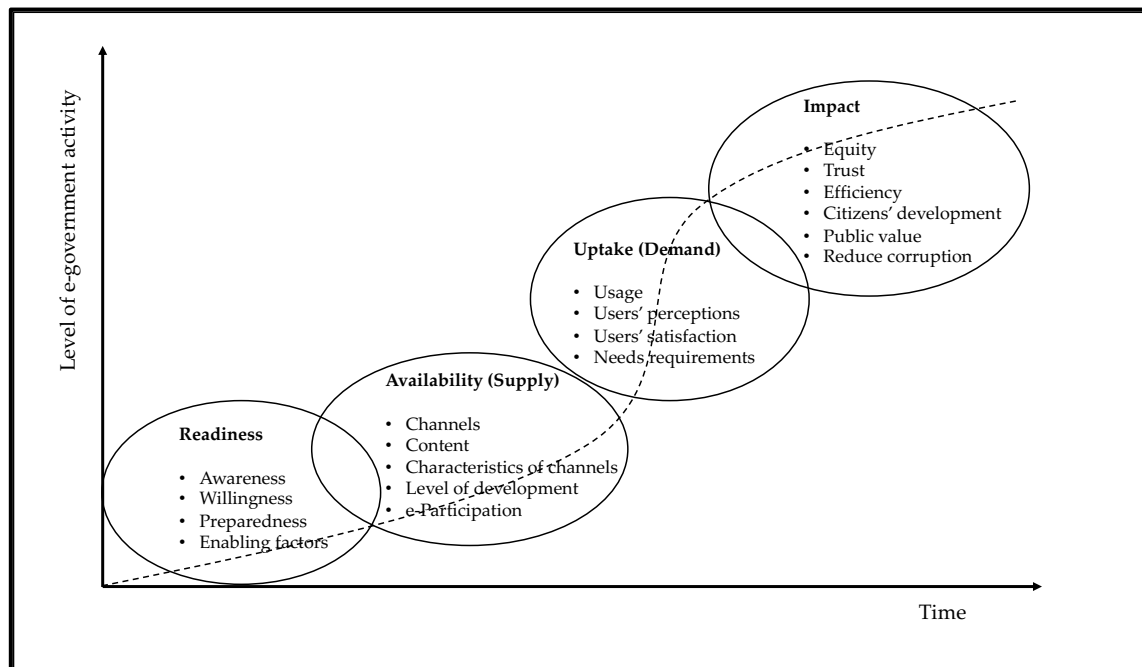


Figure 2.7. Approaches used to evaluate e-government

Source: Heeks, 2008, p.259

These e-government evaluation mechanisms have evolved over time. Most countries take the initial step of assessing the readiness of citizens to adopt e-government and then move progressively to evaluations of service availability and uptake (Cheng et al., 2007; Kunstelj & Vintar, 2004; Reece, 2006). More recently, countries have been advocating for evaluations based on the broader influences of e-government on social outcomes, in line with the United Nations definition of e-government (Heeks, 2008).

The **readiness evaluation approach** assesses the level of environmental maturity within which e-government systems are initiated. This approach evaluates the extent to which citizens, businesses and governments are aware, willing and prepared to utilise e-government. It also helps to identify enabling factors like computer literacy as part of the readiness assessment (Kunstelj & Vintar, 2004). The appeal of this method is primarily its capacity to produce a quantifiable overview of the environmental context within which the system is being introduced (Dada, 2006). However, Kunstelj and Vintar (2004) note that the readiness assessment method has been criticised for neglecting to consider what a citizen needs or the impacts that e-government has on the broader relationships between businesses, government, citizens and the society in which they live.

The **availability evaluation approach** is focused exclusively on a supply-side evaluation of e-government (Reece, 2006) and is employed to examine the availability of public services online and their level of maturity and content, as well as individual characteristics of the channels used to deliver the services (Gauld, Goldfinch, & Horsburgh, 2010). The availability assessment approach is frequently criticised for its failure to reflect the viewpoint of citizens, as well as for overlooking vital facets of a country's explicit priorities (Codagnone & Undheim, 2008).

In contrast to supply-side evaluations of e-government, the **demand-side approach** evaluates systems from the perspective of citizens (Gauld et al., 2010) and focuses on their perceptions of e-government service quality. This approach assesses the level of endorsement of e-government, which includes usage, satisfaction, perceptions, requirements, and needs fulfilment from the viewpoint of citizens (Cheng et al., 2007). This approach to e-government evaluation is constructive in determining the degree to which e-government succeeds in satisfying citizens' needs. Despite such positive attributes, however, it is limited in that it does not consider social outcomes, which constitute a vital part of the government's agenda in delivering services to communities.

Recent accelerated advances in technology have contributed to the evolution of e-government evaluation methods toward an increased focus on the effects of online systems on citizens, society and government (Heeks, 2008). This **impact assessment approach** emphasises the net benefits achieved through effective and efficient e-government. Moreover, it also considers the effect of e-government on democratic and social outcomes within the country (Heeks, 2008). Examples of the social values assessed by the impact evaluation approach of e-government include a more robust democracy and increased levels of trust and equity, indicating that it incorporates the social priorities defined by public value.

2.5. Evaluation frameworks for e-government success based on information systems, economic and public value theories

The frameworks most commonly employed by governments to evaluate e-government performance are based on several theories, including information systems,

economic and public value theories, each of which contains inherent strengths and weaknesses that impact on the pertinence of their applicability. This research draws on the work of Heeks (2002) to provide a guide for assessing the extent to which these evaluation frameworks are appropriate in evaluating e-government performance. Heeks offers an objective set of criteria to be considered in determining the success of e-government that should be included in any evaluation framework; illustrated in figure 2.8.

Criteria	Evaluation Description	Link to Foundation Theories
Functional Design	1. Are there gaps in practice between the functional design of e-government and situational need?	Representation Theory
Technology Architecture	2. Is the technical architecture of e-government suitable and sustainable?	
Work Processes	3. Does e-government provide comprehensive, end to end work processes to address citizen needs?	
Objectives of Key Stakeholders	4. Is e-government aligned with the objectives of key stakeholders?	Public Value Theory
Values of Key Stakeholders	5. Does the evaluation method consider social norms and values that are embedded within the stakeholders' service ecosystem?	
Cost / Benefit	6. Are economic and social benefits included in the evaluation?	Public Administration
Context or Situation	7. Is the context or situation within which the e-government system is employed taken into account?	

Figure 2.8. Success criteria linked to foundation theories used in this research
Source: adapted from Heeks 2002

The first three criteria (1 to 3) align with concepts from representation theory concerning the resources of e-government and how they are applied to achieve desired goals, while the following three relate to public value theory (4 to 6), identifying what should be measured and from whose perspective the measurement should be viewed. The final criterion (7) relates to public administration and the objective measures within the government policy for which the e-government was intended to deliver and against which

success can be evaluated. These seven objective criteria form a foundation from which to critically review the most commonly utilised evaluation frameworks for e-government that are based on information, economic and public value theories.

2.5.1. Evaluation frameworks based on IS theory

The majority of government agencies employ evaluation frameworks drawn from the domain of information system (IS) theory. A number of these frameworks apply IS success theory, which holds that any comprehensive methodology for evaluating systems performance should include an assessment of the system's effectiveness and efficiency based on its specific capabilities (Gunasekaran, Ngai, & McGaughey, 2006; Irani, 2002; Irani & Love, 2008). Other evaluation frameworks utilised by governments to determine the success of e-government are based on IS acceptance theory, which reinforce the importance of including assessments of the system's usefulness, perceived ease of use, and beneficiaries' intention to use the technology in the future (Venkatesh, Morris, Davis, & Davis, 2003). Although the literature proposes various methodologies, most are derivatives of the following four evaluation models.

2.5.1.1. Technology Acceptance Model

The most commonly employed IS theory-based framework is the Technology Acceptance Model (TAM). It focusses on factors influencing technology acceptance and evaluates ease of use and usefulness as factors influencing the adoption of the technology. It assumes a correlation between ease of use and self-efficacy as drivers of adoption, which is a key factor in evaluating the success of e-government. Davis (1989) proposed the TAM to explain why users reject or accept information technology. It is an adaptation

of the theory of reasoned action proposed by Fishbein and Ajzen (1975), which aims to predict and explain the behaviours of individuals in certain defined situations. Figure 2.9 depicts the original TAM, which suggests that perceived usefulness and ease of use are the two most significant factors in elucidating system adoption. The most prevalent criticism of the TAM is its failure to recognise variances between individuals' demographics, such as age, prior experience and gender, that may influence their attitudes toward technology (Agarwal & Prasad, 1999). In addition, TAM was initially developed to predict the acceptance of technology by internal staff, not by citizens.

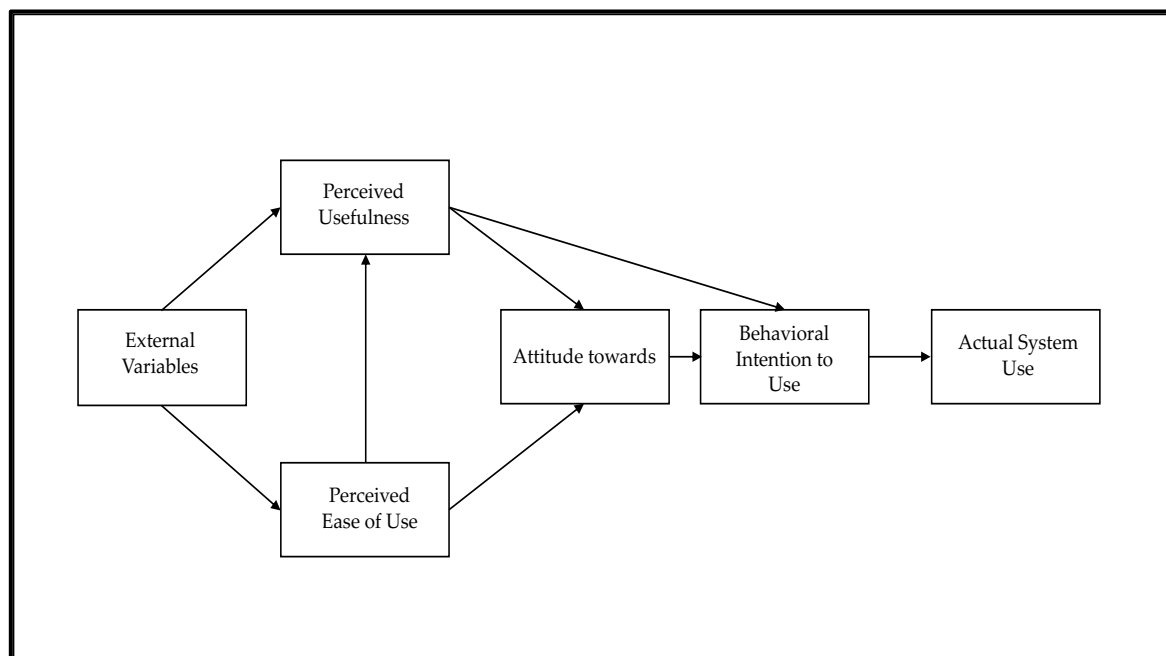


Figure 2.9. The Technology Acceptance Model

Source: Davis 1989

2.5.1.2. United Theory of Acceptance and Use of Technology Model

The limitations of the TAM evaluation framework were addressed by Venkatesh et al. (2003) with the emergence of the United Theory of Acceptance and Use of Technology model (UTAUT). Figure 2.10 demonstrates how the UTAUT model overcomes these

drawbacks. It encapsulates expected performance, expected effort, social influences and facilitating conditions, and it employs demographic variables as moderators for predicting behavioural intentions based on the assumption that these factors can predict sustained usage behaviours (Venkatesh, 2000). However, the use of e-government systems is mandated in many cases, which diminishes the applicability of “use” as a criterion for defining success.

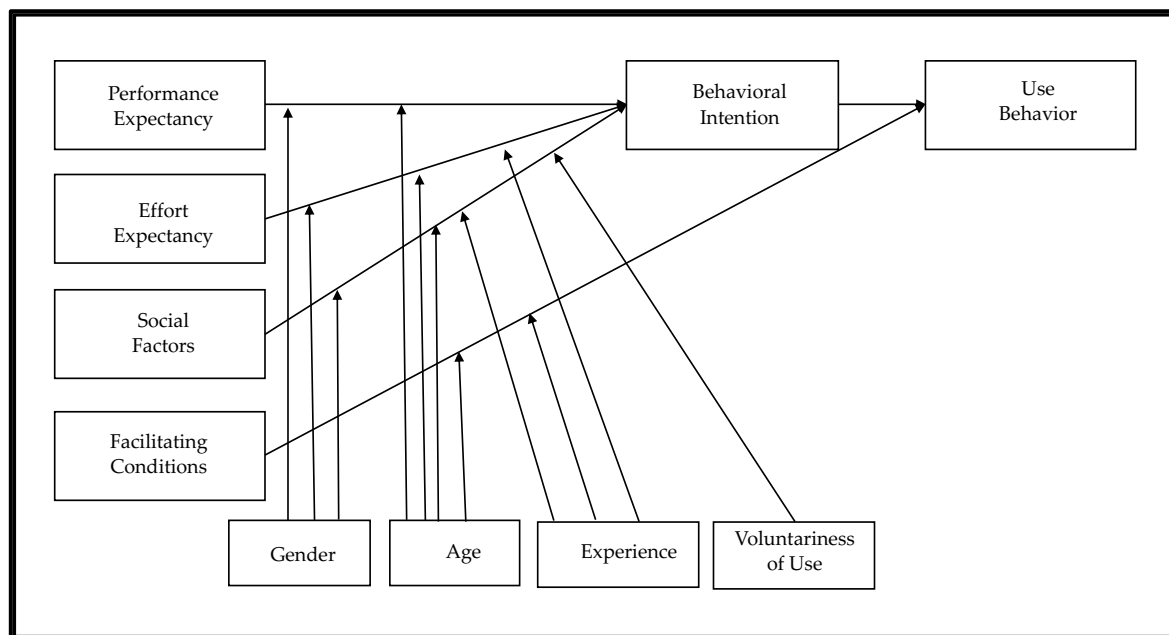


Figure 2.10. The UTAUT Model

Source: Venkatesh et al. 2003

2.5.1.3. DeLone and McLean IS Success Model

Another widely employed framework for evaluating e-government performance is the DeLone and McLean (2003) Information System Success Model. This model, presented in Figure 2.11, evaluates success through the interrelationships among six dependent variables: information quality, systems quality, service quality, user satisfaction, use, and net benefits. The inclusion of net benefits enriches the evaluation by

incorporating an outcome measure, with feedback loops to indicate how usage varies over time based on experience with the system.

Although numerous studies have evaluated success using similar dimensions to the IS Success Model, they have focussed primarily on a single quality attribute. As noted by Petter, DeLone and McLean (2008), few studies attempt to measure the multi-dimensional nature of success and the interrelationship among the elements that contribute to success.

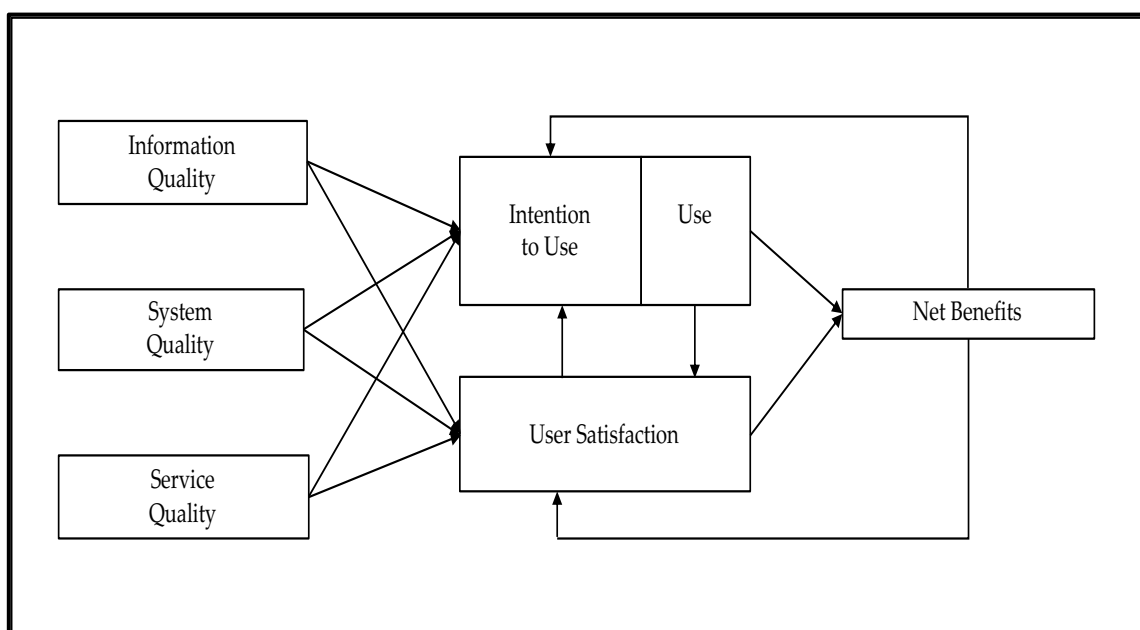


Figure 2.11. Updated D&M IS Success Model

Source: DeLone and McLean 2003

There is a growing body of evidence demonstrating the explanatory significance of the D&M model in an e-government context (e.g. Stefanovic, Marjanovic, Delic', Culibrk, & Lalic, 2016; Wang & Liao, 2008). However, very few studies focus on the expansion of discrete e-government success dimensions, and there is limited empirical research investigating the net benefits from the viewpoint of citizens (DeLone & McLean, 2016).

2.5.1.4. Scott, DeLone and Golden e-Government Success Model

Scott et al. (2016) recently proposed a distinctive and noteworthy adaptation of the DeLone and McLean 2003 model. They designed an evaluation framework for measuring “public value net benefits” from the perspective of citizens by merging concepts from research on the success of public administration and e-government, as illustrated in Figure 2.12.

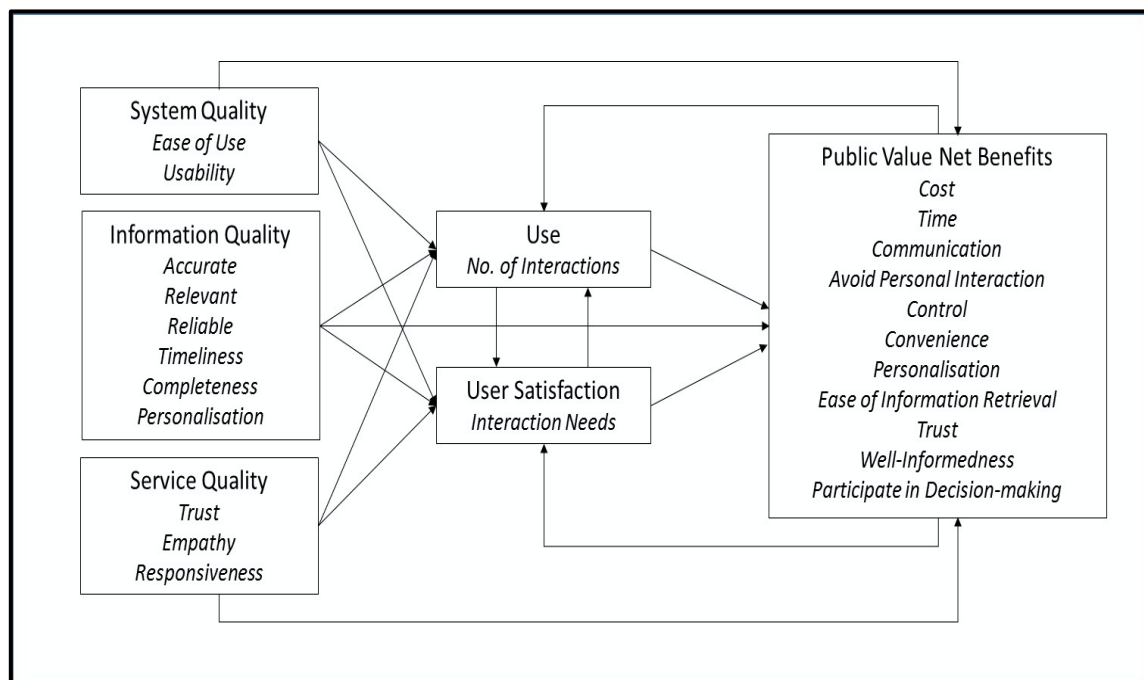


Figure 2.12. Scott, DeLone and Golden e-government success model

Source: Scott, DeLone, & Golden, 2009

Scott et al.’s (2016) model posits that the evaluation of public value net benefits should include efficiency, effectiveness and improved social outcomes based on the original DeLone and McLean (2003) model, which results in a balanced success model tailored for application by public entities. Scott et al.’s (2016) study assessed e-government success by combining a comprehensive set of public value net benefits based on public value theory. The results demonstrate that evaluating e-government

success requires a multi-dimensional framework reflecting multiple value outcomes. They further revealed that success measures must include service-based effectiveness as well as the value created from improvements in social outcomes; as citizens prioritise improvements in trust, communication, personalisation and participation over convenience and timesaving in their interactions with e-government.

2.5.1.5. Critique of IS theory-based frameworks

While there have been positive advancements in validating these evaluation frameworks, they nonetheless fail to address the general limitations of IS theory-based evaluation models in the sense that they rely on “use” as a dependent variable. Researchers frequently consider the number of interactions (i.e., “use”) with e-government as a positive performance measure. However, multiple interactions may relate to the same matter, so the frequency of use may indicate a highly ineffective e-government service. DeLone and McLean (2003) highlight this inadequacy in an earlier review of the IS Success model:

Simply saying that more ‘use’ will yield more benefits without considering the nature of this use (and context) is clearly insufficient. (DeLone & McLean, 2003, p.16)

Straub (2009) adds that “use” is a poor measure of success in cases where “use” is mandatory. These IS theory-based models also fail to adequately address the inclusion of social norms, a point made by Scott et al. (2016) in their conclusion. Overall, when viewed against the Heeks’ (2002) seven appraisal factors, not all IS theory-based models consider the context within which the system is used, nor the social value resulting from system use, or the values of the key stakeholders.

According to Straub (2009), however, the major limitation of these models is that adoption of the technology is an inappropriate outcomes criterion for success when citizens have no other options, as in the case of many e-government services. Table 2.2 summarises the limitations of the primary IS based e-government performance evaluation frameworks.

Research	Limitations of the frameworks
Technology Acceptance Model (TAM) (Davis, 1989)	• The notion of perceived ease of use cannot be associated directly with self-efficacy (Straub, 2009) • Lack of acknowledgement of individual differences like gender, age, experience, and several other characteristics that can influence attitudes about technology (Agarwal & Prasad, 1999) • Technology adoption in an environment that is mandated is not an appropriate measure of success as citizens ultimately do not have a choice (Straub, 2009) • Social norms are not considered as an influence of technology adoption (Heeks, 2008)
United Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al, 2003)	• Self-efficacy (Agarwal, Sambamurthy, & Stair, 2000) may change, particularly outside an organisational setting • Technology adoption in an environment that is mandated is not an appropriate measure of success as citizens ultimately do not have a choice (Straub, 2009)
IS Success Model (DeLone & McLean, 2003)	• Use is a poor measure of success. More use without consideration of the nature and context of use is insufficient (DeLone & McLean, 2003)

Table 2.2. Limitations of IS evaluation frameworks

2.5.2. Evaluation frameworks based on economic theories

E-government performance evaluation frameworks also have foundations in the economics domain (Lu & Zhang, 2003). Economic-based performance frameworks focus on cost reduction or benefits realisation; most also assess certain quality aspects of the service involved. In the economic models, value is generated through the reduction of transaction costs (Williamson, 1985). In the case of e-government, transaction costs might be incurred by storing duplicate data in multiple databases or by keying in redundant data repeatedly. The implementation of more effective methods of interacting with citizens can generate direct and indirect cost-savings to the government. In these instances, the strategy that drives value generation is motivated by the vision of a more efficient government.

Several economic evaluation techniques have been put forward to evaluate e-government success (Heeks & Molla, 2009), the most common of which in the literature on e-government evaluations include financial models known as Economic Cost-Benefit Analysis models (Amberg, Markov, & Okujava, 2005; Heeks & Molla, 2009). These financial models consist of several classes of economic evaluation techniques, such as Payback Period, Net Present Value, Benefit-Cost Ratio and Return on Investment.

2.5.2.1. Payback Period Model

Payback period models measure the time it takes to recover the entire investment in an e-government service (Gray & Larson, 2008). In other words, the payback period is the break-even point (generally expressed in months or years) at which the benefits of implementing e-government services equal the investment costs (Heerkens, 2002). The computation of the payback period is based on benefit flows (Gray & Larson, 2008; Gupta

& Jana, 2003), and initiatives with shorter break-even periods are considered more advantageous than those with more extended periods (Remer & Nieto, 1995b). Detractors of this method argue that it ignores the time value of money (Gupta & Jana, 2003) and that it overlooks benefits that may accrue beyond the payback period (Remer & Nieto, 1995b).

2.5.2.2. Net Present Value (NPV) Model

The NPV model computes the net worth of an e-government service in present value terms using the discount rate. Future benefits are adjusted by the discount rate and the investment cost is deducted from the total discounted benefits (Heeks & Molla, 2009). The discount rate, commonly known as cost of capital (Heerkens, 2002), is determined by the government (Gray & Larson, 2008) and may be interpreted as rate of return (Remer & Nieto, 1995a). Although e-government initiatives may be wholly financed by public funds derived from taxes (Di Maio, 2003), the rate of return in the public sector will nonetheless be determined by applying the prevailing market rate. The rationale driving this method is the fact that resources allocated to e-government have a substitute best alternative.

Economic theory posits that this best alternative is consistently viewed as an opportunity cost (Gupta & Jana, 2003) and that investments with a positive Net Present Value are considered economically viable (Heeks, 2003). Despite its reputation as a suitable measure of evaluating e-government success (Gupta & Jana, 2003), detractors of the method highlight the challenges of collecting the data required for a meaningful computation of NPV, arguing that it is difficult to quantitatively estimate costs and benefits in the course of an ex-ante evaluation (Irani et al., 2005).

2.5.2.3. Benefit/Cost Ratio Model

The cost/benefit ratio method measures public benefits against the costs incurred by the government in delivering services (Remer & Nieto, 1995b). When used to evaluate online service success in the private sector, costs and benefits accrue to the same individual or entity. The cost/benefit ratio method provides straightforward results when the data is unambiguous (Remer & Nieto, 1995b), although it can be challenging to assign a monetary value to certain classes of benefits. A key difficulty in employing the cost/benefit ratio method in evaluating e-government performance — or any other public service evaluation technique based on economic principles — is the task of identifying all e-government users and all benefits and disbenefits of the service. In addition, it can be difficult to quantify benefits and disbenefits into dollars or another relevant unit of measure (Park, 1993).

2.5.2.4. Return on Investment Model

There are two variations of the return on investment (ROI) method: return on original investment and return on average investment. In an e-government performance evaluation context, the return on original investment method measures the percentage relationship between the average annual financially calculated benefits and the initial investment. The return on average investment method, however, calculates the percentage representing the difference between the average annual benefits and the average annual investment. The amounts used to determine these averages are not discounted; i.e., they do not consider the time value of money. This, according to Remer and Nieto (1995b), constitutes a significant disadvantage of this method, as it incorporates no set criteria for success as compared with other approaches.

2.5.2.5. Critique of economic theory-based frameworks

Traditional economic evaluation measures, such as Payback Periods, Net Present Value, Benefit/Cost Ratio and Return on Investment are frequently used in evaluating e-government initiatives in public organisations (Ballantine & Stray, 1999). According to Irani et al. (2005), these appraisals are typically based on conventional accounting frameworks that are "designed to assess the 'bottom-line' financial impact of investments" (p.64). They further note, however, that these methods fail to accommodate many of the broader categories of costs or benefits relevant to public organisations. The economic notion of "value for money" (calculated based on economic cost/benefit analysis models) as a determinant of success, which is still widely employed in the public sector, has achieved limited success (Irani et al., 2005). This is especially true for e-government due to the amorphous nature of success and the inherent complexities in determining the "value for money" outcomes of these initiatives (Bannister, 2001).

When compared with Heeks' (2002) seven appraisal factors, the majority of economic theory frameworks primarily emphasise financial outcomes while ignoring democratic and social values (Jones, 2008), the context within which the system is used, the value contribution of the technology, and the values of the key stakeholders (Bannister, 2001). Bannister (2001) states that these approaches are, therefore, less practical when applied in complex socio-political environments, where citizens' preferences and values are critical considerations. A World Bank (2007) analysis echoed this reservation, stating that "in addition to measuring financial value, an assessment of social benefits is imperative for a comprehensive assessment of any initiative undertaken

by governments” (p.1). Table 2.3 summarises the limitations of economic-based e-government performance evaluation frameworks.

Research	Limitations of the framework
Payback Periods	• Ignores the time value of money (Gupta & Jana, 2003) • Ignores any cash inflows beyond the payback period (Remer & Nieto, 1995b) • Does not include other social benefits (Irani et al., 2005)
Net Present Value	• Difficult to quantitatively estimate the cost and benefits during ex-ante evaluation (Irani et al., 2005) • Does not include other social benefits (Irani et al., 2005)
Benefit/Cost ratio	• Difficult to identify all users of the system (Park, 1993) • Problem in identifying all benefits and disbenefits of the system (Park, 1993) • it is not easy to quantify all the benefits and disbenefits in dollars or other unit of measure (Park, 1993)
Return on investment	• Has no set criteria for project profitability (Remer & Nieto, 1995b) • Requires expression of welfare effects in monetary terms, which can be difficult (Gift & Marrazzo, 2007)

Table 2.3. Limitations of economic evaluation frameworks

As discussed, the limitations of current e-government evaluation frameworks based on either economic or information systems theories require consideration of alternative approaches capable of capturing the shifting variables applicable to assessments of success. One such approach that embraces both social and economic

values, as well as the contributions of others in public service delivery besides government, is public value theory.

2.5.3. Evaluation frameworks based on public value theory

Public value is a normative theory for evaluating public service performance from the perspective of citizens (Moore, 1995). It assesses "the context-specific preferences of individuals concerning the rights, obligations, and benefits to which citizens are entitled [against] obligations expected of citizens" (Bozeman, 2007, p.13). Four representative studies in the literature provide a comprehensive basis for the evaluation of e-government success with public value as the foundation: Kearns (2004), European Commission (2006), Golubeva (2007) and Karunasena (2012). All four studies share similar concepts of public value, but each adopts a distinctive approach to the assessment of public value contributions from e-government. The common thread across these research studies is that they assess what e-government achieves, rather than simply considering "use" of the technology itself.

Since their introduction, public value-based evaluation frameworks have evolved through several phases due to technological innovations (European Commission, 2006), citizen-centricity, governance (Golubeva, 2007), cost management and social dimensions (Karunasena, 2012). The following sections present a detailed analysis of the four leading public value-based evaluation frameworks highlighted in Figure 2.13.

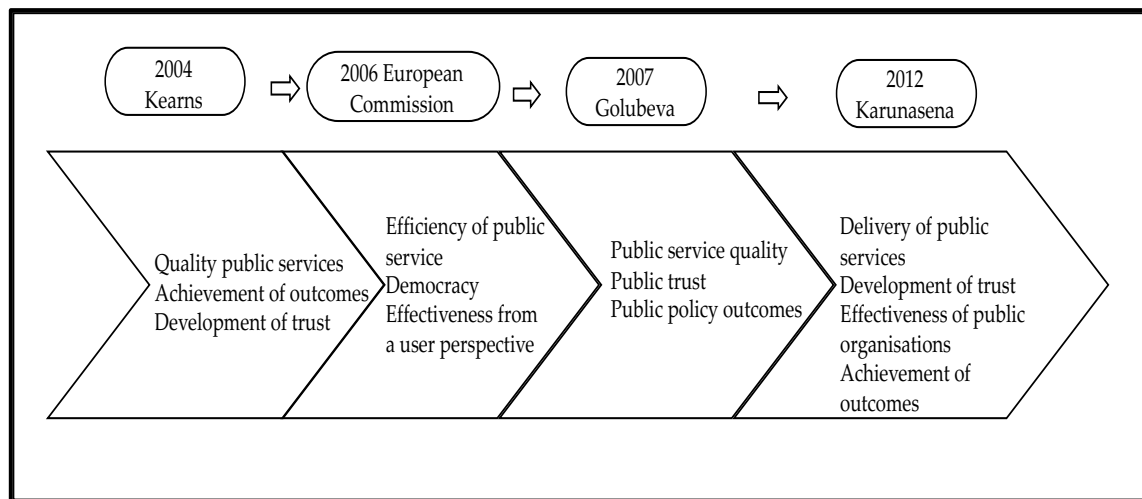


Figure 2.13. Chronology of four representative studies

2.5.3.1. Kearns' public value evaluation framework

Kearns (2004) believed that evaluations of e-government failed to yield the categories of data relating to benefits required to have a substantial impact on mainstream policy debates. He argued that public value could be employed as an analytical framework in connection with the value created for citizens by government through e-government, which he posited would provide the wider policy community with relevant insights into the benefits generated through technology when utilised to deliver policy outcomes.

Kearns (2004) investigated the creation of public value by means of several anecdotal studies of e-government services across the health, education, and transport sectors in the United Kingdom. The study applied the sources of public value proposed by Kelly et al. (2002): provision of quality public services, achievement of outcomes, and the development of trust.

In the Kearns study, the efficient delivery of public services was evaluated based on the availability of service options, citizen satisfaction, fairness in access, perceived

importance of information, and cost savings resulting from the use of these services. The achievement of broader social outcomes, such as improved health across society, a reduction in poverty and the development of public trust, was deemed essential but was not explicitly measured. The outcome of the study demonstrates that the use of e-government generates significant financial and other public value outcomes. Figure 2.14 below represents Kearns' evaluation framework.

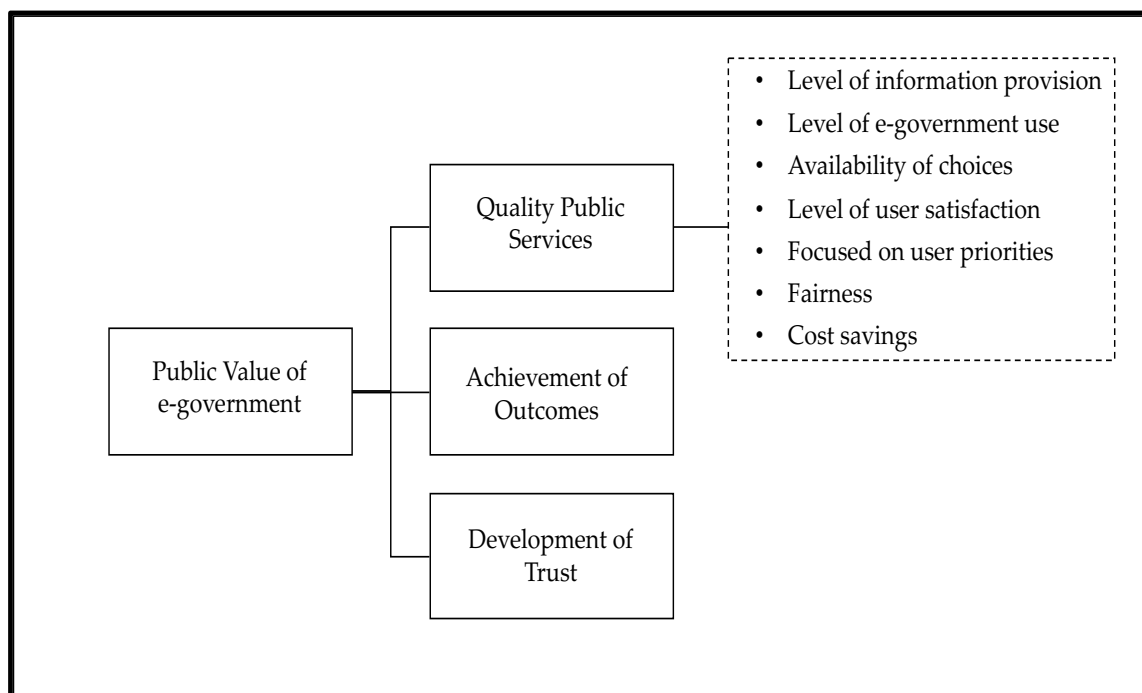


Figure 2.14. The Kearns public value evaluation framework
Source: Kearns 2004

2.5.3.2. European Commission public value evaluation framework

After two decades of policy efforts and investments, the European Commission (2006) could point to no conclusive evidence regarding the impact of e-government based on the fact that existing evaluation frameworks lacked the requisite dynamic elements to provide meaningful evaluation results. The Commission proposed an alternative framework for assessing e-government performance based on public value. Figure 2.15

provides an overview of the framework used by the European Commission to evaluate the delivery of public value for its member countries.

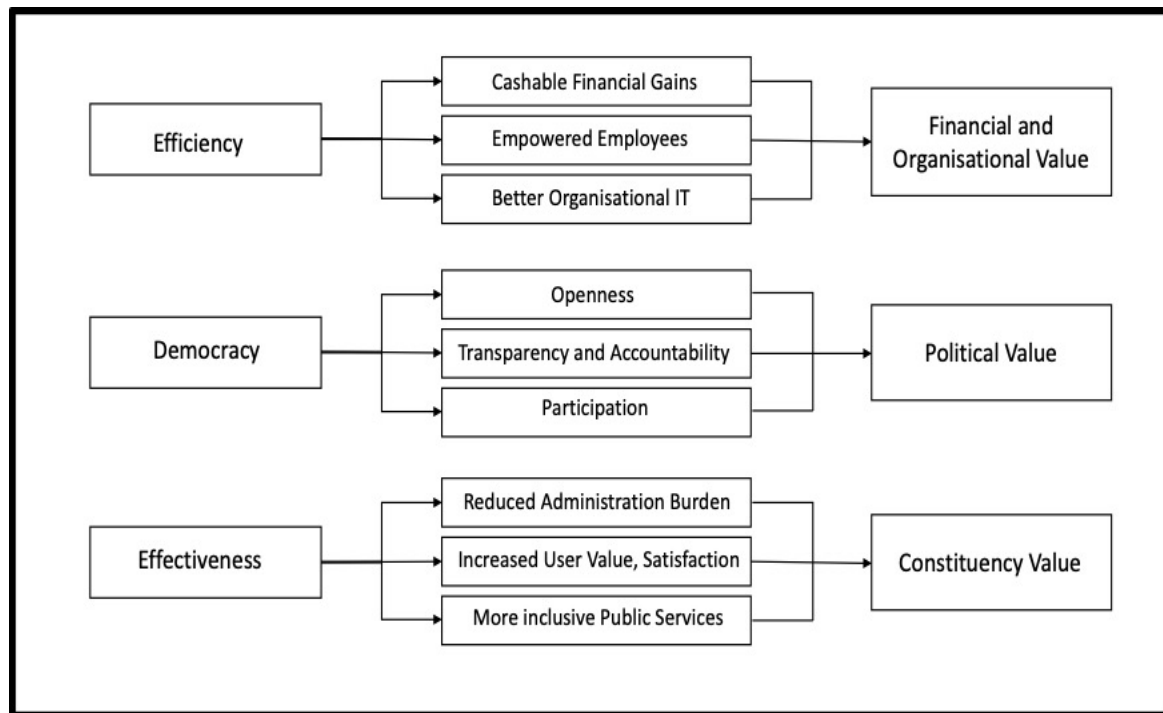


Figure 2.15. The European Commission public value evaluation framework

Source: European Commission 2006

This approach takes into consideration three categories of public value outcomes: political, financial and constituency value, which are characterised by effectiveness, efficiency and democracy. The individual sources are assessed as follows:

- Efficiency is evaluated based on the level of empowerment that public organisations bestow upon their employees, the cashable financial gains for public organisations, and improvements in the technology infrastructures of public organisations; these result in “financial and organisational value.”

- Democracy is evaluated through the extent of citizens' active participation in public sector activities and the degree to which public organisations exhibit transparency and openness through e-government; these result in "political value."
- Effectiveness is evaluated by examining improvements in citizens' satisfaction, the degree of inclusiveness of public services, and the reduction in the administrative burden on citizens; these result in "constituency value."

2.5.3.3. The Golubeva public value evaluation framework

Golubeva (2007) sought to investigate the influence of e-government on the quality of governance as reflected in the value created by government activities. She contended that this value assessment could be quantified by evaluating public value based on measurements of external citizen interactions with e-government.

Golubeva (2007) proposes a derivative of the Kearns framework that delineates services, trust and policy outcomes as the primary drivers of public value creation. Golubeva chose these three elements based on their close relationship with the governance quality criteria put forward by the World Bank and the good governance principles established by the United Nations. In addition, citizen-centricity, usability and openness elements are utilised to evaluate the public value of services, while interactivity and transparency factors are applied to evaluate public value outcomes created through trust. Figure 2.16 depicts the framework used by Golubeva.

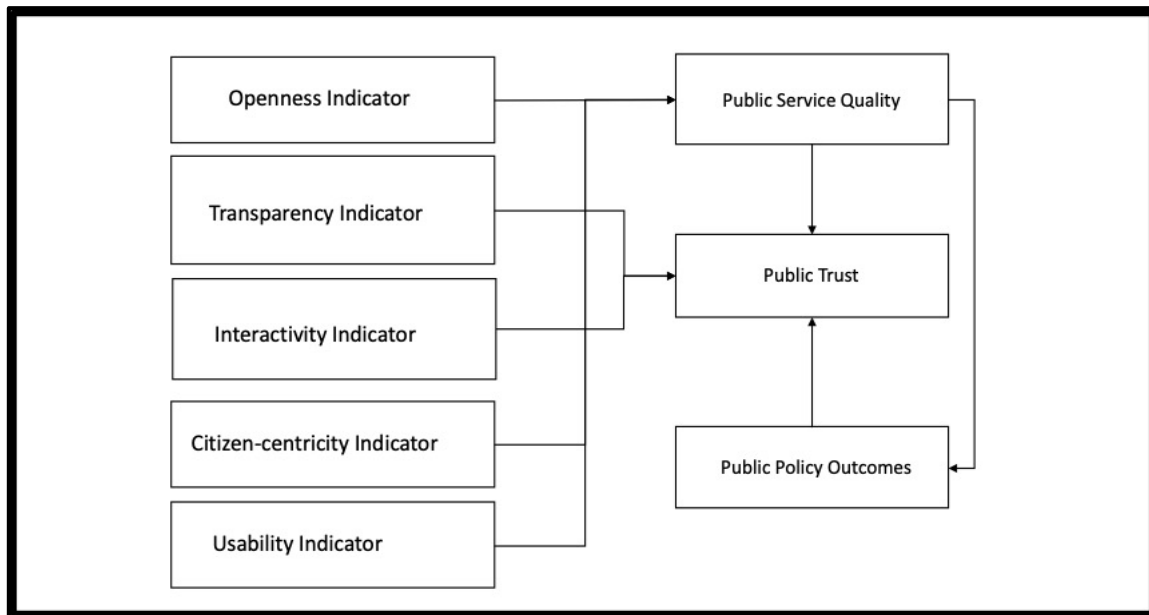


Figure 2.16. The Golubeva public value evaluation framework

Source: Golubeva 2007

The Golubeva framework was employed in a study of regional portals in Russia aimed at assessing the public value created by the impact of e-government on governance quality. The results of the research demonstrated that the potency of e-government in improving governance quality is quite limited, primarily because Russian e-government portals neglected the development of an external interaction capability.

2.5.3.4. Karunasena's public value evaluation framework

Karunasena (2012) argued that the majority of existing frameworks failed to consider the full spectrum of public values identified in the literature. As such, Karunasena (2012) further extended Kearns' (2004) original evaluation framework by including an effectiveness dimension as a source of public value creation. In this model, public value generated from the effectiveness element is assessed through improved efficiencies and accountability of public organisations, as well as from citizens' overall views on the effectiveness of the services they receive from the government.

The framework was further expanded to incorporate several evaluation elements addressing the issue of trust. In the Karunasena study, trust is assessed through increased transparency of government activities, confidence in e-government services, privacy and security of citizens' data, and levels of citizen participation in e-government. Similar to the approach adopted by Kearns (2004), it takes into account public value generated through improvements in the delivery of public services. Such value is assessed by the degree of equality in service delivery, choice, cost savings and the level of importance accorded the information, as well as overall satisfaction and participation in e-government services. Figure 2.17 represents Karunasena's framework.

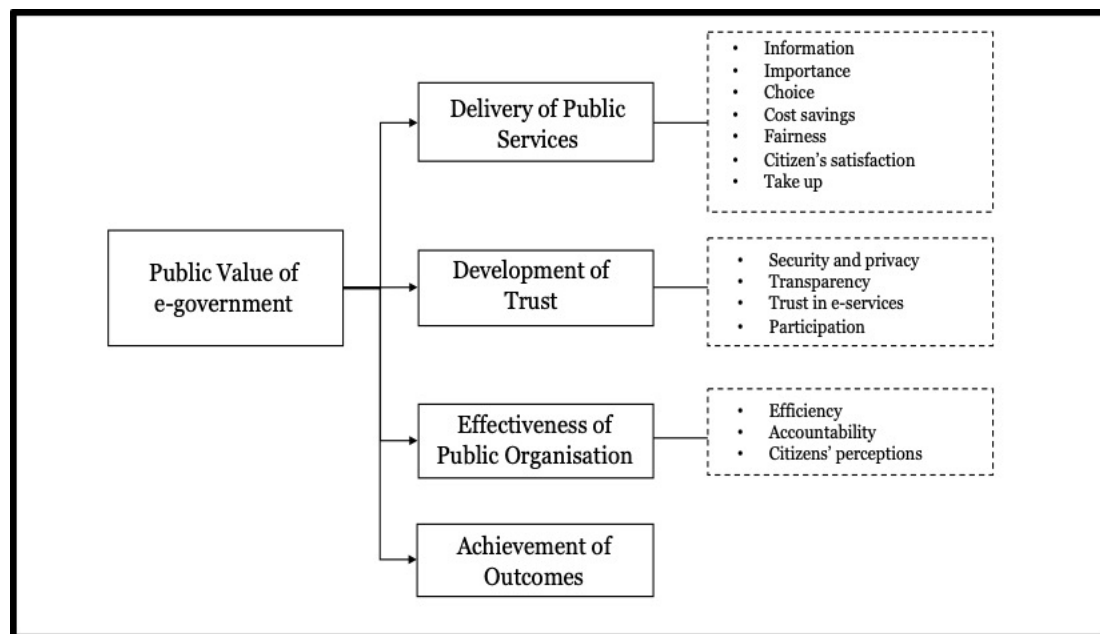


Figure 2.17. Karunasena's public value evaluation framework
Source: Karunasena 2012

The Karunasena framework was utilised in assessing the creation of public value through the deployment of e-government for the citizens of Sri Lanka. The results revealed that the vast majority of e-government systems used in Sri Lanka were inadequate in terms of generating public value across all dimensions tested. This

substandard outcome was attributed to a deficiency in functionality, user concerns regarding information security risks, depressed levels of technology adoption by the government itself, and limited citizen participation in e-government.

2.5.3.5. Critique of Public Value-based frameworks

Despite the substance and lessons learned from the foregoing frameworks, they remain deficient in their current forms. For example, the Kearns framework (2004), which is intended to assess value generated through the delivery of public services, falls short by not considering attributes of public service value creation such as user orientation, availability of services, and data quality (Wangpipatwong, Chutimaskul, & Papasratorn, 2009). It also fails to explore key sources of public value realised through the effective and efficient management of public organisations. Additionally, the framework routinely excludes indicators that would evaluate the outcomes and public trust of e-government, even though the accomplishment of outcomes and trust are recognised within the model as critical components in the creation of public value. Finally, the framework's most critical deficiency is the fact that it fails to account for fundamental social values that are indispensable in delivering public value, such as social justice and social equity (Heeks, 2008).

The evaluation frameworks of Karunasena (2012) and Golubeva (2007) are essentially extensions of the framework developed by Kearns (2004) and therefore inherit the same problems. For example, the Golubeva framework fails to capture democracy, self-development, efficiency, equity or responsiveness. The Karunasena study, while an improvement over Golubeva, nonetheless falls short by excluding essential service elements like empathy and responsiveness, and its most substantial weakness is its

reliance on secondary data sources. For a framework to be reliable, it is imperative that it directly reflect the views of citizens. Furthermore, the study was conducted in Sri Lanka, which raises concerns about whether, as a developing nation, its e-government usage has attained maturity, and therefore whether its results can be extrapolated to other contexts.

In contrast, the European Commission framework (2006) is designed around mature e-government usage in European countries, and several recent studies have theorised that these models are not always appropriate for the evaluation of e-government in developing nations (Heeks, 2008; Savoldelli et al., 2013). Indeed, the European Commission framework is frequently disparaged due to its failure to include measures to enable civil society via technology and for its biases toward measures for administrative systems (Heeks, 2008). It also enables the application of secondary data sources, which, as previously discussed, can lead to inaccurate characterisations of citizens' views. When compared with Heeks' (2002) seven appraisal factors, the majority of public value frameworks do not consider the context within which the system is used nor the value contribution from the technology infrastructure underpinning e-government.

While public value approaches present indisputable advantages as compared with other frameworks, additional empirical research is needed on these frameworks before they can be reliably employed to evaluate e-government success. Table 2.4 summarises the limitations of public value evaluation frameworks identified in this critical review.

Research	Limitations of the framework
Kearns (2004)	The attributes of usability, service quality and information quality are not considered (Wangpipatwong et al., 2009)

Research	Limitations of the framework
	• Social values are not considered in the study as sources of value creation, which is at odds with the definition of public value (Heeks, 2008) • There are reliability and validity issues with the framework (Omar, Scheepers, & Stockdale, 2011) • Not all attributes of trust and outcomes are considered in the evaluations (Heeks, 2008)
European Commission (2006)	• Focus on initiatives in developed countries only (Savoldelli et al., 2013) • Service quality dimension is ignored (Wangpipatwong et al., 2009) • Trust, self-development and user-orientation are not evaluated (Karunasena, 2012) • The survey data used in the study is from secondary sources (Karunasena, 2012)
Golubeva (2007)	• Crucial social norms are not examined (Heeks, 2008) • The study is narrowly focused on the governance perspective of public value creation • There are no indicators to assess outcomes (Heeks, 2008) • There are notable reliability and validity issues with the framework (Omar et al., 2011)
Karunasena (2012)	• Service quality dimension is ignored (Omar, 2015) • Achieving outcomes has no dimensions (Omar, 2015) • The survey data used in the study is from secondary sources (Omar, 2015)

Table 2.4. Limitations of current evaluation frameworks based on public value

2.6. Critical review summary of e-government evaluation frameworks

Table 2.5 presents a comparison of the current evaluation frameworks analysed against Heeks' (2002) seven criteria used to appraise these frameworks.

Description	Information Systems theory	Economic theory	Public Value theory
Functional Design – reality gaps	Yes	Yes	Yes
Technology architecture	Yes	No	No
Work processes	Yes	Yes	Yes
Objectives of key stakeholders	Partial	Partial	Yes
Values of key stakeholders	No	No	Partial
Cost/benefit	Economic	Economic	Economic/ Social
Context or situation	No	No	No

Table 2.5. Comparison of e-government success evaluation frameworks

The above comparative representation identifies three significant shortcomings in the current set of evaluation frameworks when compared with Heeks' (2002) appraisal factors:

1. Existing frameworks do not make allowances for the context or situation within which e-government services are utilised.
2. Not all frameworks incorporate both economic and social outcomes.

3. The perceptions of citizens, and the manner in which they use technology to achieve goals, are not always the focus of the evaluation.

Academics and practitioners regularly express frustration over the paucity of research relating to the evaluation of e-government success (Tate et al., 2011). Petter et al. (2012) mention that the determinative factors in judging success, particularly from the perspective of citizens, remain elusive. Despite a vast accumulation of knowledge relating to the elements of evaluating the success of e-government, Sabherwal, Jeyaraj and Chowa (2006) note that there is no consensus on what constitutes the appropriate measures for doing so. Petter et al. (2008) contend that this is because means of assessing specific dimensions of success, particularly outcome measures, have not been sufficiently developed. Scott et al. (2016) believe that governments should modify the outmoded economic approach to evaluating success by incorporating measures from all contributing parties that focus on the achievement of a combination of economic success and improvements in social outcomes.

The foregoing critical review reveals a number of shortcomings in the literature regarding the utility of existing frameworks to effectively evaluate the success of e-government. Despite their deficiencies, however, the public value frameworks more effectively address key outcome dimensions than those based on information systems or economic theories.

2.7. E-government and public value outcomes as a performance measure

It is widely accepted that technology is not value-free; rather, its use is motivated by perceived value (Bannister & Connolly, 2014). Appreciation of the perceived value of e-government requires a basic understanding of how public organisations function. Although the primary intent of both private and public organisations is to serve people, they have disparate areas of focus. Private organisations serve people in their capacity as customers but are ultimately accountable to their shareholders for value creation, whereas public organisations serve people as citizens and are ultimately accountable to those citizens for public value creation. This is a critical distinction in the context of this research, as it identifies citizens as the legitimate arbiters in evaluating the success of government policies in terms of public value outcomes.

Harrison, Pardo, Cresswell and Cook (2011) contend that the objective of public organisations should be to create public value, thereby enabling them to satisfy public needs. Cordella and Bonina (2012) further argue that the notion of public value is the most productive manner in which to evaluate the often complex socio-political and economic impacts of e-government. Castelnovo (2013) notes that government actions are designed to impact specific groups of stakeholders and are generally not intended to benefit individual citizens. He therefore posits that analyses of public value should concentrate on outcomes for specific stakeholder groups and their broader interests. Castelnovo also argues that e-governments should be evaluated based on their capacity to generate public value for citizen stakeholders in their roles as consumers of government services, voters, or as taxpayers. Notwithstanding the disparate views of who represents the ultimate

recipient of public value, subject matter experts are in nearly universal agreement that the focus of public organisations should be on creating public value outcomes.

In the context of this study and the central research question of *how should the success of e-government be evaluated from the perspective of citizens living with disability in Australia*, public value outcomes constitute a fundamental performance measure. The primary reasons include: (1) they measure outcomes from the application of technology and not the technology itself; (2) they measure a broad range of benefits comprising efficiency, effectiveness and improvements in social outcomes; (3) they link measures of success to the intended government program goals; and (4) they provide an assessment of value from the perspective of citizens.

2.8. Establishing the parameters for this study

The literature clearly corroborates the position that public value outcomes are the most appropriate measure in evaluating the performance of citizen-focused e-government services. What constitutes a well-defined measure of the public value outcomes of e-government success, however, depends upon the interpretation of the term “public value.”

2.8.1. Identifying stakeholders (whose perspective is being measured?)

The term “public” is frequently used to identify the stakeholder perspective of government performance, while a “stakeholder” refers to any entity, such as individuals, groups or firms, that can affect or be affected by an organisation’s implementation of its objectives (Freeman, 1984). Stakeholder theory, which emanates from organisation

management and ethics theory, maintains that every individual or group participating in an organisation's activities does so with the explicit intention of obtaining some sort of benefit. Stakeholders are identified through their interests, and all stakeholder interests are intrinsically valuable (Freeman, 1984). Harrison et al. (2011) contend that "each government action needs to be treated as potentially presenting value to multiple and diverse stakeholders" (p.2).

The identification of stakeholders who gain public value, however, remains a broadly debated concept in academic circles, with views ranging from a societal perspective of public (Bozeman, 2007), to an organisational view of public (Moore, 2013), and a single citizen interpretation of public (Meynhardt, 2009). Bozeman's approach focuses on the values held in society and whether these are met, whereas Moore concentrates on public value from a public service management perspective. Unlike Moore (2013) and Bozeman (2007), Meynhardt's approach to the notion of public is rooted in an individuals' perceptions of public value. This study posits that the goal of e-government is to create value for citizens and that citizens (as primary stakeholders in liberal democracies) are the legitimate arbiters of the public value outcomes derived from its use. As such, the success of e-government should be evaluated from the perspective of citizens.

This study thus adopts the Meynhardt et al. (2017) definition of "public" based on their contention that "public value must be [experienced] subjectively in order to exist and, therefore, should be evaluated on the same level" (p.144). This substantiates the merits of evaluating the success of e-government from the perspective of citizens, given that they are the primary users of e-government. Furthermore, delineating citizens as the "public"

reinforces the argument that success should reflect the primary objective of e-government, which is to create value for citizens.

2.8.2. Public value outcomes (what is to be measured?)

After clarifying the concept of “public,” the next step is establishing a working definition of “public value.” Alford and O’Flynn (2009) state that the term “public value” is frequently used interchangeably with “public good.” They emphasise that this is only partially correct in that public value includes, but is not limited to, public good. While the benefits of public good are generally related to the personal interests of citizens, these benefits can also indirectly create public value outcomes for society as a whole.

The following example serves to clarify this distinction. A social benefit payment made by the government to a citizen is a personal benefit to that individual citizen. Social protection payments to citizens in need, on the other hand, can also deliver indirect public value outcomes for society through a reduction in theft in the community. Notably, many government programs can generate a combination of both private and public good emanating from their activities. For example, public health benefits accrue directly to citizens through improved personal health outcomes, while employers and the government receive public value benefits indirectly from these public health initiatives through increases in economic productivity from a healthier society (Tritter, 2011). Although each of these terms (“public value” and “public good”) is useful when employed in the appropriate context, public value outcomes provide the most expansive definition within which to examine the outcomes of public programs like e-government (Kelly et al., 2002).

2.8.3. Redefining success (what constitutes success?)

As discussed in Section 1.2., success in public organisations is often defined simply as the accomplishment of a goal or aim (Isaac, 2007). This definition implies that linking performance to program objectives is critical, as part of the challenge in developing performance evaluation frameworks for e-government is determining what constitutes success (DeLone & McLean, 2016; Heeks, 2008; Petter et al., 2012; Scott et al., 2016). This is a pertinent issue when considering the current e-government services provided to citizens living with disability in Australia. Table 2.6 highlights an extract from the Australian Government's strategy on services to these citizens that articulates a primary policy goal of the program that is facilitated by e-government.

“A [primary] goal is to provide all Australians who are born with or acquire a permanent and significant disability before the age of 65 with the necessary supports to live better and more inclusive lives.”

Table 2.6. Extract from the NDIS's strategy statement
Source: NDIS (2015) Corporate Plan, p.3

Embedded in the phrase “to live better and more inclusive lives” are both economic and social performance measures related to citizens' economic participation and social inclusion in the community, both of which are impacted by the extent that citizens can live independently. When compared to the current performance measures employed by the Australian government (Chapter 1, table 1.1.), a disconnect exists between the intended policy success outcomes criteria and what is being measured. These key performance metrics tend to focus on value to public organisations by assessing efficiency

and effectiveness, rather than measures of value to citizens through improvements in social outcomes.

Although the metrics currently used by the Australian government have utility when employed in certain settings, this study takes the position that they are insufficient to measure the success of e-government in that they fail to assess the success of e-government in terms of its contribution to the goals of the overall government program for which it was designed and deployed. In establishing the parameters of this inquiry, the performance dimensions of public value outcomes used to determine the success of e-government are limited to those public value aspirations (e.g., economic and social outcomes measures) specifically articulated in the objectives of the government program.

2.9. Developing a conceptual framework for the study

The critical review of the literature on e-government performance evaluation has revealed several lacunae in view of the research questions set for this thesis. To make theoretical use of these identified lacunae, propositions are derived as a way to help build and strengthen the conceptual framework for the study, not only to address the research questions but also to find out whether they conform to the data collected (Neuman, 2011). The six propositions raised in this study are outlined below.

2.9.1. Qualities of e-government resources

Citizens must utilise the resources of e-government in order to achieve their intended goal from use of the service. In the context of e-government, these resources include system, information, service and social resources. Value creation is reliant on the

qualities of e-government resources employed by citizens to participate in an interaction (Akaka, Vargo, & Lusch, 2012). However, the manner in which e-government resources are employed can vary considerably from one citizen to another, depending upon a citizen's environmental or situational context at the time they interact with e-government (Bartis & Mitev, 2008; Myers, 1994). Thus, the quality of such e-government resources and the manner in which they are used will determine whether the experience effectively supports citizens in achieving their desired goals from the utilisation of e-government.

2.9.2.1. System resource qualities

The qualities of e-government system resources directly impact the experience of citizens in interacting with the system (Castelnovo & Simonetta, 2008; Omar, 2015; Yu, 2008). The current study intends to supplement the knowledge relating to the influence of systems resource qualities on e-government performance evaluation by proposing that the qualities of system resource determine the effective use of e-government. This study is distinct from other studies, which tend to assess system resource qualities in terms of their impact on intention to use (DeLone & McLean, 2004), perceived usefulness (Venkatesh et al., 2003) or user satisfaction (Teo, Srivastava, & Jiang, 2008). The current study is focussed on the manner in which system resource qualities influence citizens' actual use of e-government and the extent to which citizens are supported in achieving desired goals through their effective use of system resources.

Thus, **Proposition 1:** Quality of system resources has an affirmative effect on citizens' effective use of e-government.

2.9.2.2. Information resource qualities

In an online environment, the essence of the relationship between citizens and government is built on trust in the information they obtain from e-government (Parasuraman & Miller, 2004; Welch, Hinnant, & Moon, 2005). The quality of information provided via e-government is a potent determinant of citizens' employment of e-government, as their perception of the quality of information derived from these systems is a critical component in establishing trust with e-government (Parasuraman & Miller, 2004). As determined in a study by Scholl, Barzilai-Nahon, Ahn, Popova and Re (2009), information quality is essential and remains a central factor in influencing citizen perceptions of e-government success. The literature contains extensive support for the utility of information quality in improving e-government services (see: Barnes & Vidgen, 2003; Papadomichelaki & Mentzas, 2012; Wangpipatwong et al., 2009), as well as its impact on citizens' intention to utilise or adopt e-government (see: Alenezi, Tarhini, & Masa'deh, 2015; DeLone & McLean, 2003; Lee, Levy, & Hafner, 2012; Wang & Liao, 2008). The current study serves to expand on this body of knowledge by emphasising the role of information quality in effective use of e-government and how it supports citizens in achieving their desired goal through such effective use.

Thus, **Proposition 2:** Quality of information resources has an affirmative effect on a citizens' effective use of e-government.

2.9.2.3. Service resource qualities

Service resource qualities are best described in the context of the overall support furnished by the service provider for e-government (DeLone & McLean, 2004).

E-government service quality has been shown to increase user satisfaction (Teo et al., 2008), increase citizens' intention to use e-government (Wang & Liao, 2008), and support the creation of net benefits from e-government use (Prybutok, Zhang, & Ryan, 2008; Stefanovic et al., 2016). In a citizen-centric e-government environment, the quality of e-government service resources assumes greater significance, as users are citizens rather than staff members, and inadequate support can easily translate into citizen dissatisfaction with government. Employing e-government to dispense government services is capable of creating public value, which can be further amplified by citizens' positive experience with that service (O'Flynn, 2007).

Despite the overwhelming recognition in the literature on the crucial role of service resource qualities and their influence on citizen use and the creation of net benefits (see: Barnes & Vidgen, 2006; Prybutok et al., 2008; Stefanovic et al., 2016; Wang & Liao, 2008), shortcomings persist in the research in relation to how the service resource qualities of e-government influence performance outcomes through utilisation of e-government. The current study aims to address one such shortcoming by proposing that the quality of service resources positively influence citizens' effective use of e-government, thereby generating public value outcomes.

Thus, **Proposition 3:** Quality of service resources has an affirmative effect on citizens' effective use of e-government.

2.9.2.4. Social resource qualities

Social resource qualities refer to the nature of the social resources required to support citizens to “participate in the social, economic, and cultural lives of their communities under conditions which enhance their well-being and individual potential” (Beck, van der Maesen, & Walker, 1997, p.3). Social resource qualities include accessibility of e-government (Henry, Petkauskos, Stanislawzyk, & Vogt, 2014), trustworthiness of e-government (Venkatesh, Thong, Chan, & Hu, 2016), equity in the provision of digital services (Rubaii-Barrett & Wise, 2008), and participatory democracy resulting from ability to engage directly with the government (Karunasena & Deng, 2011). Although there is an extensive knowledge base addressing each of these individual social resource qualities, they are generally grouped as part of service quality, system quality, or information quality. However, there is apparently no research that focusses on how these social qualities determine the effective use of e-government for citizens living with disability in their own right. This study aims to address this significant shortcoming in the research.

Thus, **Proposition 4:** Quality of social resources has an affirmative effect on a citizens’ effective use of e-government.

2.9.2. Nature and purpose of e-government use

Any assessment of encounters between citizens and e-government must take into account the nature and purpose of these experiences in defining success (Meynhardt et al., 2017). Individuals use e-government to achieve a goal, and the manner in which this goal is accomplished is a key component in the definition of success. In order to have a

successful interaction with e-government, citizens' use of these services must be effective. The term "effective use" focuses on the rewards derived from the manner in which e-government is utilised, which clearly distinguishes it from other types of "use." As DeLone and McLean (2003) point out, the notion that "use" produces success is not necessarily true, though many e-government success studies apply "use" as a proxy for, or an implied indicator of, e-government success.

Previous research has focussed predominantly on measuring success through the quality of e-government resources that impact either "perceived usefulness" (Venkatesh et al., 2003), "intention to use" (DeLone & McLean, 2004), or "use" in terms of interactions (Scott et al., 2016). These approaches focus either broadly on rewards stemming from the anticipated use of e-government, or by simply counting the number of interactions undertaken by individuals through e-government, without making allowances for the manner in which the service is used. The concept of effective use compensates for inadequacies in past measures of e-government use, as it emphasises the performance outcomes derived from the manner in which e-government is used to achieve a goal outcome. Linking the performance outcomes generated through e-government to the effective use of e-government aims to address a significant shortcoming in the extant literature.

Thus, **Proposition 5:** The effective use of e-government has an affirmative effect on the creation of public value outcomes.

2.9.3. Outcomes measures of success

There is considerable global research evaluating e-government performance from a variety of perspectives, but there are scant contributions regarding how to holistically assess the overall success of these initiatives. The current study posits that traditional means of evaluating e-government overlook critical dimensions required to measure the ultimate success of these services. Studies have highlighted the lack of focus on value to citizens in the measurement of e-government success (Gable et al., 2008; Petter et al., 2012), the absence of measures encompassing strategic goals that include economic and social objectives (Grimsley & Meehan, 2007), or exclude the contributions from all parties to outcomes from e-government (Petter et al., 2012; Scott et al., 2016). The current study aims to address these research gaps by proposing that public value outcomes, created through citizens' effective use of e-government, exert a positive influence on citizens' perceptions of the success of the e-government service.

The employment of public value outcomes in measuring success serves to address these shortcomings. As Moore (1995) points out, public value outcomes offer a measure of the balance between the creation of social and economic values delivered to citizens. In addition, Hills and Sullivan (2006) observe, public value is driven by a set of core social and economic values required for the assessment of outcomes and the processes by which public value outcomes are delivered, including the contributions of all parties to these outcomes. This makes public value outcomes eminently suitable for this study by addressing shortcomings in the current e-government performance evaluation frameworks concerning outcomes measures of success.

Thus, **Proposition 6:** Public value outcomes have an affirmative effect on citizens' perception of the success of e-government.

2.9.4. Conceptual Framework for the study

In order to bind these propositions together, a conceptual framework for evaluating the success of e-government from the perspective of citizens living with disability has been developed to facilitate execution of this research. This framework draws on the concepts from representation theory and public value theory that were used to derive the propositions. Representation theory (Wand & Weber, 1995) is employed to establish a measure of performance by linking the qualities of e-government resources and the effective application of e-government to the achievement of performance outcomes. Public value theory (Moore, 1995) is applied to provide the social and economic outcomes measures that constitute the broad categories of e-government success from the view of citizens.

In this respect, effective utilisation of e-government defines the context within which the evaluation occurs, and citizen perceptions of public value outcomes resulting from such effective use determine the success of e-government. Figure 2.18 depicts the conceptual evaluation framework for this research.

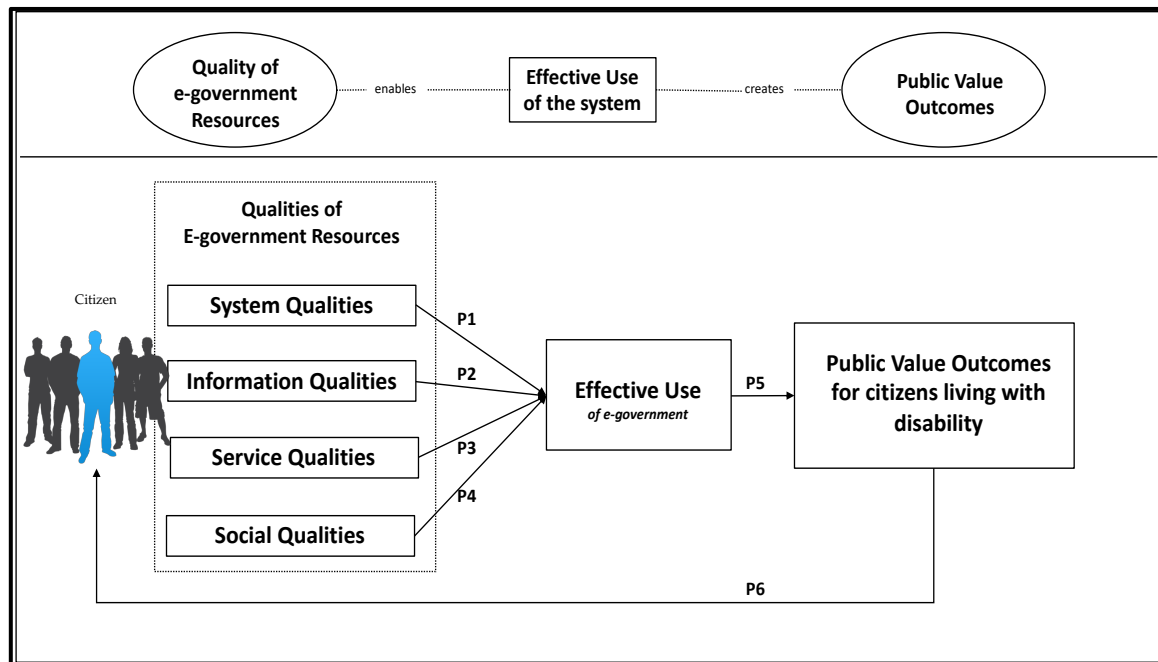


Figure 2.18. Conceptual evaluation framework for the study derived from representation theory and public value theory

A critical component of the conceptual evaluation framework is the dimension of effective use. An assessment of “effective use” is determined by the ease with which citizens can exploit the resources of e-government to complete tasks that achieve a performance goal. Included in the notion of effective use is the introduction of a standard of use (i.e., the manner in which the system is employed to generate outcomes), which is necessary for citizens to successfully interact with the service to accomplish these goals. This standard of use serves to compensate for the deficiencies of past measures, which have typically defined e-government use solely in relation to the number of interactions with the service (Burton-Jones & Straub, 2006) or in terms of citizens’ use of the information acquired through e-government (DeLone & McLean, 1992), as opposed to the achievement of performance goals.

Furthermore, the framework proposes that public value outcomes are generated from the effective use of e-government, which is influenced by the quality of e-government resources, namely: (a) system, (b) information, (c) service, and (d) social. These resources provide the facilities that enable users to access and interact with the service, as well as the technology, people and environments that support these activities. An inherent characteristic of the framework is the proposition that social resource qualities are modelled as a central, discrete and antecedent variable to public value outcomes, along with system, information, and service resource qualities. Recent studies demonstrate that citizens' judgments of intangible social qualities, such as trustworthiness and equity, are at least as relevant as tangible systems, service, and information resource qualities (Scott et al., 2016). While Scott et al. incorporate such social measures in their net public value benefits model, the current study postulates that the qualities of social resources generated by e-government are in fact antecedent to public value outcomes.

The applicability of performance dimensions (public value outcomes), including efficiency and effectiveness, are widely recognised, with improvements in social outcomes emerging as an additional significant element of performance. Efficiency is measured in terms of goal achievement for a set of inputs, and effectiveness is measured in terms of goal achievement. Improvements in social outcomes are assessed in terms of their contributions to society, including measures of social inclusion, social empowerment, social cohesion and social justice. Social outcome measures are a critical factor in a government context, which, together with economic measures, delineate the parameters of the requisite government policy objectives to provide the context within which the evaluation of e-government performance occurs.

2.10. Summary

This chapter offers a critical review of the literature on e-government performance evaluation, including an examination of the key concepts of e-government, e-government performance evaluation frameworks, and public value and e-government success. The review identified three primary limitations in the existing frameworks that constrain their utility in effectively evaluating e-government success: (i) existing frameworks do not recognise the context or situation within which e-government services are used; (ii) not all frameworks include both economic and social outcomes; and (iii) the perceptions of citizens, and how they employ technology to achieve goals, are not always the focus of the evaluation. These limitations highlight the deficiencies of existing frameworks and point to the need for further development.

The foregoing analysis provides justification for the development of a new conceptual framework for evaluating the success of e-government from the perspective of citizens living with disability. The conceptual framework articulated in this chapter delineates the parameters and context for the design and execution of the research. This framework rests on a series of reflective theoretical propositions articulated around the areas of (a) e-government resource qualities; (b) effective use; and (c) public value outcomes, as summarised in Table 2.12.

Proposition	Description
P1	Quality of system resources has an affirmative effect on citizens' effective use of e-government.
P2	Quality of information resources has an affirmative effect on a citizens' effective use of e-government.

Proposition	Description
P3	Quality of service resources has an affirmative effect on a citizens' effective use of e-government.
P4	Quality of social resources has an affirmative effect on a citizens' effective use of e-government.
P5	The effective use of e-government has an affirmative effect on the creation of public value outcomes.
P6	Public value outcomes have an affirmative effect on citizens' perception of the success of e-government.

Table 2.7. Summary of research propositions

The following chapter rationalises the research design suitable to address the research questions. ■

Chapter 3

Research Design

3.1. Introduction

This chapter discusses the key criteria associated with choosing a research design and the justifications for the methods employed in this study. It then details the philosophies and methods adopted to achieve the desired research purpose and objectives and presents descriptive portraits of the cases selected for the study. This chapter further describes the methods used to collect data and conveys the justifications for all decisions made in the selection of the approaches.

Section 3.2 outlines this study's philosophical paradigms, concluding with a discussion on the rationale for choosing an interpretive model. Section 3.3 sets out the research design for the study, while Section 3.4 circumscribes the research methodologies and basis for utilising a qualitative approach. Section 3.5 reviews the various research methods considered for the study and the justification for employing an exploratory multiple case study approach. Section 3.6 explicates the selection of a cross-sectional time horizon for the research, and Section 3.7 examines the data collection sources applied to the study. Section 3.8 sets out the criteria to be employed in evaluating the quality of the research, and Section 3.9 outlines the ethical considerations applied within the study. The chapter concludes with details of the strategies implemented to address potential researcher bias.

3.2. Research philosophy

The initial step in determining the relevant research design required to achieve the research purpose and to answer the research questions is defining the appropriate philosophical stance for the research. Saunders, Lewis, and Thornhill (2016) define research philosophy as a system of beliefs about the development of knowledge comprising three assumptions that shape the perception of these beliefs: ontology, epistemology and axiology.

Ontology refers to the nature of the world or reality; i.e., what exists. It relates to whether one believes in the existence of a single verifiable reality or whether there are multiple, socially constructed realities. Epistemology probes the nature of knowledge and truth and is concerned with what we accept as valid knowledge. Epistemology addresses the question of how things really work and the most effective means of acquiring knowledge. Axiology determines how and the extent to which personal values influence the research process.

Crotty (1998) asserts that these philosophical assumptions inevitably shape the research methodology, the understanding of how to approach and answer the research questions, the methods chosen, and the manner in which the findings are interpreted. He adds that a credible research philosophy requires a deliberate and consistent set of assumptions. When embarking on a research journey, the consideration of issues relating to ontology, epistemology, and axiology inevitably highlight the range of research paradigms from which the researcher can choose.

3.2.1. Research paradigms

A research paradigm delineates a worldview informed by its philosophical assumptions. Cohen, Manion and Morrison (2007) define a research paradigm as “the broad framework, which comprises perception, beliefs and understandings of theories and practices to conduct a research” (p.27); i.e., connecting ontology, epistemology and axiology to methodology. Oates (2006) opines that researchers should embrace a research paradigm that is most consistent with their workstyle and that is compatible with their research interests and associated research questions. Boeije (2010) adds that researchers should be cognizant of the fact that there are inevitable ramifications to the selection of a research paradigm. It is imperative to operate within its traditions while remaining attentive to the options presented by other practises and assumptions.

According to Saunders et al. (2016), four primary research paradigms are typically employed in information systems research: positivism, interpretivism, critical realism and pragmatism. Table 3.1 highlights the characteristics of the philosophical assumptions related to each of these four principal research paradigms.

Assumptions	Positivism	Interpretivism	Critical Realism	Pragmatism
Ontology	• Real, external, independent • One true reality (universalism) • Granular (things) • Ordered	• Complex, rich • Socially constructed through culture and language • Multiple meanings, interpretations, realities • Flux of processes, experiences, practices	• Stratified/layered (the empirical, the actual and the real) • External, independent • Intransient • Objective structures • Causal mechanisms	• Complex, rich, external • Flux of processes, experiences, and practices • ‘Reality’ is the practical consequences of ideas

Assumptions	Positivism	Interpretivism	Critical Realism	Pragmatism
Epistemology	• Scientific method • Observable and measurable facts • Causal explanation and prediction as a contribution • Law-like generalisations • Numbers	• Theories and concepts too simplistic • Focus on narratives, stories, perceptions, and interpretations • New understandings and worldviews as a contribution	• Epistemological relativism • Knowledge historically situated and transient • Facts are social constructions • Historical causal explanation as a contribution	• Successful action enabled through 'true' theories and knowledge • Practical meaning of knowledge in specific contexts • Focus on problems, practices, and relevance • Problem-solving and informed future practice as a contribution
Axiology	• Value-free research • Researcher is detached, neutral and independent of what is researched • Researcher maintains an objective stance	• Value bound research • Researchers are part of what is researched, subjective • Researcher interpretations key to the contribution • Researcher reflexive	• Value-laden research • Researcher tries to minimise bias and errors • Researcher is as objective as possible • Researcher acknowledges bias by world views, cultural experience, and upbringing • Researcher is as objective as possible	• Value-driven research • Research initiated and sustained by the researcher's doubts and beliefs • Researcher reflexive

Table 3.1: Comparison of four primary research philosophies used in IS research
Source: Adapted from Saunders et al., 2016, p.137

3.2.2. Research reasoning

The identification of an appropriate research paradigm as part of the research design must be explicit in order to facilitate the development of relevant theories.

Saunders et al. (2016) delineate three primary reasoning approaches to theory development: deductive, inductive and abductive.

In the **deductive approach** to theory development, the premises guarantee the veracity of the conclusion; in other words, if the premises are true, it would be impossible for the conclusion to be false (Ketokivi & Mantere, 2010). For example, using deductive reasoning, if the usability of e-government is perceived by citizens as a determinant of success, and ease of use of e-government is a component of usability, then ease of use is a determinant of the success of e-government as perceived by citizens.

In contrast, the premises of an **inductive approach** support the probable truth of the conclusion. In an inductive approach to developing theory, if the premises are true, it is unlikely that the conclusion is false (Ketokivi & Mantere, 2010). For example, using inductive reasoning, if a certain number of citizens living with disability perceive usability as a determinant of e-government success, it is likely that all citizens living with disability perceive usability as a determinant of success.

Abduction involves forming a conclusion from the information that is known (Ketokivi & Mantere, 2010). In other words, the major premise in an **abductive approach** is evident, but the minor premise, and therefore the conclusion, is only probable. For example, using abductive reasoning, citizens achieve a successful outcome through

e-government. Therefore, it can be concluded that the use of e-government was the reason for the successful outcome.

Table 3.2 provides a summary of how each of these three approaches to reasoning delineates the logic, generalisability, application of data and theory.

	Deduction	Induction	Abduction
Logic	In a deductive inference, when the premises are true, the conclusion must also be true	In an inductive inference, known premises are used to generate untested conclusions	In an abductive inference, known premises are used to generate testable conclusions
Generalisability	Generalising from the general to the specific	Generalising from the specific to the general	Generalising from the interactions between the specific and the general
Use of data	Data collection is used to evaluate propositions or hypotheses related to an existing theory	Data collection is used to explore a phenomenon, identify themes and patterns and create a conceptual framework	Data collection is used to explore a phenomenon, identify themes and patterns, locate these in a conceptual framework and test through subsequent data collection
Theory	Theory falsification or verification	Theory generation and building	Theory generation or modification; incorporating existing theory where appropriate, to build new theory or modify existing theory

Table 3.2. Differences and similarities between deduction, induction, and abduction

Source: Saunders et al., 2016, p.145

The conventional view of the distinctions among these approaches to theory development has not gained universal acceptance. Deductive research is highly structured and is driven by predetermined theoretical frameworks, allowing no subjectivity in the research process (Gill & Johnson, 2002). In contrast, both inductive and abductive

methods are criticised because they are unstructured and dependent on human observations, thereby allowing bias and subjectivity to interfere with research results (Gill & Johnson, 2002).

3.2.3. Selection and justification of the research paradigm for this study

Based on the research questions, this study adopts an interpretivist approach with an inductive reasoning method in developing theory. The nature of the e-government phenomenon, as well as the subjectivity of individual perceptions and their views on success, supports the application of interpretivism to this study. An inductive approach is appropriate based on the scant knowledge that exists regarding the phenomenon of e-government use by citizens living with disability in Australia.

Easterby-Smith et al. (2002) contend that the interpretive paradigm enables a researcher to explore the subjective meaning that individuals assign to a phenomenon. This aligns with the objectives of the study and the nature of the research questions (what? and how?), which are exploratory in nature toward the ultimate goal of measuring success based on the experiences of individual citizens in their interaction with e-government to support their daily living. An interpretive stance enables the researcher to gain a rich understanding of the factors that determine success from the perspective of citizens.

Walsham (1993) explains that in the field of information systems studies, an interpretive perspective is “aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context” (p.4-5). E-government systems initiatives impact and are impacted by citizens utilising them. An interpretive approach is therefore ideal for this

study in that it produces broader and richer data from which to interpret the subjective perceptions of citizens on the success of e-government based on their daily interactions with it.

Oates (2006) further asserts that reality is formed between social actors from an interpretive perspective. This study endeavours to delineate perceptions of success by conducting face-to-face, in-depth discussions with citizens living with disability based on their experiences with e-government to support their daily living, enabling the researcher to acquire a more nuanced understanding of the data. The data acquisition process was designed to facilitate observation of participants in their natural settings when dealing with e-government and to establish a close collaboration to enhance this process, while concurrently exploring and recording the perceptions and reactions of participants and how they make sense of their world.

The above arguments provide a compelling rationale for selecting the interpretivism paradigm for this study, which aims to explore thematic data trends in order to acquire a deep understanding of the phenomenon. In contrast, the positivist paradigm involves a singular objective reality. This is at odds with the objectives of this research, which intends to explore the various perceptions of success from diverse citizen perspectives.

3.3. Research design

Research design refers to a systematic plan to study a problem. Nieuwenhuis (2010) defines research design as the framework created to support attempts to explore and seek answers to the research questions. According to Trochim (2006), research design

refers to the overall strategy for integrating the disparate components of a study in a coherent and logical way to effectively address the research problem. Creswell (2014) defines research design as procedures of inquiry. Figure 3.1. provides a high-level outline of the research design to be employed in this interpretative exploratory study.

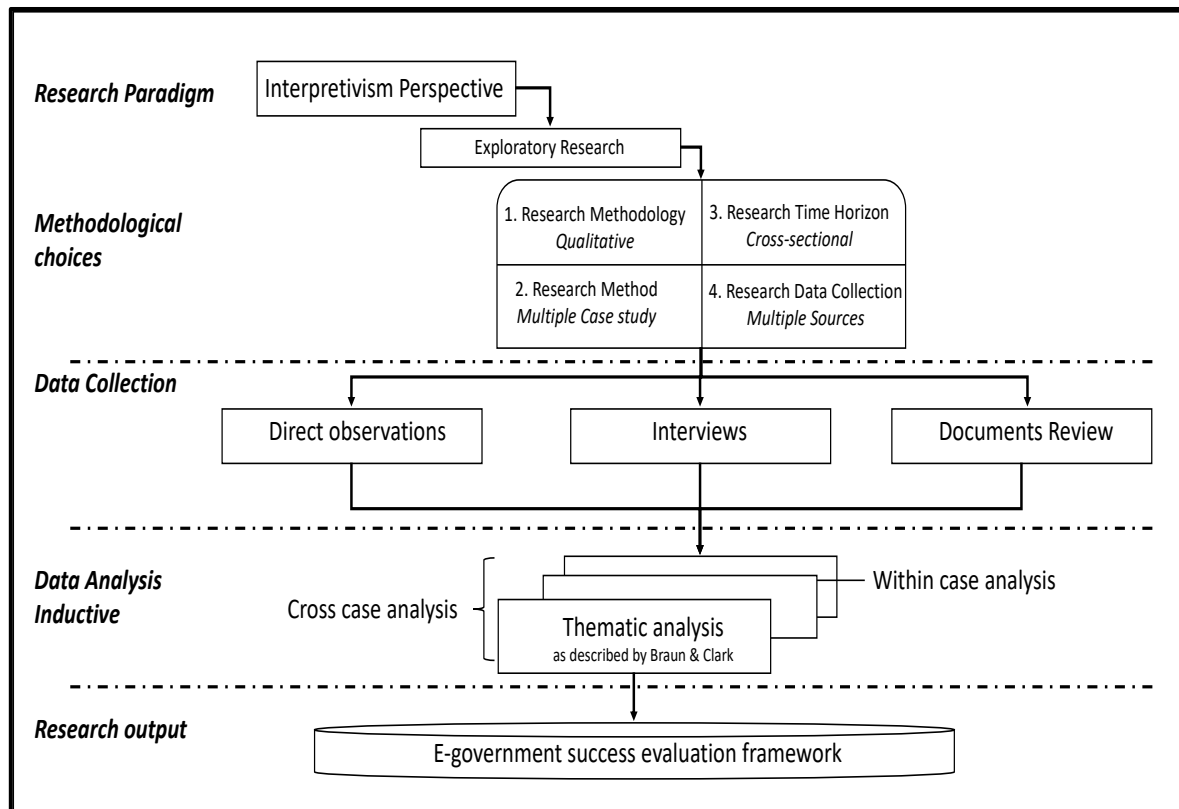


Figure 3.1. Research design adopted for this study

The design process commences with four methodological choices, followed by implementation of the data collection procedures from the selected sources. Data emerging from the thematic analysis is then studied using both within-case and cross-case analysis before developing the proposed framework for evaluating e-government success.

3.4. Research methodology

The **first methodological choice** in the research design is whether to pursue a quantitative, qualitative or mixed methodology. Jankowicz (2000) defines a research methodology as a “systematic and orderly approach taken towards the collection and analysis of data, so that information can be obtained from those data” (p.10). The selection of an appropriate research methodology involves a critical comparison of the key characteristics of the three approaches, taking into account the purpose, objectives and questions of the research.

Quantitative research approaches are influenced by positivistic world views and are typically grounded in theories, focusing on testing theories to address the research questions (Creswell & Plano-Clark, 2011; Teddlie & Tashakkori, 2006). Quantitative strategies emphasise the deductive approach in examining the relationship between theory and research and involve the application of structured procedures and formal instruments, such as surveys, statistical analysis and data modelling (Bryman & Cramer, 2008).

Qualitative research approaches, on the other hand, are generally employed to understand a phenomenon in order to extract meanings or theories from the research findings. Qualitative research facilitates unbiased exploration of a phenomenon and relies on the views and feedback of study participants to draw conclusions and formulate theories (Creswell, 2012). The essence of qualitative inquiry is, therefore, the construction of meaning from the interpretation of study participants’ views (Bhattacharjee, 2012; Ngulube, 2013).

There are eight distinct characteristics of qualitative and quantitative approaches that need to be considered in determining the approach best suited to answer the research questions. Table 3.3 summarises the central differences between qualitative and quantitative studies.

Qualitative	Quantitative
Subjective	Objective
Flexible	Fixed
Exploratory	Hypothesis testing
What, How, Why?	How many?
Soft	Hard
Meanings in the context	Causal relationships
Inductive process	Deductive process
Sample is small and selective	Sample is large and random
Informal writing style	Formal writing style

Table 3.3. Differentiation between qualitative and quantitative research

Source: Oates, 2006

Qualitative methods can be employed in tandem with interpretive, positivist or critical research paradigms, depending on the researcher's philosophical stance (Denzin & Lincoln, 2005), whereas quantitative approaches are commonly linked exclusively with positivism (Johnson & Onwuegbuzie, 2004; Oates, 2006). Academics acknowledge the benefits and drawbacks of both qualitative and quantitative approaches. Creswell and Plano-Clark (2011), for example, defend quantitative approaches as being free from personal biases and interpretations but concede that they under-represent the context in which people interact, while qualitative methods display the opposite characteristics.

The limitations of both qualitative and quantitative methods have given rise to **mixed methods research**, which is influenced by pragmatist world views and has recently become more prevalent among researchers (Tashakkori & Teddlie, 2008). According to

Creswell and Plano-Clark (2011), this approach can exploit the strengths of qualitative and quantitative methods by joining the two methods into a single research effort.

Several factors need to be considered in selecting a research methodology. Yin (2003) contends that “the characteristics of the research inquiry will greatly influence the selection of an appropriate research strategy” (p.22), including the nature of the research problem, the research topic, the research purpose and objectives, and the related research questions. Hathaway (1995) notes that additional relevant selection criteria are access to research sites, the time available to conduct the study, and the researcher’s skills and experience.

This study adopts a qualitative methodology from an interpretive perspective based on its associated characteristics. To Altameen (2007), a qualitative approach is appropriate when the primary research objective is to further understand a phenomenon. Patton and Appelbaum (2003), Kohlbacher (2006) and Creswell (2014), deem a qualitative approach suitable if it serves to elucidate how people perceive a problem from a holistic perspective. Further, Cassell and Symon (1994) assert that a qualitative approach is applicable when the research question relates to processes, as is the case in the current study. The foregoing forms the basis for the application of a qualitative approach to this research, along with the following five points:

- (i) Boeije (2010) argues that qualitative research is particularly effective in gaining rich and detailed descriptions of phenomena, which aligns with this study’s objective of conducting an in-depth exploration of citizens’ experiences with e-government.

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- (ii) Strauss and Corbin (1990) state that a qualitative approach is best employed when scant knowledge exists about the phenomenon.

E-government is still a relatively novel concept in Australia, particularly from the perspective of citizens living with disability. It was launched by the Australian government in 2016, with the intention of providing a unique service experience to connect the citizens, government and service providers; a qualitative approach is therefore applicable in this context.
 - (iii) This research focuses on understanding citizens' perceptions of success by interpreting their experiences with e-government. Denzin and Lincoln (2005) state that qualitative research should be used to "make sense of or to interpret, phenomena in terms of the meanings people bring to them" (p.3), which points to qualitative research as the appropriate method for this study.
 - (iv) Harvey and Myers (1995) maintain that the qualitative method should be used to collect data concerning social reality, in the context of the phenomenon being researched, to gain an understanding of these social meanings. This study aims to reveal the public value outcomes aspects of e-government utilisation from the perspective of citizens living with disability to support their daily living by providing a real-life context. Thus, a qualitative approach is wholly consistent with the current research objectives.
 - (v) According to Creswell (2014), qualitative data analysis is typically inductive and interpretive and involves generating findings from emerging
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themes discovered in the data. This is in alignment with the study's intent of exploring citizens' use of e-government and their perceptions of the value gained from this experience.

3.5. Research method

The **second methodological choice** in the research design is determining the appropriate method to employ. The research method provides the overall direction of the research, including the research process and a general strategy for approaching the research questions (Saunders et al., 2016). Thus, the research method moves from its philosophical underpinnings to designing the research procedures and the subsequent choices of data collection methods. Benbasat et al. (1987) contend that while multiple methods are available to qualitative researchers, none is substantially superior to another. Hancock, Ockleford, and Windridge (2009) concur and contend that no particular method is preferred over others in the array of potential methods available. They explain that the choice of method depends primarily on the research questions, the phenomenon investigated, and how data is to be analysed and interpreted.

3.5.1. *Selection of case study method*

This research adopts an interpretive world view, a qualitative-based research approach and a case study method. The main unit of analysis for this study is the individual citizen living with disability. An individual citizen's recent experience using e-government to support daily living constitutes the context and parameters for each case, as shown in Figure 3.2.

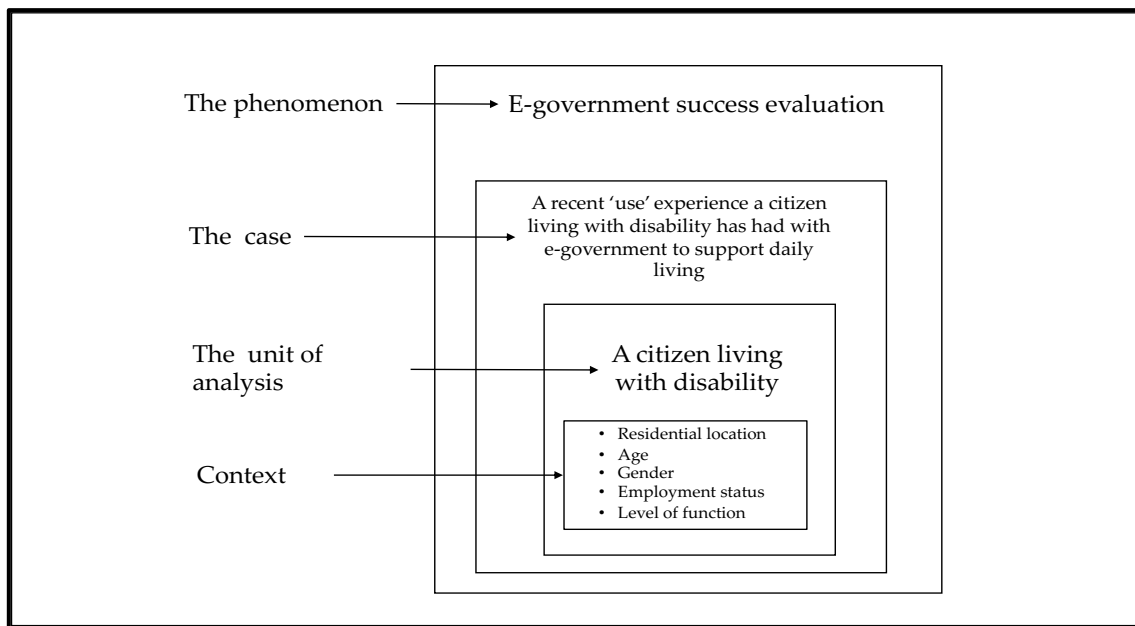


Figure 3.2. Description of the case and the phenomenon been studied

The context of each individual experience is circumscribed by delineating the residential location, age, gender, employment status and level of function of the citizen living with disability. Level of function describes an “individual’s ability to execute a task or an action, in a given domain at a given moment” (WHO, 2002, p.11).

Yin (2014) suggests that case studies are appropriate to explore contemporary events when it is not necessary to control behavioural events or variables, employing either single or multiple case approaches. A single case method is typically utilised when an especially unique, extreme or critical phenomenon is under examination, and it can also be advantageous in that it affords the opportunity to observe and analyse a phenomenon in a manner that has not yet been considered. Multiple cases can be suitable based on the replication of findings across cases that are selected with the expectation of comparable results being derived from each case (Yin, 2014). However, single and multiple case studies have distinct purposes beyond the mere fact that multiple case studies generate a

greater volume of evidence. Multiple case study methods serve to assess replication, while single-case study approaches are selected based on the nature of the individual case itself (i.e., it is unique, extreme or critical).

3.5.2. Justification for a case study approach

There were five primary motivations for selecting a case study method for this research, as delineated below:

- (i) Benbasat et al. (1987) assert that case study methods are most suited to research in which a small number of studies exist, as is the situation in the current study. E-government is a relatively new phenomenon in Australia, and the e-government system that supports citizens living with disability has only recently been implemented. It provides an e-government experience that combines both customer to government and customer to business capability within a single e-government platform, making it unique to government services in Australia.
- (ii) According to Baxter and Jack (2008), case study methods support the exploration of phenomena, such as the issue of the appropriate manner in which to evaluate the success of e-government from the perspective of citizens living with disability. Benbasat et al. (1987) add that case study methods enable the exploration of phenomena in a real-life context and are thus suited to research, such as the current study, which aims to acquire insights into the nature and complexity of the phenomenon by asking how or what questions.

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- (iii) This study focuses on the contextual experiences of citizens living with disability vis-à-vis e-government and the manner in which they utilise the technology to support their daily living. Benbasat et al. (1987) contend that case study methods are particularly appropriate in information system research, as the focus has shifted from studying the technical qualities of system use to citizen experience qualities, with a greater emphasis placed on innovations in technology, context interactions, and outcomes from technology usage. This study's focus on the outcomes from the use of technology, rather than the technology itself, underscores the suitability of the case study method.
- (iv) Understanding the impacts of disability on the daily lives of citizens and the manner in which they engage with technology is critical to appreciating the fundamental determinants of success from their perspective. Interaction with study participants in a natural setting enabled the researcher to establish rapport with the research subjects that facilitated understanding of these impacts. Baxter and Jack (2008) believe that the collaborative process inherent in the sharing of views and stories with participants enables the researcher to gain a more in-depth appreciation of their experiences. A case study method fosters collaboration between researchers and participants, thereby supporting its application in connection with this research.
- (v) Yin (2014) states that case study methods are more favourable than other approaches when their primary focus is on contemporary phenomena over which the researcher exerts minimal control. This study explores a
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contemporary e-government environment supporting citizens living with disability in Australia, over which the researcher has no control, making the case study approach ideally suited to this research.

3.5.3. Justification for selecting an exploratory case study approach

Yin (2014) identifies three types of case study methods: (1) descriptive; (2) exploratory; and (3) explanatory. Descriptive studies produce rich and detailed information of phenomena and their settings, whereas exploratory studies function to acquire understanding of phenomena about which limited information exists (Oates, 2006). Explanatory studies are utilised to explain why specific outcomes occurred (Oates, 2006). This study is exploratory in nature, as its objective is to determine the best method of evaluating the success of e-government from the perspective of citizens living with disability in Australia, a topic that has been the focus of scant academic attention.

3.5.4. Justification for selecting a multiple case study approach

This study employs a multiple case study approach to explore the experiences of citizens living with disability using e-government. Stake (2006) contends that a multiple case study design ensures a richness and depth of information drawn from multiple events to understand the phenomenon of interest. Lauckner et al. (2012) add that the multiple case study approach also facilitates the exploration of complex situations and the collection of multiple perspectives from a range of sources, including contextual information.

Yin (2014) emphasises that the multiple case study method serves to strengthen study findings by replicating patterns, making it well-suited to deliver the research objectives of this study. Yin (2014) compares the use of the replication strategy to conducting several separate experiments on related topics. Replication is accomplished in two stages: a *literal replication* stage, in which cases are selected (to the extent possible) to obtain similar results, and a *theoretical replication* stage, in which cases are selected for examination in order to either confirm or negate the patterns identified in the initial cases. According to Eisenhardt (1989), the development of a preliminary theory to describe the phenomenon is warranted if all or most of the cases generate comparable results. Figure 3.3. depicts the multiple case method design as proposed by Yin (2014) and employed in this study.

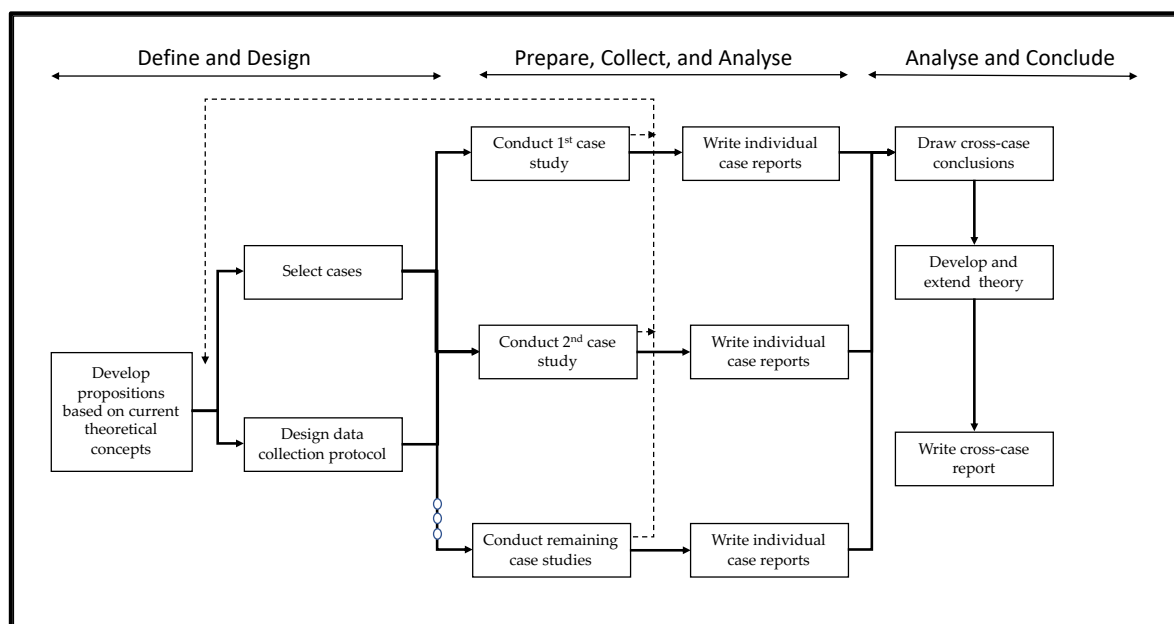


Figure 3.3. Multiple case design protocol for this study

Source: adapted from Yin, 2014

Yin (2014) claims that multiple case designs are preferable to single-case methods as they generate findings that are more robust and create the potential for external

generalisability of the findings. Lee (1989) also endorses the multiple case design, contending that single-case research is “vulnerable to charges that its findings cannot be extended to other settings” (p.35). Marshall and Rossman (2006), however, contend that the transferability of the research turns on how a researcher demonstrates the manner in which the research was conducted, not in merely replicating the research. Notwithstanding the foregoing arguments, the primary advantages of the multiple case method over a single-case method is its capacity to assess the replication of findings against the proposed conceptual framework and its underlying propositions, which supports the principal research objectives of this study.

3.5.5. Disadvantages of a case study approach and mitigating factors

Despite the inherent advantages of a case study approach, there are two significant drawbacks. First, Stake (2005) contends that the case study method lacks the ability to generalise the findings. Yin (2003) counters this assertion and maintains that findings from case study research “are generalisable to theoretical propositions, and not to populations or universes, and the aim of case study research is to expand and generalise theories (analytic generalisation), and not to enumerate frequencies (statistical generalisation)” (p.10). Given the multiple case replication strategy employed in this study, the research outcomes provide analytic generalisation with respect to the specific citizen group under scrutiny. As such, the study’s findings could be utilised in connection with other e-government services that provide support for citizens living with disability under similar circumstances.

Stake (1995) also developed the term “naturalistic generalisation,” which implies that generalisation can be based on similarity in settings and context. He identifies several practical steps supporting the validation of “naturalistic generalisation” (p.86). These include:

- (i) Providing explanations for the approaches applied in the research.
- (ii) Making raw data available so that others can develop their own interpretations.
- (iii) Providing the researcher's personal contact information and other sources of information.

Consistent with the foregoing, all procedures employed in this study are delineated in detail. Furthermore, the researcher's contact information and any additional supporting material are available, within the approved confidentiality agreements with study participants, to enable interested third parties to track the analytical processes adopted and/or to evaluate the trustworthiness of the research.

A second drawback associated with the case study method is its perceived lack of rigour. To mitigate this risk, a systematic and planned approach as proposed by Yin (2014) was adopted throughout the research, ensuring that the appropriate use of research procedures, data collection, and analysis techniques were documented in order to facilitate straightforward evaluation of the research by third parties as required. Concerted efforts were made to avoid a directive tone during interviews to diminish the possibility of bias impacting the direction of the findings and ensuring that an emic perspective was maintained. Clear distinctions are made throughout the study between the researcher's personal opinions and those of the participants; the researcher's role was limited to that of

an observer and listener. This presented no problems in practice in the context of the research, as the researcher is not currently living with disability and could therefore not authentically place himself in the “lived” environment of the participants (see Section 3.10 for strategies employed to reduce researcher bias in this study).

3.6. Research time horizons

The **third methodological choice** in the research design is the time horizon. Studies can be either longitudinal; i.e. examine a phenomenon over a period of time, or cross-sectional, i.e. examine a phenomenon at a fixed point in time. Cross-sectional studies seek to explain factors of the phenomenon relative to different contexts, while longitudinal research involves observing events or people to study changes and developments over time (Adams & Schvaneveldt, 1991). This study seeks to explore how citizens living with disability experience e-government at a given point in time. A cross-sectional time horizon was selected for the research, based primarily on the desire to compare cases, as well as the practical reality that such comparisons would be challenging using a longitudinal study in light of the constant evolution of e-government resulting from ongoing development of the service. The time commitment and expense involved in a cross-sectional study were also taken into account.

3.7. Research data collection

The **final methodological choice** in the research design is determining the most appropriate data collection techniques and procedures.

3.7.1. Research preparation procedures

A fieldwork approach proved ideal to gather data regarding citizens' experience using e-government, as it aligns with the interpretive nature of this research. Fieldwork was conducted full-time over a period of five weeks, from 1 February 2018 to 5 March 2018, during which 20 participants were interviewed.

Parikh (2002) asserts that, when properly conducted, case study research yields more robust and rigorous interpretive power. To achieve this, Bachman and Schutt (2008) propose that qualitative researchers need to develop a sound theoretical frame for the study, articulate clear research propositions, carefully plan fieldwork, prepare purposeful questions for participants, and systematically make notes throughout the process. To increase the reliability and rigour of this research, the researcher comprehensively detailed all activities that took place during the fieldwork. Figure 3.4 provides a timeline for executing the research.

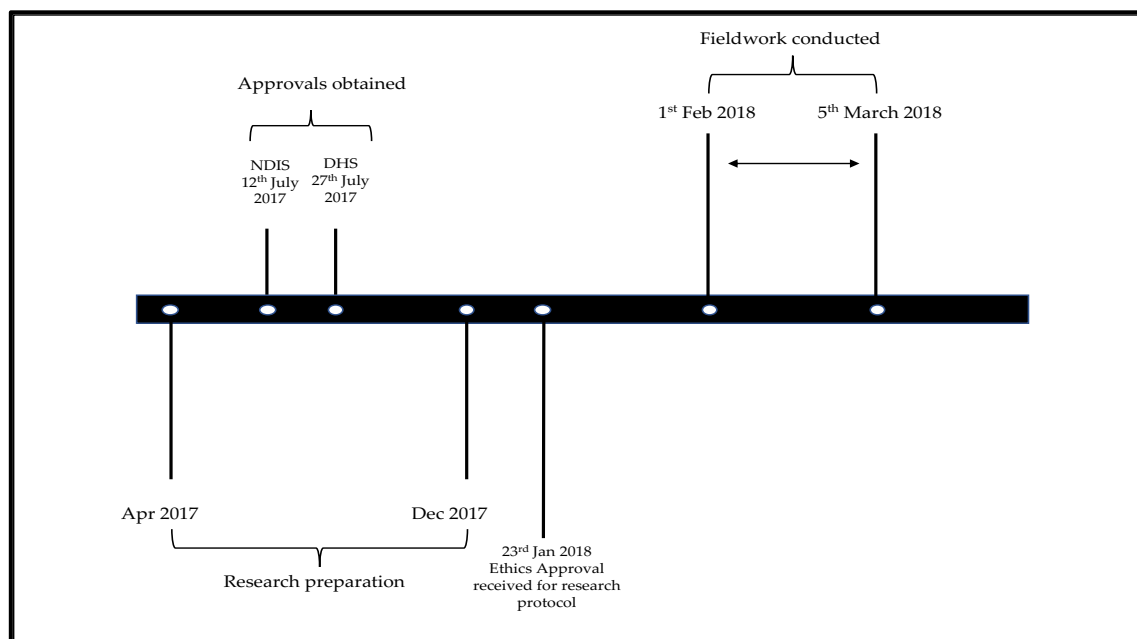


Figure 3.4: Summary of timeline and events for research execution

The initial phase involved seeking support for the research, which took place in Canberra, Australia between April 2017 and December 2017. The first step involved collating information from the Australian government and other related websites to collect data regarding e-government initiatives in support of citizens living with disability in Australia. This activity was followed by an exploration of the literature resources to identify theoretical explanations and to collate articles, documents and presentations about e-government.

A series of communications (via email, phone and in person) were subsequently initiated with the NDIS executive to obtain the requisite support and approval for the study (Appendix A). Approval was also sought from the Secretary of the Department of Human Services (DHS) (Appendix B). After obtaining these approvals and developing a plan of action to complete the data collection, the research protocol was submitted to the Australian National University's Ethics Committee, which granted approval on 23 January 2018.

3.7.2. Case selection

Ryan, Coughlan and Cronin (2007) state that, in qualitative research, the data collection process is generally initiated by researchers using a purposeful sampling method to select cases for the study. Oates (2006) contends that purposeful sampling involves intentionally selecting a sample that is most likely to produce data that will facilitate accomplishment of the research goals. Fossey, Harvey, McDermott and Davidson (2002) add that, if necessary, the case selection process can be augmented by additional sampling methods to enhance the adequacy of the collected data.

In this study, cases were selected by means of a purposeful sampling technique to ensure that citizens from a broad spectrum of physical and sensory disability categories were included. Cases were selected to provide opportunities for both literal and theoretical replication strategies. *Literal replication* is expected to occur when comparing cases involving participants who effectively interacted with e-government, while *theoretical replication* is expected to occur when comparing results across cases in which participants did not effectively utilise e-government.

Case selection was guided by both the researcher's personal judgments and the objectives of the study (Greig & Taylor, 1999), ensuring that they supported the replication strategy design. As recommended by Kruger (1988), specific emphasis was placed on ensuring the inclusion of citizens who had direct and active experiences with the phenomenon being studied. A final selection factor was the willingness and availability of individuals to participate in the study and their capability to convey details of their experiences and opinions in an expressive, reflective and articulate manner (Bernard, 2002). This approach excludes participants with intellectual or verbal disabilities (or people from non-English speaking backgrounds), but such limitations did not compromise the overall objectives of the study.

3.7.2.1. Case selection from citizens living with disability

The target participation group for the study was drawn from the population of citizens described on the NDIS National Public Dashboard, dated 30 September 2017. It was crucial to assess how citizens living with disability interact with e-government directly, rather than indirectly through their carers or legal guardians. As a result, case

selection for the study excluded citizens with intellectual disabilities (as NDIS advised that these citizens were unlikely to be active users of e-government), and the research parameters were limited to those with a physical or sensory disability. Target cases were selected from 11 physical and two sensory disability categories, as defined by the National Disability Services Australia. Physical disability categories include acquired brain injury, spinal cord injury, spina bifida, cerebral palsy, cystic fibrosis, epilepsy, multiple sclerosis, muscular dystrophy, amputees, Tourette syndrome and dwarfism. Sensory disability categories include blindness and low vision. Given the breadth of abilities exhibited by citizens within each of these categories, low and high functioning subgroups were added within each disability category (as defined in the International Classification of Functioning, Disability and Health (ICF) guidelines).

3.7.2.2. Number of cases

No concrete rules govern the number of cases required in a multiple case study design to satisfy the requirements of the replication strategy. Yin (1994) suggests that six to ten cases, if the results are as predicted, are sufficient to “provide compelling support for the initial set of propositions” (p.46). Yin further states that “the typical criteria regarding sample size are irrelevant” (p.50), given the fact that the multiple case study approach does not rely on the type of representative sampling logic typically employed in survey research. Instead, sample size is determined by the number of cases required to reach theoretical saturation; i.e., when data collection reaches the point where no new themes or information emerge. In interpretive research, the number of participants is generally relatively small (Holloway, 1997). Stake (2006) argues that multiple case studies frequently include more than four but fewer than 15 cases, as beyond that number the

cases exhibit “more uniqueness of interactivity than the research team and readers can come to understand” (p.22). Eisenhardt (1989) believes that between four and ten cases are conducive to effective research using interpretive multiple case studies. The information systems domain contains several examples of interpretive multiple case studies with between five and 15 cases (e.g. Ponelis, 2015; Teo, 2017).

In this study, it was determined that data saturation was reached after conducting 20 interviews from the 20 cases, with participants from ten of the 13 disability categories defined by National Disability Services participated. Those not included were disability categories with a limited number of citizens registered on the NDIS, such as dwarfism, epilepsy, and Tourette syndrome. The study included four participants with sensory disabilities and 16 with physical disabilities. The selected case numbers and participant disability categories are detailed in Table 3.4.

	Category	Study population
Disability Categories (n=20)	Blindness	2
	Low vision	2
	Quadriplegic	2
	Paraplegic	3
	Spina Bifida	2
	Multiple Sclerosis	2
	Cerebral Palsy	1
	Parkinson's disease	1
	Cystic Fibrosis	1
	Muscular Dystrophy	1
	Amputee	1
	Neurological impairment	2

Table 3.4. Participant disability categories

3.7.2.3 Demographics of participants in the study

The demographics of study participants reflect the range of citizens living with disability in Australia, consisting of 11 men and nine women. Of the 20 participants, ten were from rural locations and ten from metropolitan areas. The age distribution of participants was split fairly evenly between those older and younger than 50, while 13 participants were employed and seven unemployed. The function levels of participants were dispersed evenly among the cases interviewed: ten participants had low levels of function and ten were functioning at a high level. The participant demographics are presented in Table 3.5.

Participant demographics	Category	Study population
Gender	Male	11
	Female	9
Location	Rural	10
	Metro	10
Age	> 50	11
	< 50	9
Employment status	Employed: 13	Unemployed: 7
Level of function	High: 10	Low: 10

Table 3.5. Participant demographics

3.7.2.4. Case recruitment

A variety of means were employed to identify and recruit participants for the case studies. An advertisement was placed in Occupational Therapy Australia's monthly online newsletter, leaflets were distributed to a range of disability societies, and the research intent was communicated to potential participants via word-of-mouth. See Appendix C for

the invitation and information sheet provided to prospective participants, and Appendix D for a recruitment flyer.

Potential candidates were initially identified and selected from associations with disability support groups. This approach proved to be ineffective, however, as no data existed related to a candidate's use of e-government and many did not meet the screening criteria (see Appendix E), leading to an adjustment of the recruitment process. Once candidates were identified as meeting the criteria, a snowball sampling approach was utilised to connect with further potential participants. Each candidate who consented to participate in the study was asked to forward the recruitment flyer to other potential participants, in particular to individuals who they believed were actively involved in the use of e-government, who may be amenable to taking part in the research, and who met the criteria.

Potential participants were initially screened to ensure they met the selection criteria and that they would contribute to the diversity of represented categories before being formally invited into the study. The participants selected for the qualitative interviews received a formal invitation, via either an introductory letter or telephone contact, to take part in the study. Those who agreed to participate were asked to complete a consent form before an interview was initiated (see Appendix F for the consent form).

3.7.2.5. The Cases

Table 3.6. provides a summary of the 20 cases selected, classified by participant demographics and indicating dates and time when interviews took place.

	Level of function		Gender		Status of employment		Location		Age		
Case No.	Low	High	Male	Female	Yes	No	Metro	Rural	Age >50	Age <50	Interview Date and Duration
C1	x			x	x		x		x		(01/02 - 14:00)
C2	x			x		x	x		x		(02/02 - 10:30)
C3	x		x		x		x		x		(02/02 - 15:00)
C4		x	x			x	x		x		(05/02 - 10:00)
C5	x		x		x		x		x		(05/02 - 15:00)
C6		x		x		x		x	x		(12/02 - 14:00)
C7	x		x			x		x		x	(13/02 - 11:00)
C8		x	x		x			x	x		(13/02 - 14:30)
C9		x	x		x			x	x		(15/02 - 11:30)
C10		x	x		x			x		x	(20/02 - 15:00)
C11	x			x	x		x			x	(22/02 - 14:00)
C12		x	x		x		x			x	(22/02 - 16:00)
C13		x		x	x		x			x	(23/02 - 08:00)
C14		x		x	x			x	x		(26/02 - 11:00)
C15	x			x		x		x		x	(26/02 - 13:00)
C16	x		x		x		x			x	(27/02 - 15:00)
C17		x	x		x		x		x		(01/03 - 10:30)
C18		x	x		x			x	x		(01/03 - 15:30)
C19	x			x		x		x		x	(02/03 - 12:30)
C20	x			x		x		x		x	(05/03 - 10:00)
Totals	10	10	11	9	13	7	10	10	11	9	

Table 3.6. Case information and context

3.7.3. Data Collection

Hartley (2004) observes that a comprehensive and deep understanding of a phenomenon and its context can be acquired by collecting data using different methods. Yin (2014) reinforces this stance and suggests that employing multiple methods to collect data increases the opportunities for triangulation that serve to support research conclusions. Baxter and Jack (2008) contend that utilising multiple data sources increases data credibility and ensures that potentially latent facets of a phenomenon are revealed. Benbasat et al. (1987) add that the use of multiple data sources supports verification of the research findings.

Yin (2014) recognises six data collection methods or sources of evidence that are conducive to case study research: interviews, documentation, direct observations, physical artefacts, participant observation, and archival records. This study relies on the first two methods, with interviews as the primary data sources, and official documents as secondary data sources.

3.7.3.1. Interviews

Qualitative interviews represent the principal data collection method employed in this research. Oates (2006) explains that interviews are planned meetings guided by a researcher with the intent of obtaining in-depth information about a specific topic. Dörnyei (2007) notes that data collection is most commonly accomplished through interviews in qualitative-based research. Kvale (2003) contends that interviews constitute a more substantive means of collecting the narrative data needed to explore an individual's views when compared to other data collection methods. Cohen et al. (2007) believe that

interviews are “a valuable method for exploring the construction and negotiation of meaning in a natural setting” (p.29). In other words, the value of an interview lies in its ability to construct a complete picture of a person, as well as enabling participants “to speak in their own voice and express their own thoughts and feelings” (Berg, 2007, p.96).

According to Kvale (1996), interviews are conversations designed to impart descriptions of the “lived” world of participants to interpret the meanings of a phenomenon under investigation. Schostak (2006) sees interviews as “an extendable conversation between partners that aims at sharing in-depth information about a certain topic or subject, and through which a phenomenon could be interpreted in terms of the meaning participants bring to it” (p.54). Several methods can be employed in collecting these explanations, the most common of which is participant interviews. Walsham (1995) claims that interviews are the key data source in interpretive case studies, since researchers relying on interviews are able to access participants’ views and perceptions regarding specific events. He cautions, however, that the tone of interviews must maintain a balance between being overly directive and extremely passive.

Interviews can be structured, semi-structured or unstructured (Hancock et al., 2009; Oates, 2006). A structured interview employs a standard set of ordered questions for each participant being interviewed. A semi-structured interview consists of a set of topics to be investigated, while allowing for additional questions or variations in the order of the questions if deemed appropriate to facilitate the discussion. In an unstructured interview, the researcher proposes a topic and then listens while participants articulate their views. Britten (1995) further distinguishes between in-depth and semi-structured interviews, explaining that the latter employs open-ended questions in a loose structure that delineates

the parameters for the range of topics to be discussed, while the former is less structured and generates details regarding a narrower spectrum of topics.

The primary data collection method employed in this study was qualitative face-to-face semi-structured interviews. Myers and Newman (2007) confirm that face-to-face qualitative interviews are the most effective technique for collecting data in qualitative studies because they facilitate a comprehensive examination of participants' subjective experiences. In addition, Oates (2006) points out that this personal interview mode makes it possible for a researcher to explore sensitive subjects or confidential material that participants may be disinclined to share in a less personal setting.

Hancock et al. (2009) further contend that face-to-face semi-structured interviews are relatively uncomplicated to arrange, while Oates (2006) notes that their nature and design permit a researcher to deviate from the sequence of questions during the interview depending on the flow of the discussion. Such flexibility allows researchers to seek additional information if elaboration concerning specific topics is warranted and to pursue relevant lines of inquiry that may not have been prepared initially.

3.7.3.2. Interview process

An account of participants' recent experiences with e-government, which is at the core of this study, can be accomplished within about 45 minutes. Thus, the data collection interviews were projected for completion in a single session. Each participant was contacted prior to the interview to agree on the location, which also served to establish a modicum of rapport in advance. The majority of interviews were conducted in the

participants' homes, or when requested by interviewees, at the offices of the Department of Human Services.

Prior to meeting the participants, the interview script was refined and subjected to peer review by a thesis supervisor to ensure that questions were clear and unbiased and that the interview was designed to flow in a coherent and logical order. A limited pilot study was subsequently undertaken in which two citizens were interviewed to verify the effectiveness and efficiency of the research protocol, including the audio equipment to be utilised.

As the primary methodological approach for the study, face-to-face interviews enabled in-depth exploration of the personal experiences of participants' use of e-government. Interviews were conducted in each of the 20 cases identified for the study, with durations between 45 and 60 minutes. At the commencement of each interview, participants were requested to provide written authorisation for audio recording of the interview (obtained verbally and audio recorded for those unable to write due to their disability). Walsham (1995) states that audio recordings are advantageous in that they provide a full account of what was expressed throughout the interview. All participants in the study agreed to be recorded.

An information sheet was provided as part of the interview process (see Appendix C for the participant invitation and information sheet) setting out the scope, aims and potential risks of the inquiry. The document further outlined avenues available to participants in the event that their involvement caused them distress. The information

sheet also indicated that a participant could withdraw from the research at any time and without any consequences.

In accordance with Holloway's (1997) recommendation, informed consent was obtained from individual participants who agreed to participate in the study. A formal agreement was developed in line with Bailey's (1996) guidelines for conducting ethical investigations (see Appendix F for the participant consent form), which included confirmation that:

- (i) Participants agreed to join the study and understood the voluntary nature of their involvement.
- (ii) Participants understood the purpose and objectives of the research.
- (iii) The approach to be taken in the research was explained.
- (iv) The benefits and risks associated with the research were conveyed to participants.
- (v) The actions to be taken to protect and secure the confidentiality of personal information were clear and were communicated to participants.

All participants signed the consent forms except those with a vision impairment, from whom an audio recording of their consent was obtained. Each participant interview was conducted in three parts. The initial segment of all interview sessions established the context of the participants' life experience, including the nature of their disability, when it occurred, and how it impacted their activities of daily living. Information was also obtained from participants during this introductory section regarding their level of

technological literacy and extent of their daily technology utilisation, including e-government.

During the second part of each session, participants were asked to reconstruct the details of a recent experience with e-government, including the circumstances leading to their need and decision to use e-government, the precise nature of that contact, and their feelings both before and after interacting with the service.

In the third and final portion of the interview, participants were encouraged to reflect on the individual resource quality attributes they had raised during the interview and to specify which of those attributes they considered essential in effectively using e-government; i.e., without these resource quality attributes in e-government, the participant would choose not to use the service. In addition, each participant was asked to describe the resource quality attributes that would reflect an ideal e-government experience. This information was later applied to correlate the resource qualities selected with the data analysed from their descriptive experiences of the phenomenon.

3.7.3.3. Interview format

Each interview was conducted in a confidential setting and was designed to take into account accessibility conformance measures across the spectrum of disability, including partial sight or blindness and physical disability, to ensure that participants were provided the maximum opportunity to contribute. A qualified Occupational Therapist (OT) was present at each interview to assist participants if required during the qualitative data collection phase and to assist in putting the participant at ease. It should be noted that the occupational therapist was on hand solely to ensure the health and safety of the

participants and that the environment was conducive to optimise the interview process. The occupational therapist played no other role and the interview process was in no way impacted by her presence. Nonetheless, she executed the relevant confidentiality statements, as did any other support workers who were present during the interviews.

Several strategies were implemented during the main study that were designed to promote open communication and to facilitate the data collection sessions. Poggenpoel and Myburgh (2003) states that researchers in a qualitative study must facilitate the flow of communication, identify areas for more in-depth probing, and put the participants at ease during the interviews. Seidman (2006) contends that researchers must build a sense of rapport with participants. This was accomplished in this study through a series of phone calls and e-mails to participants leading up to in-person interviews.

An interview script guided the researcher through the participant interview process (see Appendix G). It contained a set of pre-defined open-ended questions specifically formulated for the interviews based on the literature regarding e-government success factors. However, while the background literature provided a critical tool in establishing the context and structure of interviews, the researcher allowed participants to lead the discussion and avoided direct references to e-government literature to avoid pre-conditioning responses that may introduce bias. Participants were provided the opportunity to get settled prior to the session, and a set time period was allocated for each group of questions within the interview.

The questions posed throughout the interview were arranged in a logical order based on Patton's (2002) classification of questions into six types. They focused initially

on developing a *background* picture of the participants to establish the context within which they utilised e-government. This was followed by a set of open-ended questions designed to examine the *experience and behaviour* of participants vis-à-vis e-government, and how the participant was *feeling* before, during and after interacting with e-government. The interview concluded with a set of questions concerning the participant's *opinion and values* regarding which elements of the experience were essential to their use of e-government. Any follow-up questions were calculated to facilitate an examination of the participants' lived experiences in using e-government and the value they derived from that experience.

All interviews were in English. No more than five interviews per week were conducted, as the researcher wanted to transcribe each interview as soon as possible upon completion. This schedule provided the time and flexibility to transmit copies of the transcribed interviews to participants for review and comments while their recollections of the substance of the interview was still fresh.

Participants were urged to choose a convenient time and place for their interviews. The majority preferred to be interviewed in their homes, although C4, C7, and C9 requested that interviews be conducted in their nearest DHS offices. Sufficient time was allotted to each interview to enable participants to thoroughly relate their personal stories and were concluded only when the material became repetitive. Participants seemed energetic, enthusiastic and friendly; they spoke openly and appeared eager to provide fulsome accounts of their experiences. Without prompting, most participants offered to participate in follow-up interviews if needed.

The researcher remained focussed on the interview objectives during each session, which bolstered the validity and reliability of the research while providing the participants leeway to expand on their reflections. This approach is supported by Parikh (2002), who emphasises that researchers' ability to maintain focus will enhance the quality of data collected. At the conclusion of each interview, participants were thanked for their time and contribution. The researcher also confirmed their willingness to be contacted for further enquiries and offered to provide a copy of the research outcomes once the final report had been generated. All accepted.

3.7.3.4. Documents

It was crucial to include document reviews as a data collection method to increase the reliability of the study. Mogalakwe (2006) states that "the documentary method is the technique used to categorise, investigate, interpret and identify the limitations of physical sources; most commonly written documents, whether in the private or public domain" (p.221). Eisenhardt (1989) asserts that relying on multiple methods to collect data supports and strengthens the research findings, and Lehman (2003) adds that collecting data from documents is about learning from things. The documents used in this study are listed in Table 3.7.

Document Type	Document Title	Reference
Official Government Reports	Productivity Commission Study Report Overview, October 2017	Australian Government Productivity Commission (2017)
	Assessment Reports: Digital Transformation Agency – WCAG compliance	Digital Transformation Agency (DTA) (2018b)

Document Type	Document Title	Reference
	Shut Out: The experience of people with disability and their families in Australia; National Disability Strategy Consultation Report	National People with Disabilities and Carer Council. Australian Government (2009).
	Joint Standing Committee on the National Disability Insurance Scheme: NDIS ICT Systems	Australian Government, Senate Estimates (2018)
	Australian's use of and satisfaction with e-government services	AGIMO (2005)
National Disability Insurance Scheme	COAG Disability Reform Council, Quarterly Report	NDIS (2018)
Special Reports to Government	Disability Expectations: Investing in a better life, a stronger Australia	PWC (2011)
	National Disability Insurance Scheme MyPlace Portal Implementation Review – Final Report	PWC (2016)
	National Disability Issues Register	NDS (2018)

Table 3.7. Documents used in the study

Saunders et al. (2016) posit that government documents may be of superior quality to those collected by researchers and should therefore be taken seriously. These fall into two main categories: research-generated documents and found documents. Research-generated documents are those created for the study, such as images and notes, while found documents already exist in organisations, such as public or personnel records. Found documents are considered secondary data, as the information is collected for purposes other than the current study, but they remain relevant in understanding the phenomenon under study in conjunction with primary data.

A diverse array of documents obtained from the Australian government served as a complementary source for collecting secondary data for the study and were utilised to identify multiple facets of e-government, including policies, services, objectives and strategies. These documents included government publications, websites, Senate estimate reports, and newspaper articles. They were also instructive in how secondary data (such as official government reports) can be applied to assess the generalisability of research outcomes by validating results in a general context.

3.7.3.5. Strengths and weakness of data collection methods used in this study

Table 3.8 provides a comparison of the strengths and weaknesses of the sources of data collection used in this study.

Source	Strength	Weakness
Documents	• Stable and can be retrieved repeatedly • Unobtrusive, not created as a result of the case study • Precise • Broad coverage	• Can be difficult to retrieve • Biased selectivity • Reporting bias • Access may be blocked
Interviews	• Targeted • Insightful	• Reflexivity • Inaccuracy • Response bias • Biased due to poorly constructed questions

Table 3.8. Strengths and weaknesses of data collection techniques
Source: adapted from Yin, 2014

Copious notes were taken while reviewing documents obtained from government archives during the data collection process, and this practise was maintained throughout the interviews, including written impressions and thoughts as they came to mind. Walsham (1995) describes field notes as qualitative notes recorded by researchers during or after observation of a specific phenomenon they are studying, involving the manner in which researchers write notes or collect data in the field. The researcher created field notes using the procedures and practices employed in collecting data for the study. Walsham (1995) asserts that the quality of notes recorded in the field can vary significantly depending upon the personal views, perceptions and values assigned to them by the researcher. Some researchers believe that field notes are an essential element in data collection, while others view them as secondary in importance.

Walsham (1995) considers it essential for researchers to take notes throughout participant interviews, a suggestion to which the researcher strictly adhered in all interviews and which proved beneficial during the later stages of the study for five primary reasons, all of which are consistent with those raised by Eisenhardt (1989):

- (i) The field notes proved useful during the transcription process to clarify occasionally unclear statements from the audio recordings.
 - (ii) They facilitated recall of contextual events that transpired during the interviews.
 - (iii) The field notes served as a backup record of the interview in the event of audio-recording failure, even though two separate recording devices were used.
-

- (iv) They assisted in noting observations, emotions and impressions of the participants as they were relating their stories.
- (v) It was impossible to predict what information would prove valuable in the future, so it was prudent to capture as much information from the interview as possible.

3.8. Quality evaluation of qualitative research

The final stage in the research design is evaluation of the quality of data and research outcomes, which provides details on the approach that the researcher has employed to ensure the quality of the data collected and outcomes of the study are trustworthy. While it can be challenging to assess the accuracy of results from qualitative studies, Lincoln and Guba (1985) assert that relevant criteria and strategies are available that can improve the *trustworthiness* of the outcomes of qualitative research.

Trustworthiness is commonly used as a measure for the quality of qualitative research and can be understood as the means by which a researcher ensures that the research is credible, transferable, dependable and confirmable (Murphy & Yelder, 2010).

3.8.1. Credibility

The credibility of the study outcomes is an essential aspect of qualitative research, as it establishes that the research is trustworthy (Lincoln & Guba, 1985). Credibility in qualitative research is used to address how research findings match reality; i.e., the meanings that individuals compose within their social context. As qualitative studies can produce multiple realities, the outcomes will thus not relate to every reality. It is,

therefore, others who must judge the credibility of the outcomes based on how they understand the research (Smith & Ragan, 2005).

A method of increasing credibility is to incorporate participants (members) in checking the research outcomes. Lincoln and Guba (1985) “consider member checking of outcomes as the most critical technique for establishing credibility” (p.314). The credibility of the data was ensured in this study through member checks. Participants were asked to verify their interview transcripts, as well as review and validate that the interpretations from the research reflected their “lived” experience using e-government. Confirmation e-mails of their agreement was obtained from each participant to maintain an appropriate audit trail. These actions align with those recommended by Graneheim and Lundman (2004) that participant verification of the research results is an essential aspect of credibility.

Multiple sources, or triangulation of evidence, is another technique for enhancing credibility endorsed by such researchers as Denzin (1978), Jorgensen (1989) and Patton (1990). Bonoma (1985) asserts that triangulation allows for more robust substantiation of constructs to assist in generalisability of the research findings. This research demonstrates triangulation in that it involves collecting data in multiple ways, assessing the evidence from several data sources, and ultimately constructing a consistent validation of themes based on the data. This corresponds with Yin’s approach (2014), which contends that “any findings or conclusions in a study are likely to be more convincing and accurate if based on several different sources of information” (p.98). Maxwell (1996) adds that the risk of bias is reduced when collecting data using different techniques, making possible a compelling valuation of the validity of the research outcomes.

3.8.2. *Transferability*

A significant challenge in qualitative research resulting from the subjectivity of the data gathered is transferability of outcomes. This transferability of results in qualitative studies is also a threat to the valid inferences that can be made about the data. Lincoln and Guba (1985) contend that transferability of results can be achieved using a multiple case study methodology and through comparison of evidence. Yin (1994) states that multiple case studies can be used to develop analytic generalisation through replication logic and/or corroboration of findings to achieve external validity (transferability). Miles and Huberman (1994) add that several other techniques can be exploited to enhance transferability, including “thick” descriptions for a case study database, cross-case analysis, utilisation of a planned interview protocol, and the application of procedures for coding and analysis.

This study uses a multiple case method, with all procedural approaches documented and justified throughout the research, and provides explanations that shaped and linked meanings the researcher associated with those phenomena. Transferability was further augmented through structured coding and analysis procedures throughout the study, a planned interview protocol, and a thematic analysis to examine the interpretations derived from the cases. Furthermore, focussed comparison across the multiple cases was utilised to support analytic generalisation of the findings for citizens living with disability.

3.8.3. *Dependability*

Given the qualitative nature of this study, it was critical to demonstrate the dependability (reliability) of its outcomes. Lincoln and Guba (1985) describe

dependability of outcomes as those that are repeatable and consistent; i.e., the ability to consistently generate identical findings in the same context if the study were to be repeated. Yin (2014) recommends carrying out three research activities to enhance the reliability of the research: (1) using a case study protocol; (2) developing a case study database; and (3) maintaining a chain of evidence. He adds that the goal of dependability is to minimise the potential of errors and biases in the study.

To address the dependability quality of this research, all original data and information regarding the cases were stored in a secure database and an audit trail was maintained throughout the research. Babbie and Mouton (2010) state that maintaining a clear audit trail is a prudent strategy to enhance the dependability of research. This involves presenting detailed explanations of the research preparation, data collection, data analytics and choices made by researchers during the study. As previously discussed, the researcher adhered to the practice of creating an audit trail consisting of all relevant decisions and documentation of the various stages of the research process, from the initial interview transcripts to the procedures employed in final interpretation of the data. Boeije (2010) argues that maintaining “methodological accountability” throughout the study is essential to ensure that research quality is maintained. That is, researchers must accurately record and justify what has been done and why and how it was done. Thorne (2000) concurs that auditable and systematically applied qualitative analytical processes are among the most crucial factors that determine the quality of research.

A case study protocol was developed for this research in relation to the overall methodology, methods and data collection approaches employed (Section 3.3). Graneheim and Lundman (2004) contend that every study must be assessed relative to the methods

used to produce the findings. To ensure transparency, a detailed audit trail was documented in the main body of the thesis, supported by an extensive set of figures, tables and appendices that systematically describe all processes and procedures undertaken and all decisions reached throughout the data collection and data analysis phases of the research.

3.8.4. Confirmability

Confirmability is a term used in qualitative research that determines the extent to which the study outcomes are shaped by the participants' views and precludes the researcher's motivation, personal interest or bias (Lincoln & Guba, 1985). It is considered equivalent to objectivity and can be viewed as the degree to which others can verify the research findings (Murphy & Yelder, 2010). This confirmability of outcomes "can be established by research auditing, where a researcher makes the provision for a methodological self-critical account of how the study was conducted" (Boeije, 2010).

To address the confirmability of the outcomes of this research, the researcher has included in the main body of the thesis a detailed audit trail of all decisions made and procedures undertaken. The outcomes of this research have been shaped by participants' perceptions and all data collected has been archived electronically in a way that can be easily retrieved. Participants were also requested to review, validate and confirm that the research findings reflected their "lived" experience using e-government. This action aligns with the recommendation from Graneheim and Lundman (2004) that participants' verification of the outcomes of the research is an essential aspect of confirmability.

3.9. Ethical considerations for this study

Throughout the study, the researcher abided by the ethical principles outlined by Boeije (2010): (1) informed consent from participants and authorities; (2) the privacy of participant information; and (3) confidentiality and anonymity of participants' identities.

Principle of informed consent: Prior to commencing the interviews, participants were informed about the nature of the research, its title and objectives, the method of data collection, and the estimated interview duration. Participants were also advised that they could withdraw from the interview at any point or refuse to answer any question(s). All participants in the study were given a comprehensive information sheet, and all participants consented to the interviews in writing. The consent document was read aloud to participants living with vision impairments, and their formal consent was audio recorded.

Principle of privacy: Participants were assured that the information they provided would be kept secure and confidential, and the data was maintained in a locked and secure environment. Personal information relating to participants was coded at the start of the project and no data that could identify a specific participant was included beyond that point. Support staff who were present during interviews were asked to execute confidentiality agreements.

Principle of confidentiality and anonymity: Participants were assured that their identities would be protected. They were also asked to review their contributions (textual descriptions and quotations) prior to submission to ensure that no vulnerabilities or any

representations that could be interpreted as derogatory were included. Participants were further assured that their contributions to the research would be reported anonymously.

Strict adherence to the foregoing ethical principles served to promote the trustworthiness of the process and provided an unwavering guide for the researcher's efforts throughout every aspect of the study.

3.10. Strategies to deal with researcher bias

It is important to acknowledge that the researcher in the current study has had previous interactions with e-government. As Chief Information Officer for the Department of Human Services from 2011 to 2017, the researcher was intimately involved in the development and launch of several new online government systems. Malterud (2001) contends that "a researcher's background and position will affect what they choose to investigate, the angle of investigation, the methods judged most adequate for this purpose, the findings considered most appropriate, and the framing and communication of conclusions" (p. 483-484). Heron (1996) recommends that researchers explicitly articulate their judgement, values and beliefs throughout the study, not only when selecting the research topic, procedures and approaches. He cautions, however, that this should be accomplished in a manner that serves to minimise subjective bias.

To address this risk, the researcher undertook several strategies to foster reflexivity within the research design to limit bias. The most critical of these strategies was following the guidance of Lincoln and Guba (1985) to maintain a comprehensive diary and make regular entries during the research process. These entries included records of

methodological decisions and the rationales behind them, the logistics of the study, and reflections on the researcher's values and interests, both during and after the interviews. Furthermore, the researcher explicitly underscored points during the research process that exhibited his values and judgements and not those of the participants. Additionally, the researcher's thesis supervisors provided objective guidance throughout the research process to maintain focus on the objectives of the study and to guard against any subjective personal views infiltrating the research.

3.11. Summary

This chapter delineates the research framework for the study, describing the four dominant philosophical paradigms used in information systems research. This is followed by a presentation of the various research methods, approaches and data collection sources considered for this study.

The rationale for selecting an interpretive qualitative approach for this study was articulated, followed by the motivation for adopting an exploratory multiple case study approach and the sources of data collection for this study. Table 3.9 summarises the research design and methodological choices made and the justifications for these choices.

Key research decisions	Choices	Main reasoning
1. Philosophy	Interpretivism	Success evaluation is highly subjective, complex and contextual; need to understand citizens and their use of e-government in their

Key research decisions	Choices	Main reasoning
		environment to understand how the outcomes impact on daily living
2. Reasoning	Inductive	Exploratory nature of the research; little known about the phenomenon; new and unique service environment
3. Methodology	Qualitative	Need to generate rich data and in-depth understanding of the phenomenon
4. Time horizon	Cross-sectional	A particular point in time, as e-government constantly evolves
5. Method	Multiple case study	Ensures a richness and depth of information drawn from multiple events in order to understand the phenomenon of interest; enables exploration of complex situations; allows gathering of multiple perspectives from a range of sources, including contextual information; useful to analyse a process.
6. Data collection techniques and procedures	Interviews and documents used as sources of evidence	Ability to examine participants' subjective experiences in detail; multiple information sources for triangulation; ability to observe and record emotions

Table 3.9. Summary of methodological research choices

The following chapter sets out the data analysis procedures and the rationale behind those considered for this study. ■

Chapter 4

Research Data Analysis

4.1. Introduction

This chapter delineates the data analysis procedures employed in the research. It presents a comprehensive overview of the processes used to analyse the data, together with the rationale for all decisions made in the selection of the approaches. A comprehensive analysis of the data is conducted using both within-case and cross-case analysis to address the research questions. This examination generates a set of themes to describe the outcome measures that determine the success of e-government from the perspective of citizens living with disability in Australia.

Section 4.2 identifies the theoretical methods used to analyse the qualitative data considered for this research and justifies the selection of a thematic analysis approach. In Section 4.3, data analysis is focused on answering the research questions. Section 4.4 specifies the thematic analysis results, and Section 4.5 outlines the themes of explanation to the research questions.

4.2. Qualitative data analysis procedures

Thorne (2000) contends that data analysis is considered the most demanding procedure in qualitative research, and one that has received the least amount of discussion in the literature. Yin (2014) concurs and claims that analysing case study data can be the

most challenging aspect of case study research. It is therefore essential that there is no ambiguity regarding the theoretical approach to data analysis in this research.

4.2.1. Selection of a thematic analysis approach

In this study, an inductive approach is applied in analysing the qualitative data collected for this study, guided by the specific research objectives. Saunders et al. (2016) advocate several specific inductive procedures, including analytic induction, thematic analysis, data display and analysis, narrative analysis, discourse analysis, and grounded theory. **This study adopts a thematic analysis approach.**

Attride-Stirling (2001) describe two primary thematic analysis approaches: (1) a data-driven approach, and (2) a theory-driven approach. In a data-driven approach, themes are extracted exclusively from the data that has been collected. Braun and Clarke (2006) contend that in this approach, the themes are more explicitly derived from analysis and as such may exhibit minimal correlation to the specific interview questions. Boyatzis (1998) states that this approach is effective for expanding into new areas of research. By comparison, the themes are drawn from pre-existing theories in a theory-driven approach. According to Boyatzis (1998), this is the most common approach, as the themes have been developed from established theories and are likely relevant to the study context. He adds that the theory-driven approach is therefore beneficial for a researcher who intends to refute, extend or replicate previous research.

This study applies a data-driven thematic approach to analyse the data, as there are limited academic antecedents when it comes to evaluating the success of e-government holistically from the perspective of citizens living with disability. This approach aligns

with the inductive foundation of the study and the researcher's interpretivist epistemological stance.

4.2.2. Justification for choosing a thematic analysis approach

A data-driven thematic analysis procedure was selected based on five characteristics associated with this approach, as advocated by King (2004) and Braun and Clarke (2006):

- (i) Thematic analysis offers a highly adaptable method that can be tailored to the needs of the research, generating rich and detailed accounts of data that can be used within most theoretical frameworks.
 - (ii) Thematic analysis provides a manageable form of analysis that does not require detailed technological or theoretical knowledge as compared with other qualitative methods.
 - (iii) Thematic analysis is comparatively easy to learn, as there are few specific procedures and prescriptions.
 - (iv) Thematic analysis is deemed a useful approach to examine the viewpoints of study participants, which highlights their differences and similarities and can generate unexpected insights.
 - (v) Thematic analysis facilitates synthesis of large amounts of data, as it fosters a structured data analysis procedural approach, which in turn facilitates creation of a clear and organised final report.
-

4.2.3. Procedures used in the data-driven thematic analysis

Thematic analysis was employed in an integrated manner that allowed for the analysis of data collected from interview transcripts and documents. This process was applied to each case, using an iterative sequential process to review and adjust the codes and themes for analysed cases, as new information emerged with each subsequent case.

Table 4.1 details the steps involved in the thematic analysis process as suggested by Braun and Clarke (2006) and applied in this study.

Step	Description of the process
1. Familiarise with data	Transcribe data, read and re-read transcripts, noting initial ideas. Add data from observations and documents to database.
2. Generate initial codes	Code features of the data in a systematic fashion across the entire data set; collate data relevant to each code.
3. Search for themes	Collate and connect codes into potential themes; gather all data relevant to each potential theme linking it to the research questions.
4. Review themes	Check whether the themes work in relation to the coded extracts and the entire data set, then generate a thematic ‘map’ of the analysis.
5. Define and name themes	On-going analysis to refine the specifics of each theme as the overall story from the analysis unfolds; generate clear definitions and names for each theme.
6. Produce the report	Select compelling narrative examples; complete final analysis of selected extracts; relate the analysis back to the research question and literature; produce a scholarly report of the analysis.

Table 4.1. Steps in thematic analysis
Source: Braun & Clarke, 2006, p.87

In Step 1, become familiar with the data, the data was transcribed and subsequently labelled with an information tagging code, date and time of capture. The researcher read transcripts and secondary source documents repeatedly, and listened to the audiotapes to facilitate deeper familiarisation with the data, all of which expedited the researcher's working knowledge of the data. During this process, initial thoughts and ideas concerning possible approaches to coding were recorded in memos.

In Step 2, generate initial codes, the researcher began coding the data based on notes taken during familiarisation with the data. Iterative coding was conducted over a period of two months, during which transcripts and documents were read repeatedly to highlight statements relevant to sustainable coding criteria. The *in vivo* codes that emerged from the data were based on recurring points throughout the participants' transcripts concerning their perceptions of success. During each round of reviews, the codes were further consolidated and, in some cases, expanded. Once coding of the data had been completed, the list of codes was reviewed by supervisory team for interpretive consistency, effectively constituting an inter code validation to ensure coding quality.

In Step 3, search for themes, codes previously identified in the transcripts were categorised into themes that emerged as part of a more elaborate and advanced framework of code descriptions. This process ensured the systematic analysis of the data required to establish patterns and relationships in the data, and the researcher positioned the codes against potential themes to ascertain whether they accurately reflected the data. A peer researcher executed a subsequent review on a subset of the data to ensure the quality of the analysis.

In Step 4, review themes, the researcher examined emerging themes to determine their connection to previously coded extracts and created a thematic map based on that analysis. This made it possible to visualise the relationships and links among themes. An iterative process served to further refine the themes based on the procedures for thematic analysis until the themes exhibited stability.

In Step 5, define and name themes, the themes were finalised. Entries with similar or identical themes were merged or grouped in order to answer the research questions. A description of each theme was subsequently developed, and a concerted effort was made to create succinct and appropriate theme narratives designed to instantly convey the essence of its components.

In Step six, produce the report, the researcher focused on analysing the data and crafting a narrative on the meanings derived from the experiences of participants in the context of addressing the research questions. The output of the thematic analysis was employed as part of the broader analytical requirements of the multiple case study approach, ensuring that it respected this study's theoretical framework, the details of which are presented below.

4.3. Case study data analysis

The practical goal of the data analysis is to find answers to the research questions in the data. To achieve this goal, the conceptual framework developed for this study in chapter two is used as a theoretical frame for analysing the data from the cases. The data analysis is separated into two key components: (1) within-case analysis (identifying unique patterns within each case) and (2) cross-case analysis (identifying generalised

patterns across cases). This consolidated data analysis approach is employed in the study to verify and sharpen the theoretical propositions derived from the literature review.

4.3.1. Part 1: Within-case analysis

A within-case analysis enables the research to relate a story derived from the case studies to better understand the phenomenon in its natural setting. During the within case analysis, each case is analysed in turn using thematic analysis to:

- (i) establish what influences and shapes a participant's experience when interacting with e-government;
- (ii) identify the resource quality attributes a participant values when using e-government to support daily living; and
- (iii) determine whether participants experienced an effective use of e-government.

In this research, a standard of *use* was established to determine what constitutes an effective encounter for citizens using e-government. The criteria for “successful” use of e-government (i.e., effective use) were adopted from the three stages of use defined by Burton-Jones and Grange (2011) that are necessary for effective use, shown in Figure 4.1.

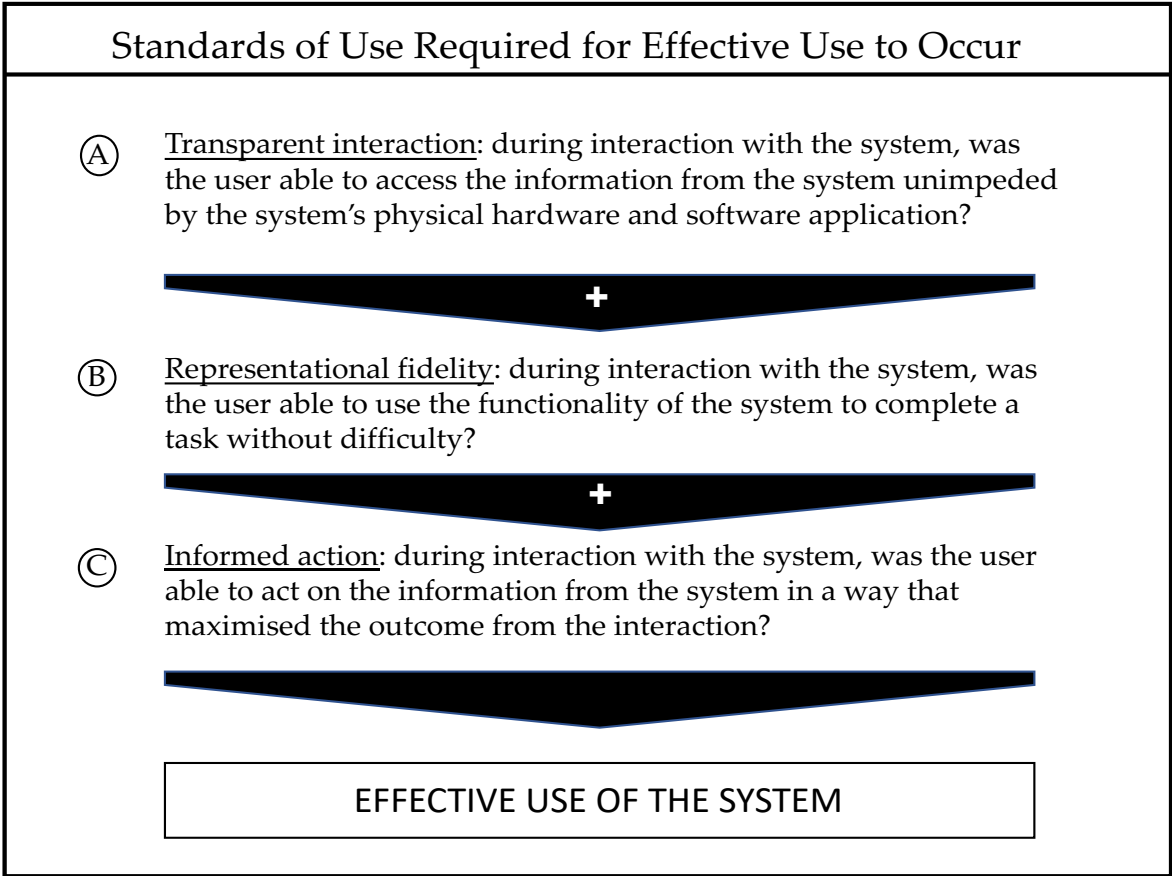


Figure 4.1. Three standards of use needed for effective use
Source: adapted from Burton-Jones & Grange 2011

In this study, effective use of e-government is considered to have been achieved if all three of the above standards of use were met. In considering data from individual cases, it was particularly relevant to this study when participants perceived particular resource quality attributes significant enough to consciously recollect them as part of their experience with e-government.

Table 4.2 provides a synopsis of the 20 cases analysed. The case descriptions facilitate an appreciation of the essence of the participants' individual stories and include brief profiles (age, residential location and nature of disability). Participants' function levels (as defined in Section 3.5.1.) are specifically shown in the summary and relate to an individual's ability to execute a task using e-government without the aid of assistive

technology, the primary purpose of which is to maintain or improve an individual's functioning and independence to facilitate participation in e-government. A low level of function implies that the participant needs assistive technology, whereas a high level of function implies that the participant does not need assistive technology. An overview of the medical conditions articulated in these cases are provided in Appendix H to help understand the profound nature of the disability of participants.

Case No.	Case Description	Level of Function
C1	57-year-old woman living with vision impairment in a metropolitan area	Low
C2	62-year-old woman living with Parkinson's disease in a metropolitan area	Low
C3	51-year-old man living with a vision impairment in a metropolitan area	Low
C4	51-year-old man living as a paraplegic in a metropolitan area	High
C5	56-year-old man living as a quadriplegic in a metropolitan area	Low
C6	62-year-old woman living with multiple sclerosis in a rural area	High
C7	43-year-old man born with spina bifida living in a rural area	Low
C8	61-year-old man living in a rural area who has recently become a single leg amputee	High
C9	52-year-old man living as a paraplegic in a rural area	High
C10	23-year-old man born with cerebral palsy resulting in impaired lower limb functionality who lives in a rural area	High

Case No.	Case Description	Level of Function
C11	49-year-old woman living with vision impairment in a metropolitan area	Low
C12	30-year-old man born with cystic fibrosis living and working in a metropolitan area	High
C13	49-year-old woman diagnosed with hereditary neuropathy living and working in a metropolitan area	High
C14	56-year-old woman born with spina bifida living and working in a part time capacity in a rural area	High
C15	43-year-old woman with a vision impairment, living and working in a rural area	Low
C16	39-year-old man living as a quadriplegic in a metropolitan area	Low
C17	57-year-old man living as a paraplegic in a metropolitan area	High
C18	58-year-old man living as a paraplegic in a rural area	High
C19	35-year-old woman living with muscular dystrophy in a rural area	Low
C20	40-year-old woman living with multiple sclerosis in a rural area	Low

Table 4.2. Case descriptions analysed within case

Each of the 20 cases is presented in the same way. First, a descriptive summary of the participant is offered, providing a sense of their contextual situation and its impacts on their use of technology. This is followed by an analysis of the participant's recent experience using e-government to support their daily living from an emic perspective. Themes of explanation that emerge from the analysis of their experience are highlighted.

Finally, an ideograph is presented indicating the stages and outcomes of the participant's experience using the conceptual framework presented in Section 2.9 highlighting how each participant experienced the three standards of use required for effective use of e-government (shown as stages A, B, and C on the ideograph). These stages are employed to analyse whether e-government supported the participant in terms of meeting each of the required criteria for effective use of the service, as well as to determine the outcome from this use. Parentheses denote a negative outcome experienced by the participant, while no parentheses signify a positive outcome. This information is applied later in the cross-case analysis for comparison.

4.3.1.1. Case 1: 57-year-old woman living with vision impairment in a metropolitan area

C1 has been living with a visual impairment condition for over 30 years and has been legally blind for the last 20. She self-identifies as having a good level of computer literacy and is significantly reliant on online systems to stay connected to the world. She expects government systems to be designed to cater to people like her with similar conditions. She explains that the **usability of the system** is important to individuals living with vision impairment:

“When I move between screens, there is no way I can tell when the next screen has loaded, as I can't see the screen, so I just have to wait. If you hit the enter key too early the page will just reload again from the start. So, I just have to be patient and wait a sufficient amount of time before trying. If there are a lot of screens to go through this can be frustrating.” (C1)

She is categorised as having LOW FUNCTION and relies on others for assistance if the system she uses is not fully compliant with **industry accessibility standards**. However, she is willing to try new things, and as the technology improves, she has expanded her use of it. She is now striving to utilise social media sites to further enhance her connection to the world.

An analysis of C1's experience using e-government shows that she values the ability to complete tasks independently using e-government. Her vision impairment means that she expects e-government to be built with **accessibility** in mind, designed for easy navigation between screens, with field inputs that are **easy to understand** and simple to follow, and enable the **usability of the system** for someone with her condition.

"I feel that the system needs to be a lot more accessible for blind people. I believe government systems should be properly designed and tested in consultation with people living with disability." (C1)

She needs a system that is **consistent** so that she can easily anticipate the next activity, with seamless navigation and all prompts being accessible-enabled. She also expects that an online government system will be **reliable, available** and error-free. She provides an example:

"Well the very first time when I tried to get [into] myGov, I had so many problems and eventually it took me days and days. I had someone sighted, just a friend, try to help me see what sort of screens [were appearing on the computer]. It's not saying to me—it's not talking to me—I don't know where I am. [My friend says], "Oh, there's a pop-up box says blah," and I say,

“Well, that’s useful. There’s a pop-up box in the middle of the screen but it doesn’t talk to me so how the hell do I know there’s a pop-up box? [The system] should be error-free before it is rolled out.” (C1)

She places high value on screens and systems devised to be **intuitive** and easy to remember, designed with users in mind, and developed based on user input to support daily living. She advocates a system that does not take hours of effort to complete a transaction, is **operationally efficient**, and provides her with the information she requires to make decisions. She values information that is **relevant** to her circumstances, **clear**, **easy to find and understand**, and is applied **consistently** to all parts of the system. She explains:

“The information provided was not clear and it is difficult to understand the structure of the system. I find getting access to all types of information very tricky and cumbersome. There is no easy way to navigate around the system, so I haven’t used the system to access information.” (C1)

She believes that **security** is essential but should not impede usability nor encourage bad habits that are counter-intuitive to the security of the system.

“The login process is difficult. The login name is very long and made up of whole strings or numbers which are meaningless to most people. To avoid forgetting, I save the login and password on my computer and accept that this is not good security but feel that there is no other convenient way.” (C1)

She believes **trustworthiness** of the system is essential but needs to be developed over time based on performance. C1 also values **timely responses** from public service

personnel to her queries. She wants to be able to contact someone who understands her situation when confronting a problem. She explains:

“...So, and then when I finally got hold of someone that's after two or three departments worth, you know, you lodge your questions and they ring you up after couple of days and they say, “Oh what exactly is it you really want?” even though you spelt it all out on the email and then they go “Oh that's an IT problem” and they send you onto the IT people. And then once again I go through the whole lot of questions and discover the person I'm talking to will just - well not just - but is not the programmer or anyone, it's someone who collects information to pass it onto the programmer. So, all the explanation I gave is probably gone straight over the top of this person's head, but I don't know why she even had to ring me, when I spelt it out in the email.” (C1)

C1 did not have an effective use of e-government in attempting to submit a payment claim; Figure 4.2. provides an ideograph outlining the stages and outcomes of this experience. C1 was not able to use the resources of e-government without difficulty due to the inconsistency in accessibility standards across the system (A). Furthermore, she was unable to reconcile her payment data with her own records and was impeded in completing her task due to system errors during the experience. As a result, she ultimately had to ask her carer for assistance (B). This poor experience made her question the trustworthiness of e-government, thereby impacting her trust in government as a whole (C).

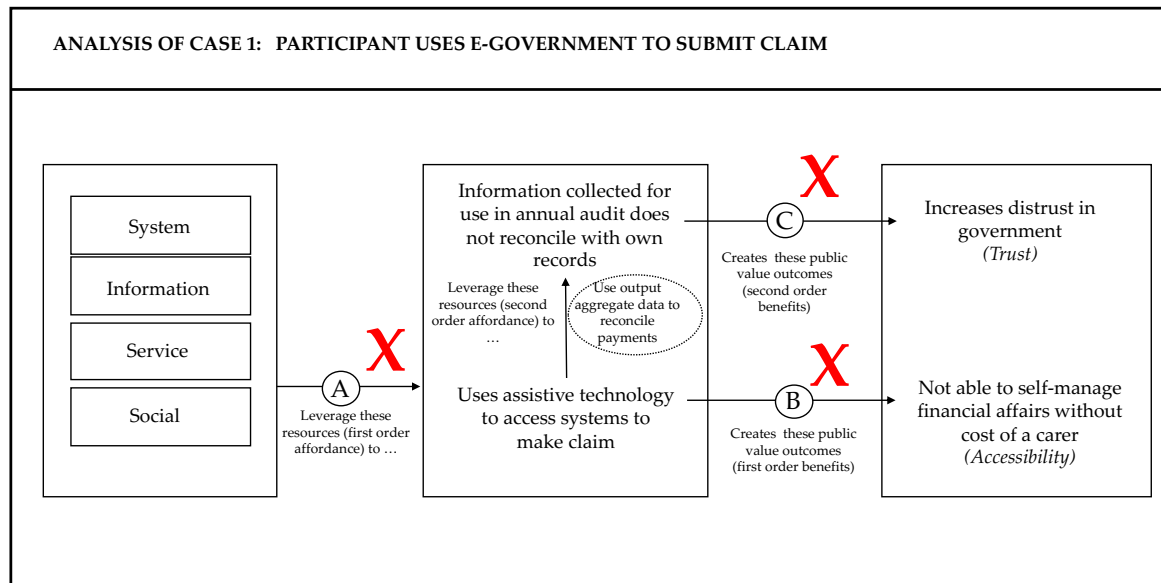


Figure 4.2. Analysis of C1's experience using the conceptual framework

4.3.1.2. Case 2: 62-year-old woman living with Parkinson's in a metropolitan area

C2 self-identifies as having a good level of computer literacy and is categorised as having LOW FUNCTION. She has been using technology at a competent level in the workplace since 1990. She is now retired due to her physical condition but remains active with art and other creative and social endeavours, continuing to play an active and prominent role in the community. Due to the degenerative nature of Parkinson's, C2 needs to carefully monitor everything related to her medical visits and relies on e-government to meet this need. She claims this has proven difficult when using e-government, as the information stored on these sites is often verbose and lacking in **relevance**.

"Due to my current disabilities, I have difficulty processing large chunks of information both verbally and written. Difficulty learning new methods of undertaking IT activities and retaining this information." (C2)

She finds herself increasingly reliant on the intuitiveness of applications like “Siri” to help her remember how to perform tasks. She feels that e-government should stay current with emerging technologies and not focus primarily on financial transactions, such as filing claims and receiving reimbursements from the government. An analysis of C2’s experience shows that she values **relevant, complete and current** information presented in a straightforward manner to support her daily living.

“I am confronted with verbose amounts of written information and there is nowhere where I can verbally ask or type in simple queries which would lead anywhere.” (C2)

As C2’s Parkinson’s condition progresses, she values **easy-to-understand**, simple language to enable her continued functioning and engagement in society.

“I want the system to use language that is simplified in its context and does not make the presumption that the user has an intimate knowledge of government in-house jargon.” (C2)

She values full and functional systems that provide more than financial administration and broaden their service offerings to cater to her complete set of needs. She also wants e-government to keep step with evolving technologies and to utilise **innovative** technology to improve the usability of the system in a way that facilitates easy navigation that will enable her to stay connected online.

“I expect a government system to allow the individual citizen to be able to update system records in an ‘e’ environment which is familiar to them, and is adapted continuously to meet current standard ‘e’ operating environment,

which many Australian citizens use on a daily basis.” (C2)

She values being able to **access** systems easily, without having to navigate cumbersome, complex or outdated security features, as she believes that **security** is essential. She has concerns that the complexity of security features in current government systems could leave the system less secure, and therefore less trustworthy. However, she believes that **operational efficiency** of public services will only be achieved if data concerning an individual’s holistic circumstances is shared across departments, while ensuring that ownership of this data remains with the citizen.

“I would like e-government [...] to collate from its public records all data held on individual people in an open responsive manner, so when a citizen enters a new area of benefit etc. from the government, the system is responsive, reliable with its information gathering and can provide an honest, up to date summary of an individual Australian citizen.” (C2)

She believes that the **trustworthiness** of systems is essential, which might be achieved when citizens are confident that they are designed to address their needs.

“[Lack of trust in the system] influences my decision to keep my own records because I know the value of keeping up-to-date and complete records, and I don’t trust that government systems are able to do this.” (C2)

C2 expects information flows to be seamless between the private and public sectors, ensuring that the citizen experience is enhanced by the **operational efficiency** of agencies by removing the current onerous administrative **cost and time** wastes.

“Every time my health records are opened, a letter is sent to me, so as you can imagine that this would result in a lot of mail, given my need to access current information almost daily about my condition. I consider this to be a waste of taxpayer money.” (C2)

C2 did not have an effective use of e-government in retrieving her medical records for the NDIS annual review. Figure 4.3. provides an ideograph outlining the stages and outcomes of this experience. She was unable to utilise e-government resources without difficulty due to the lack of integrity and completeness of the data on the system (A). As a result, she could not effectively employ the functionality of the system to manage her medical records using a single source (B), nor was she able to apply the information to maximise her desired outcomes. The consequence of her negative experience was needing to keep her own records outside of the system, leaving her with a sense of mistrust in government (C).

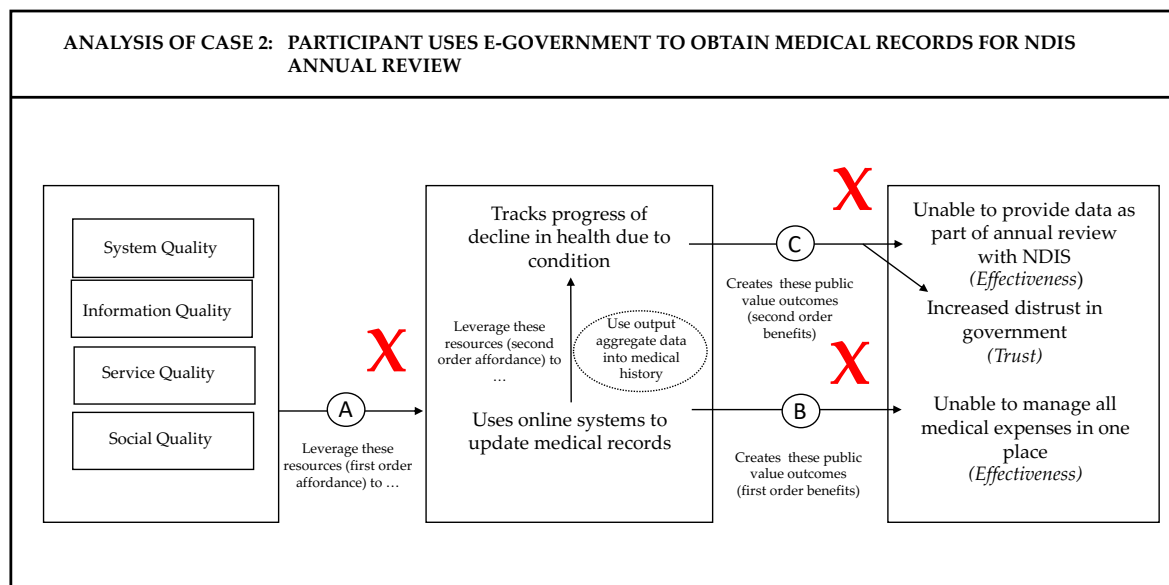


Figure 4.3. Analysis of C2's experience using the conceptual framework

4.3.1.3. Case 3: 51-year-old man living with a vision impairment in a metropolitan area

C3 self-identifies as having an excellent level of computing skills. He is self-employed as an accountant and is an active user of technology, employing a multitude of online systems for banking, share trading and purchasing goods, as well as government systems to support his daily life. His condition has deteriorated over the last 20 years and he is now classified as legally blind. C3 is categorised as having LOW FUNCTION and is reliant on screen-reading technology to access online systems. His time is scarce due to work commitments; as a result, he will simply not use the online system if it is inaccessible, ineffective or not easy to use.

“In the past it would be down to the point when I get somebody to do it because I couldn't do it. There were a lot of screens and you would have to backtrack and go forward and quite often it would also time out which was a real hanger, because when you're not seeing the screen, you do take your time, you're more cautious especially when you're dealing with money and it would time out on you so you would have to start at point one again.” (C3)

He is nonetheless positive about the improvements he is seeing across government systems, although he believes much still needs to be accomplished. An analysis of C3's experience shows that he values **time** and **cost efficiency** gained through e-government. He is a businessperson and an active user of online systems to support his business ventures, as well as to participate in government activities. He values **accessibility** of the sites he uses to conduct business and does not have time to contend with inefficiencies in government services, preferring instead to pay a third party to undertake tasks he finds too

challenging. As someone living with a vision impairment, he believes that government systems should cater to his **accessibility** needs. He explains:

“The online system does not cater for my accessibility needs. The screens are all mouse-driven so they don’t work effectively with a screen reader. They say that it is keyboard driven, but from my experience very little is. To give another classic example, I get an official letter and a 15-page document from the NDIS, which is my plan, but it does not come in a screen readable format. I had to ask a friend to help me export it into Adobe to make it screen readable. I would expect that this should be a service they offer and not leave it to the participant to have to work through this.” (C3)

He values service **innovation** and expects online services to be designed with users in mind. He believes it is essential for online services to be **reliable and useable** and that systems that are well structured, simple and easy to use are more **accessible**.

“In my view, they tried to make the system flexible for all people but ended up making it unusable for all. At the moment it is just easier for me to get somebody to do it for me.” (C3)

He values **responsiveness** in service delivery and feels that **empathy** will improve efficiency in the public service and increase effectiveness in how citizens use services. He has **trust** in the systems and believes that an avenue to provide **feedback** on how services are performing are essential as a reflection of government’s openness to citizens’ needs.

“[Through a recent support experience] I also learnt a bit more about the online system because in the past, when it didn’t work or was too complex to

get even very simple answers, I would go, ‘I can’t be bothered—forget it, it’s not worth my time and energy.’ Whereas now I go that bit further because it looks like they have really picked up their game and this helps me maintain my independence.” (C3)

C3 did not have an effective use of e-government in submitting his quarterly tax payment. Figure 4.4 provides an ideograph outlining the stages and outcomes of this experience.

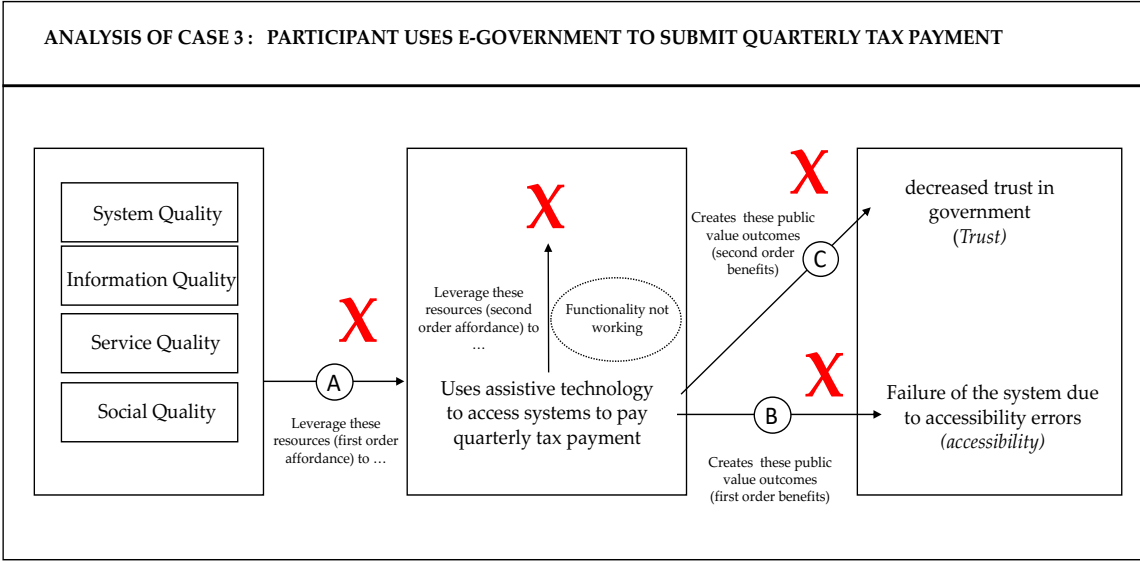


Figure 4.4. Analysis of C3’s experience using the conceptual framework

C3 was not able to utilise the resources of e-government without difficulty due to system errors (A) and was not able to complete his tasks as a result (B), causing him to mistrust the government’s intentions (C).

4.3.1.4. Case 4: 51-year-old man living as a paraplegic in a metropolitan area

C4 self-identifies as having an excellent level of computing skills and states that he has been using technology at an advanced level for most of his professional life. He

manages a ten-pin bowling group for people with disability via a series of websites. He is an active user of technology, including online banking, Facebook, Instagram and other social media technologies, and he is also an active user of several government online systems. He is categorised as having HIGH FUNCTION. He has been a paraplegic for over 40 years, since the age of nine, and has experienced the evolution of government services during that time. He provides an example of a past service experience, noting that although the e-government service experience has improved, progress still needs to be made:

“At the beginning, servicing was always [via] face to face appointments. You had to always go to a social security office and wait for hours to get an appointment. You could try ring them up for an appointment, but there was always a six month wait. You could try your luck by arriving at an office to see if they would take you. One day I waited for eight hours for an appointment and did not get it. Even though they now have online systems you still have to ring up or go face to face for some activities. You can wait for up to three hours on the phone before being served.” (C4)

He believes that government systems should be developed for the majority of users, ensuring that those with the greatest need are accommodated so that the systems work for all. An analysis of C4’s experience demonstrates that he values the convenience of completing all tasks with government through online channels. He believes that for systems to be efficient, they should be designed with **ease of use** and **simplicity** in mind. He particularly values access to information that is prompt, **clear, accurate, relevant and easy to understand**.

“When you go into a site you've got to be able to feel that information you're getting from that site is accurate. It's up to date and it's giving you what you need without having to run around the block 15 times to try and find that information. I think if something's set up in a logical manner, you feel that you can trust where it's going. You trust you will be able to achieve what you want to achieve on that website.” (C4)

C4 values the **usability of a system** that is well-structured and enables him to easily locate and access the information he requires to support the activities of daily living.

“The system does work very well for getting into where you need to go, but it does not always provide you with all the information that you want when you do get there. ...You need to have access to lots of information to provide to the OT. Nine times out of 10 I will just go through and print out everything, or write everything down, that I think I'm going to need, and then make the contacts, which you shouldn't have to do these days.” (C4)

He values a **timely response** to service enquiries and believes that public service officials need to fully understand the circumstances of citizens in order to provide effective government services. He explains:

“When you're being responsive, you need to listen to what the person is actually saying. Get an understanding of what their circumstances actually are. If you don't get it, you don't fully understand what their circumstances are, you can't respond to them properly. You can't give them the best service that you can give them.” (C4)

He values a system that is useful, **intuitive**, and structured in a manner that is **easy to navigate**.

“Once I was in the system, trying to find information on the site is even more frustrating because the search engine that finds services and practitioners is limited. The system won’t let you search by either occupation, service or practitioner, which makes this search engine useless. It wasn’t intuitive, it was very clunky, and I can understand why people would just go, ‘Yep, this is all too hard!’” (C4)

He advocates for more effective e-government by structuring it in such a way that enables individuals to perform their daily activities in a straightforward manner. He explains:

“The logic behind some of the setups and the menus I’ve found [to be] disconnected. There’s stuff that I would have expected under my profile, isn’t there—it’s under my plan, but what’s in the plan isn’t connected to my profile, sort of thing. You can’t access the information from either area, which with some of the things you’ve got to do, you need to have access to both lots of information. Especially if you’re trying to contact somebody to, yeah, to make an appointment to get a booking, to get a service, for whatever, you need both lots of information—but you can’t get both lots of information at the same time.” (C4)

He values the independence he has gained from completing tasks through online channels and believes that government should extend these channels significantly to

increase their effective use. He expects government systems to support and enable citizens’ holistic needs and not simply deliver the core elements.

“I had to refill in all the information again that had been flying backwards and forwards over the months via email between myself and the NDIS. I just don’t understand why they can’t make the information input online from the beginning.” (C4)

He believes that satisfaction with an online service is linked to the interdependence of multiple system components, including **quality of the information, reliability** and **availability** of the system, and **trust** in the system.

In attempting to search for the details of an Occupational Therapist on the system, C4 did not have an effective use of e-government. Figure 4.5 provides an ideograph outlining the stages and outcomes of this experience.

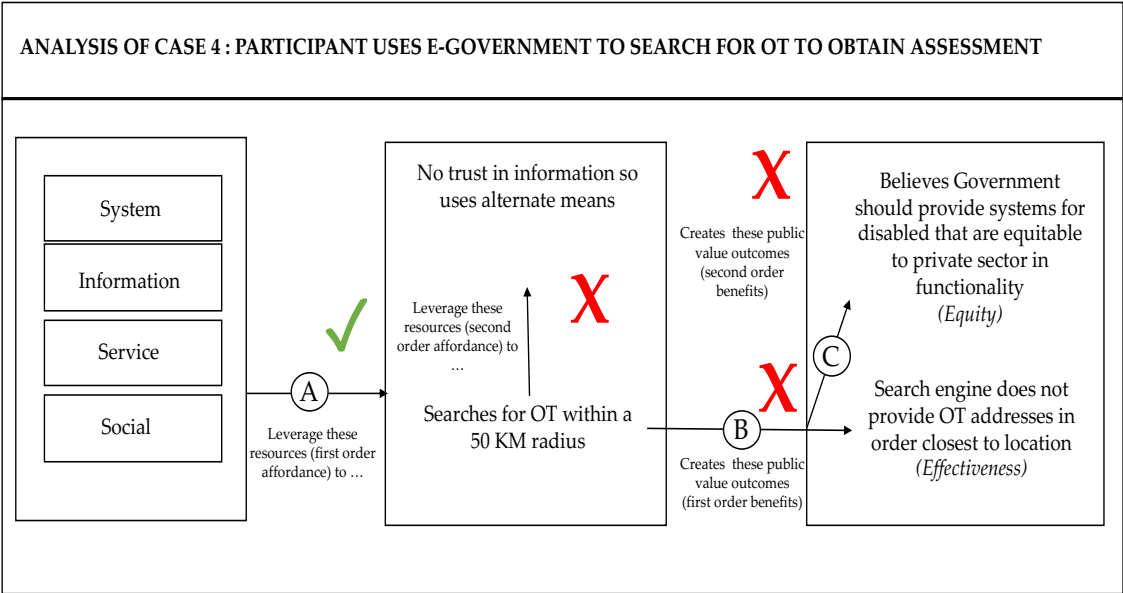


Figure 4.5. Analysis of C4’s experience using the conceptual framework

Although C4 was able to utilise system resources to access information (A), it was not structured in a way that provided the functionality that enabled him to complete his task effectively (B). As a result, he ultimately needed to resort to external means to achieve his goal outcome. This left him with a sense of inequity in the systems provided by government to those living with disability (C).

4.3.1.5. Case 5: 56-year-old man living as a quadriplegic in a metropolitan area

C5 self-identifies as having an excellent level of computing skills gained from an early background in mechanical and systems engineering. He acquired his condition at the age of 38 and lives independently, supported by carers. Since then, he has been at the helm of an assistive technology consulting business. He is categorised as having LOW FUNCTION. He is an active user of technology, including commercial and government systems, and a prominent advocate for the use of assistive technology to support those living with disability. C5 personally relies on assistive technology, including voice technology and an infra-red sensor attached to his forehead, to perform the activities of daily living, from operating his wheelchair, using his desktop, to opening doors and controlling household appliances.

“After the accident, technology was going to be my way out of this and back to the world. It turned out that a disabled person working with technology wasn’t well accepted in those days - so no chance of getting work there. Technology became my work as an independent consultant - but in a role recommending it to others who have a disability.” (C5)

He is optimistic that the advances in technology over the last ten years have significantly altered the outlook for those living with disability, and he believes that government has a responsibility to set the standard for all other sectors to follow. C5 is profoundly disabled and relies significantly on technology for all aspects of life. He has full-time care for assistance with daily living, but he remains fiercely independent when it comes to any activities he can accomplish autonomously using assistive technology.

“I value my independence greatly, and therefore rely significantly on technology and the accessibility of online systems to stay connected to the world.” (C5)

He values the independence facilitated by online government systems, particularly those that are truly **accessible** and **easy to use**. He cited an example of a failure in accessibility of the system:

“They’ll call it an accessible form. Certainly, can’t enter data into them - not without changing the form, they haven’t locked it in a form filling mode. So, it’s a simple thing, but they often haven’t done that. Or they just, you’re just given a form in PDF that’s completely locked down. You’ve got to print it out and fill it in - and that’s exactly how they intend you use it.” (C5)

He values features that allow quick and easy access to the information required to undertake daily living tasks and becomes frustrated with avoidable inefficiencies, such as locating information on government sites that are poorly constructed or provide superfluous material.

“Finding information out from the [government] online system, means I have

to set aside days to do it. A search takes me entirely to the wrong place or gives me so much information to read through that it becomes an exhausting process in itself. The amount of superfluous answers to my searches that take me nowhere makes it really difficult, to the point where it's actually easier to use Google to find what I want from the website. So, for me, finding information on the online system is a major issue." (C5)

Although he believes **security** is essential for any online government system, he feels that privacy and what that entails is not well understood or appreciated. He asserts that privacy requirements, if taken to the extreme, could impede enhanced system capabilities that could positively impact on the effectiveness of government agencies. For government systems to be efficient, he believes they should be tested in conjunction with standard assistive technologies to ensure that they work correctly in those instances, noting that using voice technologies makes it much less problematic for those living as a quadriplegic to navigate the system. He explains:

"Like most government websites, this system is [...] not fully accessible by standard voice assistive technology. I typically have to dictate into the dictation box and then transfer the information. I could liken that for you to having to type something into notepad and then copy it from there onto a website every time you want to input text. So, it's a bit painful—you get it done but it's slow and tedious." (C5)

He expects government to be an exemplar in the provision of **equitable** services and to promote the rights of minority groups and those living with disability to access online systems. He stresses that government's role in promoting **accessibility** to digital

services will enable those living with disability to more successfully remain connected to the world and function as productive members of society.

“I believe government has a role in ensuring that all public online systems are fully accessible to those living with a disability to ensure social inclusion. The benefit for all users is that accessible websites, electronic documents, and forms are much easier for everyone to use. If they don’t show this level of leadership, then who will?” (C5)

C5 did not have an effective use of e-government in attempting to submit a claim form using the system. Figure 4.6 provides an ideograph outlining the stages and outcomes of this experience.

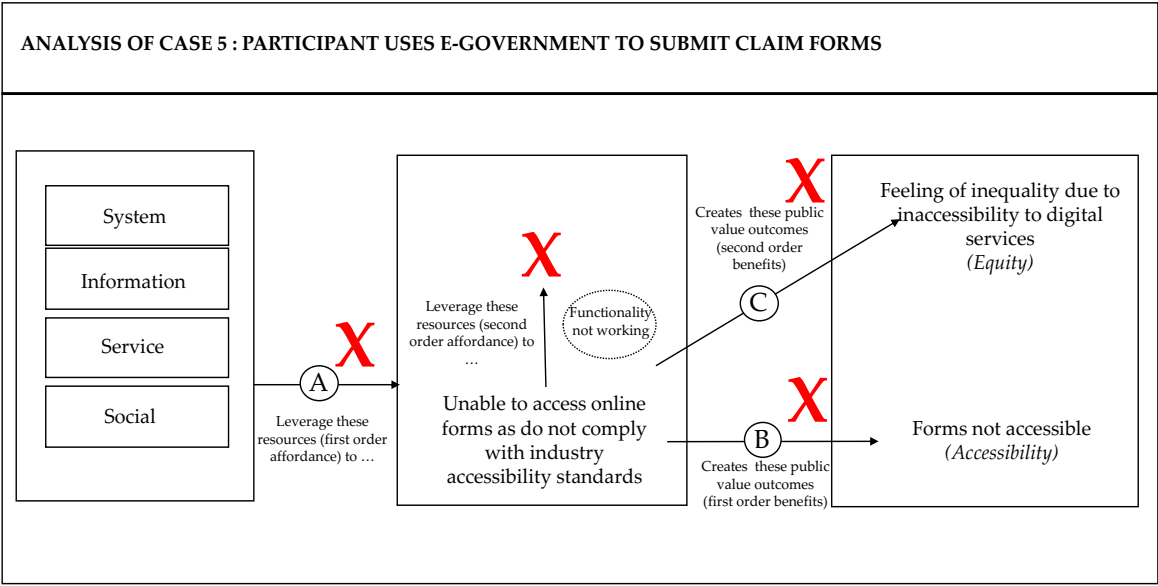


Figure 4.6. Analysis of C5's experience using the conceptual framework

The resources of the system were not fully accessible using industry standard assistive software (A), and the information was difficult to locate once C5 had navigated through these obstacles (B). The experience resulted in C5 having to ask his carer for

assistance to achieve his goal outcome, creating a perception of inequity in the provision of digital services for those living with disability (C).

4.3.1.6. Case 6: 62-year-old woman living with multiple sclerosis in a rural area

C6 self-identifies as having a good level of computing skills and is an active user of both government and commercial online systems. She is categorised as having HIGH FUNCTION. She has been living with the condition for over 26 years but recently experienced significant deterioration, requiring the support of mobility aids. Her experience with government online systems has been poor due to the lack of government **feedback** following her requests. She explains:

“I did all the paperwork and submitted the request online, and nothing happened. It went on for weeks and weeks and weeks. It has taken 4 months since my submission and it's just taken forever. I have eventually got an outcome, but it has taken an enormous number of phone calls and emails. I was emailing them almost daily and getting no response. The only time I got a response was when I actually went into the office.” (C6)

Her sense of the **trustworthiness** of the online system has been impacted by what she perceives as a lack of **relevance** of information on the system, which she feels could be addressed by improving the **usability** of the system by simplifying its design to allow simpler navigation.

“I do have issues with the information on the system. If I am searching for specific information, it is not easy to find answers to what seem like really simple questions; you wonder if they are doing this on purpose. You have to

navigate numerous screens, just to try and find what you need. I am quite computer literate, but the NDIS site is more than a little confusing.” (C6)

C6 places significant emphasis on the operational efficiency of public services to obtain the necessary financial resources that would enable her to remain socially included for an extended period. As a result, she values **timely responses** to her requests and **feedback** on progress relating to these requests. She states:

“I find the major problem I have with the system is that I just don’t get any response back. I put in a lot of data, either requesting information, submitting applications or invoices, but I don’t get any feedback on what action has been taken or notification of the status of my requests.” (C6)

She values **empathetic** and **friendly** customer service, with commitments being provided and upheld in a transparent, efficient and timely manner.

“The system provides no tracking on the status of my requests and when I phoned, they were hardly responsive. They would commit to getting back with an update but never did. I phoned them several times, and despite their politeness, the only response appeared to be to pass the request on to someone else.” (C6)

While she concedes that the government has good intentions when it comes to those living with disability, she feels much needs to be done toward establishing trust within rural communities. However, she does **trust** that the information she submits via e-government is dealt with securely.

“I believe government has the right intent with the scheme, and I trust that the information that I give them will be used in a sensitive, confidential and secure way.” (C6)

C6 did not have an effective use of e-government in using the system to request additional financial support. System resources enabled her to gain access (A), but locating the relevant information proved challenging. Therefore, the system functionality did not support C6 in completing her desired task (B) and she was able to accomplish her goal outcome only after repeated calls to the service centre, followed by a face-to-face visit. This resulted in a lack of trust of government (C). Figure 4.7 provides an ideograph outlining the stages and outcomes of this experience.

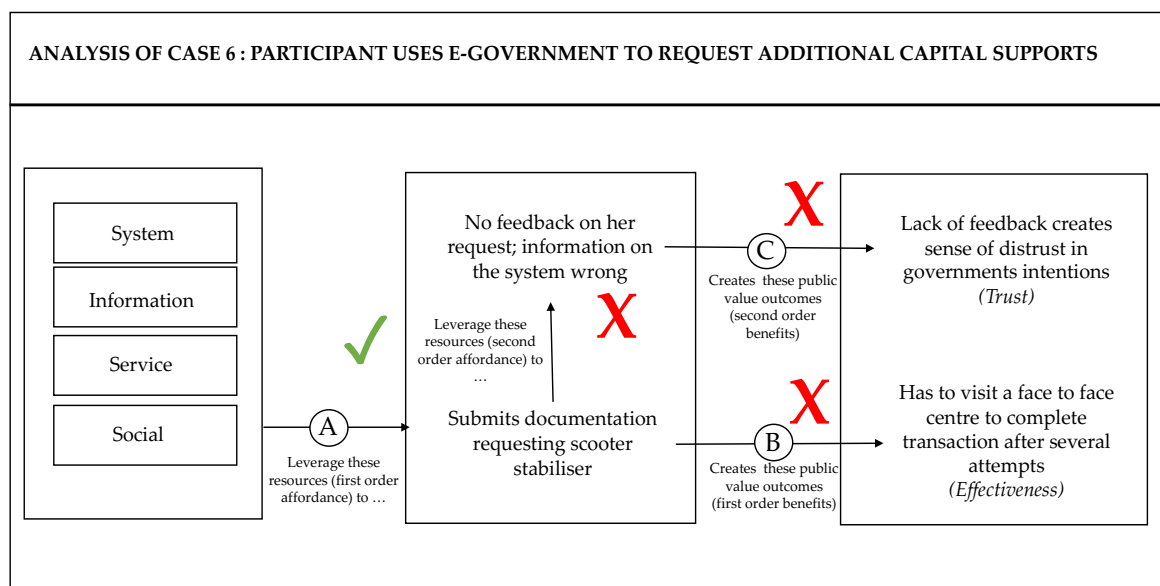


Figure 4.7. Analysis of C6's experience using the conceptual framework

4.3.1.7. Case 7: 43-year-old man born with spina bifida living in a rural area

C7 self-identifies as having a good level of computing skills and is categorised as having LOW FUNCTION. Although he is an active user of technologies such as Skype

and YouTube, he has an inherent mistrust for any online application for commercial or financial purposes. He has a strong personal preference for face-to-face engagement, as it affords direct feedback and allows him to assess the authenticity of the communication. Part of his justification for not utilising technology for financial needs is related to his secondary condition of hydrocephalus, which presents challenges for him in reading comprehension.

“I can’t read and absorb complex sentences easily. It takes a bit of time. It is much easier if the information is developed in an easy to understand manner.” (C7)

He believes that he uses technology appropriately to meet his varying needs and current preferences. C7 prefers to receive limited quantities of information in plain, **easy to understand** language, and he therefore values face-to-face or verbal interactions, as he believes that people will better appreciate his circumstances from these personalised conversations.

“I prefer to do most of my [...] government transactions face to face. I find dealing with people a better way to get across what I want. I can generally tell from their expressions whether or not they are being authentic and are trustworthy.” (C7)

He also values staying up to date on his transactions, which enables him to better plan his daily needs. His deep mistrust of online systems to handle financial transactions due to intense concern over cyber security makes it unlikely that he will utilise government online systems in the future for anything other than verifying that his plan is

progressing effectively. C7 did not have an effective use of the system to track his NDIS plan. Figure 4.8 provides an ideograph outlining the stages and outcomes of this experience. Although he successfully exploited the system to meet his limited needs (A+B), he could not use the information from the system due to his inability to absorb complex information, resulting in mistrust of e-government (C).

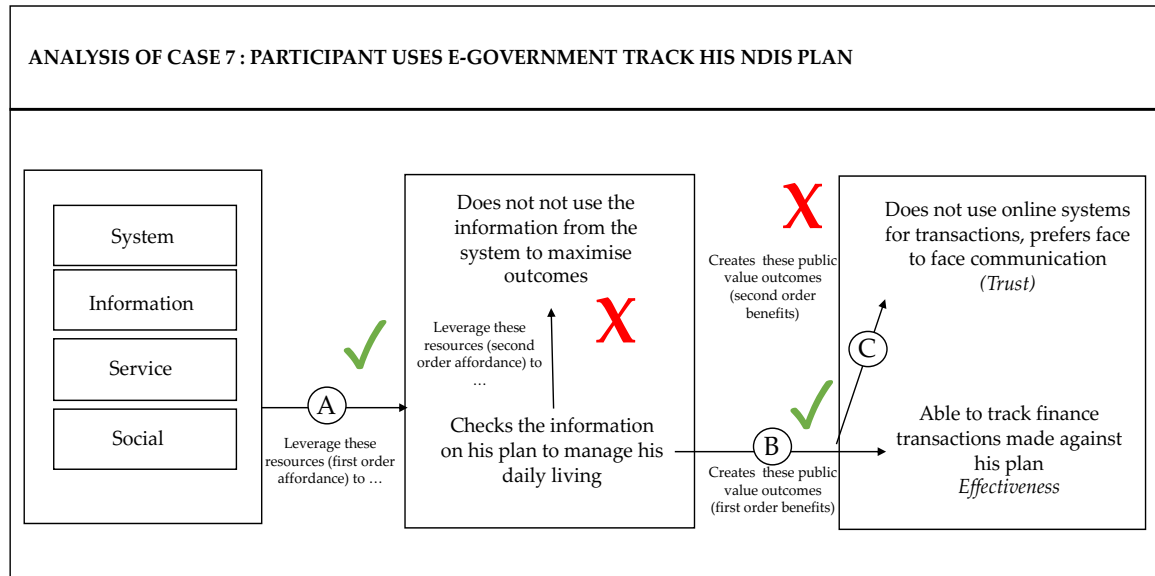


Figure 4.8. Analysis of C7's experience using the conceptual framework

4.3.1.8. Case 8: 61-year-old man living in a rural area who has recently become a single leg amputee

C8 self-identifies as having a good level of computing skills, acquired from years of working with computers as a youth support worker, and is categorised as having HIGH FUNCTION. Lack of mobility resulting from his recent leg amputation has dramatically curtailed his ability to perform his usual occupation; consequently, his use of technology has increased significantly. He becomes frustrated when there is no confirmation feedback from the system after submitting information, which is critical to his effective use of the system.

“I initially had to scan some documents onto my plan. I did not get an acknowledgement that the documents had been successfully uploaded. In my opinion, there is nothing worse than scanning something and wondering if they had been received.” (C8)

He believes that government systems should be designed to be more **user oriented** and focused on citizens living with disability who use e-government rather than relying on their care providers.

“I don’t particularly like the site at all as it seems to be designed for carers. I understand a lot of disability on the scheme is about supporting people with intellectual disability and functional impairments who need ongoing support from carers. So, it is probably not surprising that the online system appears designed for use by carers and not for people who self-manage.” (C8)

C8 values the convenience of accessing services online to support his daily living, in particular because his recent disability has had a significant impact on his mobility. He believes that the quality and **reliability** of the system are essential to the efficient delivery of public services to rural areas. He values a system that is **easy and simple to use**.

“I found the process relatively simple, even though there are enough typical little glitches to irritate you.” (C8)

He believes that **equity** in network access for those in rural locations is a socially desirable outcome and essential to his ability to engage with government online services **efficiently** and effectively.

“What they don’t seem to understand is that when you are in a rural setting, it is not as if you can simply ask somebody about specific information needed to get through the identification process [for e-government]. Nor do they appreciate that you can’t always get access to the network from many locations.” (C8)

He values feedback on the status of online tasks and considers a **timely response** essential to the effectiveness of government agencies. He feels that lack of feedback when using e-government creates the impression of lack of trust, which in turn contributes to a sense of isolation.

“The OT had put together a justification for a particular piece of equipment, including the quotes, which I uploaded onto the site. The OT got an acknowledgement that the documents had been received, I didn’t. It gives me the impression that they are not really trusting me to manage my own affairs.” (C8)

He values **systems that are designed with the user in mind** and expects them to offer a full suite of functions to ensure effective use that enable him to accomplish everything online, as opposed to the inconvenience of executing certain transactions through staff assisted channels. Figure 4.9 provides an ideograph outlining the stages and outcomes of his experience with e-government to request price quotes for a wheelchair. C8 was able to use the resources of e-government without difficulty (A), but he did not receive responses after submitting information, causing him to abandon the online channel and engage personnel face-to-face to complete his task (B). The result was a lack of trust

in e-government and the trustworthiness of the government in general; he therefore did not have an effective use of e-government (C).

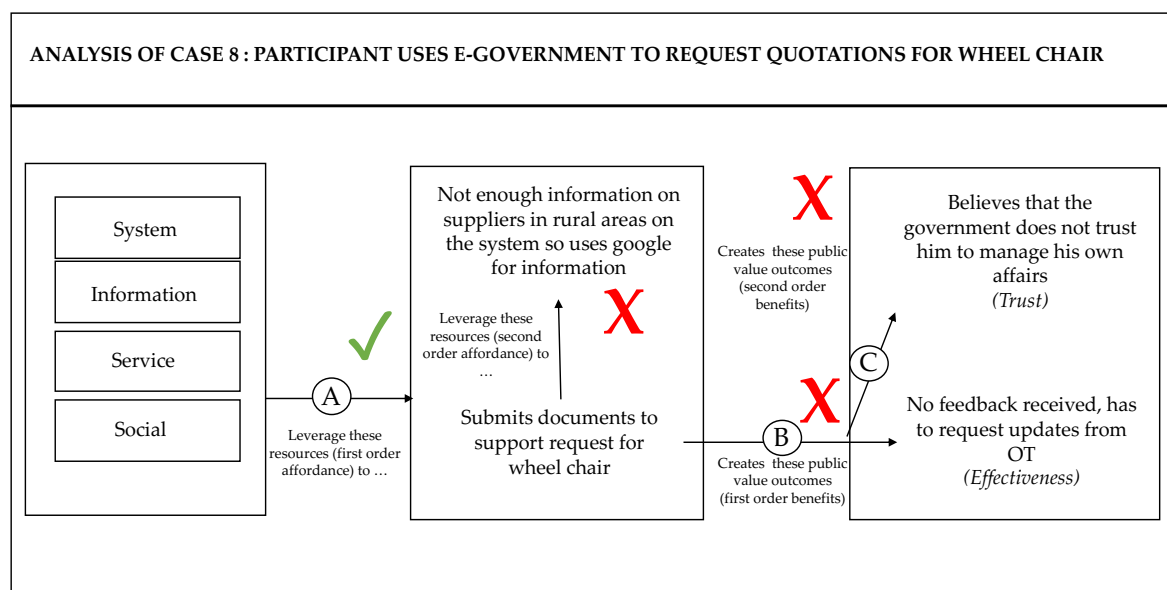


Figure 4.9. Analysis of C8's experience using the conceptual framework

4.3.1.9. Case 9: 52-year-old man, living as a paraplegic in a rural area

C9 self-identifies as having an excellent level of computing skills, acquired from years of working as a chemical engineer until his disability necessitated a career change. He has a degenerative neurological condition that impacts the function of his lower limbs. He is categorised as having HIGH FUNCTION. He is an active user of both commercial and government online systems to support his daily living. He finds the reliability of and access to networks an obstacle to using technology.

“Living in rural areas has significant barriers to the use of technology because of the lack of access to networks. Even in rural towns this access is sporadic and almost non-existent in areas outside of small community towns.” (C9)

He believes that improving access and **reliability** of online systems through enhanced network capacity in rural communities is a desirable social outcome and could go a long way in expanding service and product choice. An analysis of C9's experience demonstrates that he values system **reliability and availability**.

"Sometimes [the system] fails, particularly in the mid-afternoon, and sometimes on weekends when there's obviously updates occurring, and you can't access the system. So, at times its unreliable, but today I was able to get into the system." (C9)

He further values a system that is **easy to access** and intuitive in design.

"I do find navigating around the system self-explanatory. There is also a user guide, if you need to clarify some things as well, which is handy." (C9)

He expects the system to afford him control over his finances and the ability to make choices to support his daily living in an efficient and effective manner. He values the **responsiveness** of a system that provides updates on progress against activities and allows him to investigate details of transactions in the system.

"What is frustrating is that you don't actually get any advice back from the system on the status of what is happening. It just feels as if it goes into the hole and that's where it stays, and nothing happens." (C9)

He wants the system to store historical records so that he is not required to maintain duplicate records. He also values a system that is easy to navigate, which improves the **efficiency of the service**.

“It is really difficult to interrogate the system to get the information you need, and you can’t drill down and get enough detail. You have to keep the information yourself on a completely different system in order to get the level of detail that you require”. (C9)

He expects a system to have absolute information **integrity** to effectively meet his needs when selecting relevant service providers, so he does not need to rely on word of mouth. He **trusts** government systems and the assurances provided regarding the **security and confidentiality** in the use of his information. However, he feels that an appropriate balance needs to be struck between security and access so that it does not become a hindrance to the **operational efficiency** of public organisations.

“I trust in government systems and although it is good that they have all of those security protections in place, it does slow the process down a lot. One thing that a really high wall of security does, it actually stops people being able to help you efficiently.” (C9)

C9 had an effective use of e-government in requesting funding for residential modifications. Figure 4.10 provides an ideograph outlining the stages and outcomes of this experience. C9 utilised the resources of e-government without difficulty (A) and completed his task efficiently (B). He then provided information obtained from the system to a construction company to assist them in performing accessibility modifications to his home, thereby maximising the outcome from information acquired from the system (C).

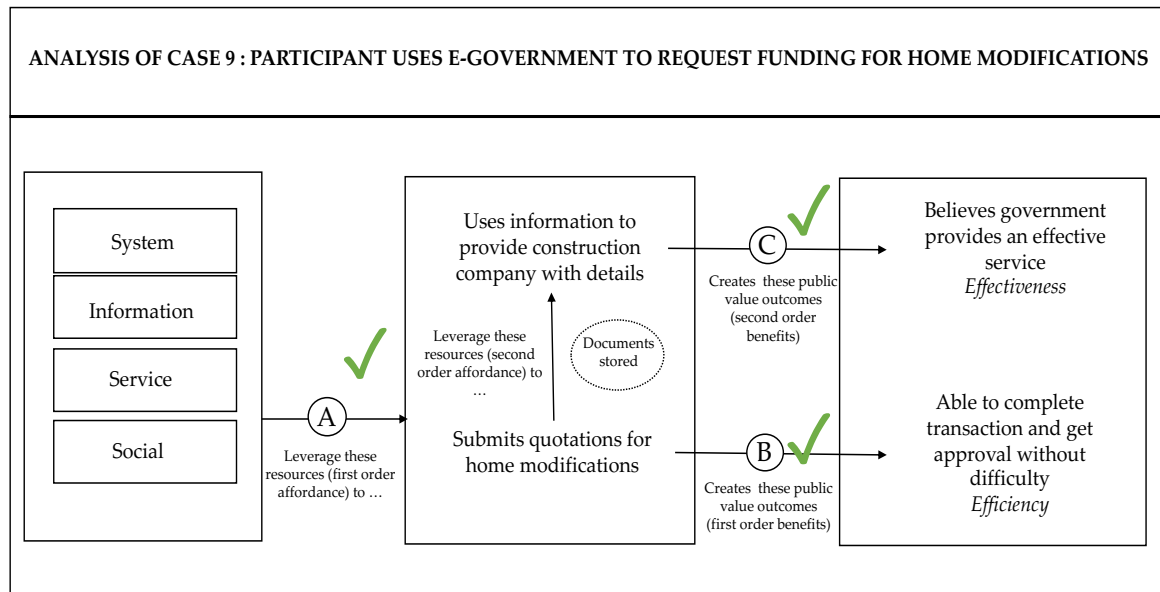


Figure 4.10. Analysis of C9's experience using the conceptual framework

4.3.1.10. Case 10: 23-year-old man born with cerebral palsy which has resulted in impaired lower limb functionality who lives in a rural area

C10 self-identifies as having a good level of computing skills, having been born into a generation that interacted with computer technology in school and as part of the daily routine. The use of government online systems has afforded him a sense of empowerment and control over his personal affairs, allowing a greater level of independence and a sense of social inclusion.

"You feel like you've accomplished something because now you understand how financial management works. And when I completed [my first payment request], I felt I had accomplished something in my life, I was independent."
(C10)

C10 is categorised as having HIGH FUNCTION. He is optimistic about the future and how technology will continue to play a role in supporting his daily living. C10 values

the improved social outcomes he has gained through the use of e-government, which affords him the ability to control his own finances and make decisions about his everyday living.

“When I first logged on as a participant, I was somewhat excited, because I finally had control of my own funds. It was an exciting time for me.” (C10)

He values the **reliability and availability** of the system and the **response times** with which transactions are processed.

“The response times of the system were [...] good, and there was no delay in the response of how the transaction was processed.” (C10)

He also values being able to use the system to meet all of his needs online and finds the information on the site clear, **easy to understand** and useful in sourcing service providers, making his interactions with government effective and efficient.

“I [...] find it easy to find information on the site. Being part of a small community, you get to know the various providers of services, but going onto the online portal is definitely helpful if you don’t know where they are located. When I first started going through the process, having access to this information on providers was very helpful because I only really knew a few. So, I had a very positive experience from my initial searches.” (C10)

He expects government systems to be **secure** and trusts government with his information. He values **timely responses** to his contacts and enquiries, and he believes that the system supports his social need for independence.

“I am satisfied with [e-government] and the independence it gives me to manage my affairs. I do trust government with my own information and security and I think a government online system like the NDIS portal is a lot more secure, as there are many people accessing that system. I think it’s one of those things where you just have to have belief in the system.” (C10)

C10 had an effective use of e-government in submitting a request for a new wheelchair. Figure 4.11 provides an ideograph outlining the stages and outcomes of this experience. He was able to use the resources of e-government without difficulty (A) and complete his task efficiently (B). He was also able to use the information from e-government to enhance his capability in managing the financial component of his daily living, which afforded him a sense of independence and social inclusion (C).

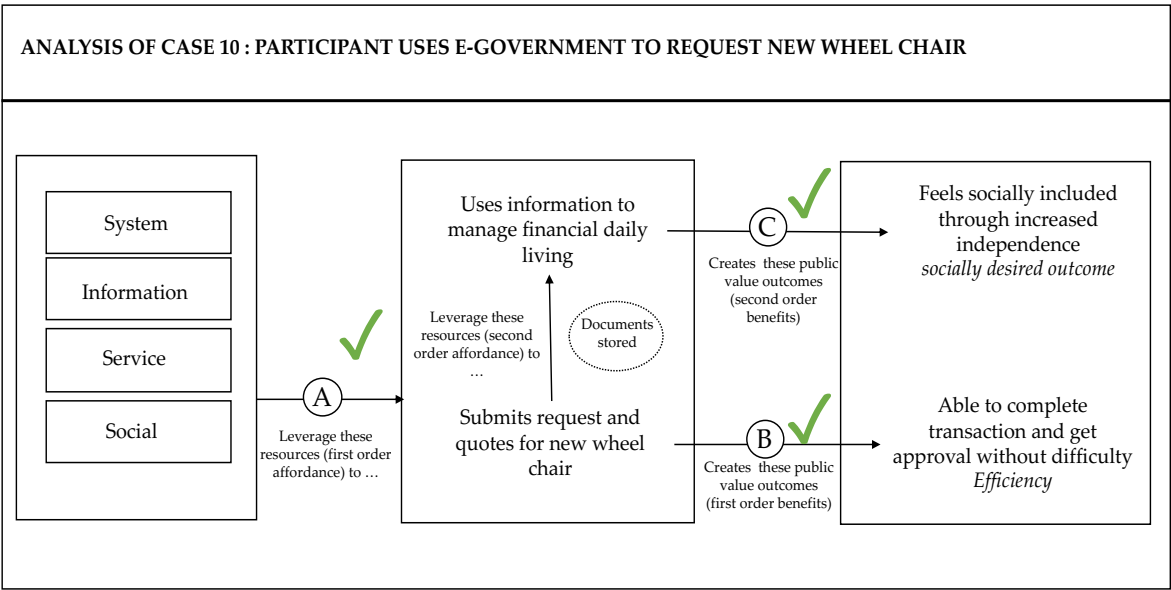


Figure 4.11. Analysis of C10's experience using the conceptual framework

4.3.1.11. Case 11: 49-year-old woman living with vision impairment in a metropolitan area

C11 previously worked as a teacher and self-identifies as having a good level of computing skills. Although she is no longer working as a teacher after having become legally blind 15 years ago, she remains employed as a teaching assistant, helping young students deal with a range of disabilities in a school environment. She is categorised as LOW FUNCTION. She credits access to advanced assistive technology for significantly extending her ability to remain productively engaged in the workplace and socially included in activities outside of work.

“I value being able to access, use, respond, be included just like everyone else, without feeling that it is ten times harder. I don’t want to be limited or become frustrated by my disability to do things and I want systems to be aware of that.” (C11)

She believes that advances in technology are on a positive trajectory, with developments in voice activation likely to provide an inclusive environment for those living with disabilities similar to hers. C11 has a vision impairment that requires assistive technology to support her use of e-government, requiring systems to meet **accessibility** standards to allow her to stay productive in society.

“I am confident and self-sufficient in managing and undertaking government activities through online systems if they meet the necessary accessibility standards that cater for my vision impairment.” (C11)

She values online systems that are **easy to use**, designed to meet the needs of users, and are **easy to navigate**.

“My disability prevents me from scanning a whole screen, as I lack peripheral vision. I have to read the whole page and I have to expand the text. Depending on how much text is on the screen, I may have to scroll backwards and across each line to get the full meaning of the sentence. It can be hard to get the text to the point where it is the right size for my vision; and then you have to scroll across the screen to read the sentence. If there’s a lot of information, then it’s really difficult to digest, and so smaller chunks are much better. It also has to be very clear in order for me to easily navigate the system and I find that often it is not as clear as it could be.” (C11)

She expects information regarding e-government to be structured so that it is **relevant** to her needs and **easy to understand**.

“Once logged in, it is not obvious where the mailbox is on the [website], and it usually takes me a while to work out where I have to navigate to on the screen. Once you find the mailbox you have to scroll through the list of mail items to determine which department each mail message is from. I don’t find this process straightforward and I have to assume that the latest message is from the tax office. I then select the option to take me to the website where I get my mail. There are usually some further options you have to navigate through before you can access your mail. The whole process is very clunky, including where to find the information that you need to read, what messages you have already read, and what messages you have answered.” (C11)

She values the ability to use e-government effectively without being constantly reminded of the impact of her disability on daily living activities.

“Reading the message itself depends on what kind of information it contains.

Sometimes there’s a lot of information, which again makes it difficult for me”

(C11)

She values **responsiveness** and **empathy** from those providing staff-assisted services but expects online systems to meet all of her processing needs without having to resort to these channels.

“Most times I can get the answers that I need from the online system, but if I can’t then I use the phone to call the relevant agency. I might send an email, but my preference is to speak to someone. I can generally get through to the call centre and find the answers that I need. I have occasionally gone into a service centre to do government business, and when I do, I find the staff very helpful. You walk in with a cane and people are very understanding, you walk in without a cane and they’re not quite so helpful. I find that if people know that I am visually impaired they will go out of their way to help me, and so I always tell everybody, and I take my cane with me.” (C11)

She is pleased that online technologies have allowed her to maintain her inclusive role in society. She believes that the government has a responsibility to ensure that systems are consistent with **industry standards** as an exemplar of the most current innovations in **accessible** systems, as well as ensuring that they are equally available to all Australian citizens.

“I trust that government wants to do the right things and am positive about technology in the future. I expect government to keep up with industry standards in this regard.” (C11)

C11 did not have an effective use of e-government in submitting a tax claim for her NDIS payments. Figure 4.12 provides an ideograph outlining the stages and outcomes of this experience.

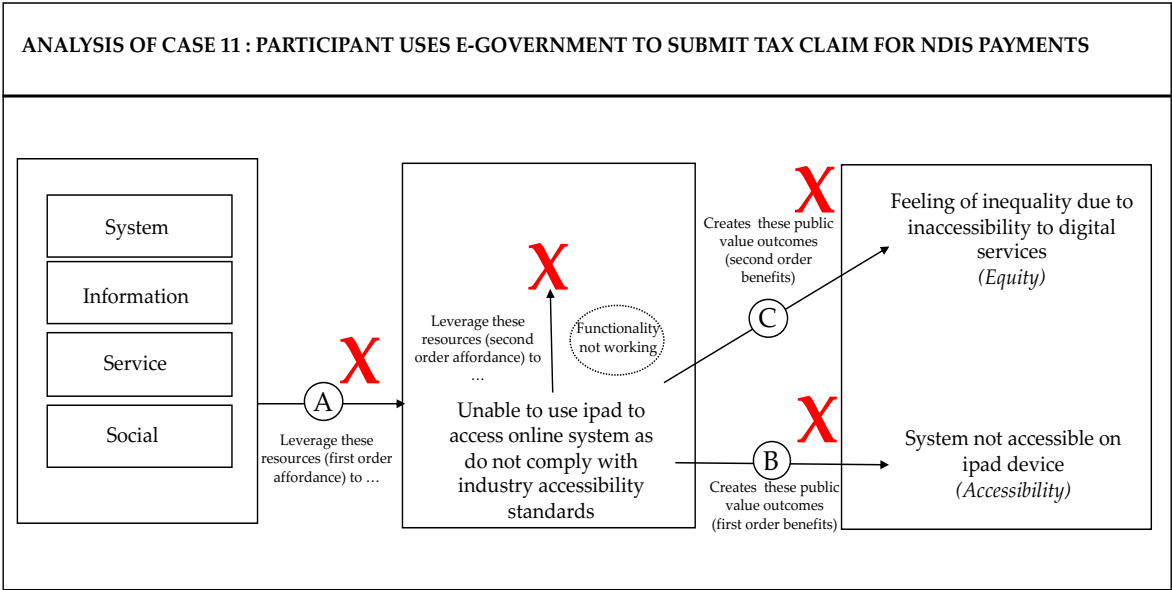


Figure 4.12. Analysis of C11's experience using the conceptual framework

C11 was not able to access e-government via her new iPad nor exploit the accessibility features that are standard on her device (A). As a result, she could not use the functionality of the system to accomplish her goal and was forced to revert to a face-to-face transaction (B). The government system's lack of accessibility gave her a sense of social inequity in terms of access to digital systems (C).

4.3.1.12. Case 12: 30-year-old man born with cystic fibrosis living and working in a metropolitan area

C12 self-identifies as having an excellent level of computing skills, and he is categorised as HIGH FUNCTION. His physical functional capacity has diminished significantly in the last four years, and his need for and reliance on e-government have consequently increased.

“My use of online systems increased dramatically as my capacity diminished to the point where walking down the road made it difficult to breath, which created a substantial barrier to any physical activity.” (C12)

He is optimistic about advances in technology, which he thinks will make it more convenient for individuals to meet their needs digitally, but he is concerned that it could lead to social consequences if not carefully considered. C12 values systems that are **easy to navigate**, are logically designed and efficient to use.

I recently used the new [e-government], which I found to be extremely helpful. It was much less complicated than the previous iteration of the system, with a simpler interface. Everything was in a sequential manner that was logical and as a result, it made it easy and very quick to use.” (C12)

“The navigation of the site is well structured and although there isn’t a huge amount of customisation you can do; I wouldn’t say it’s rigid. A lot of my information that was required was already prefilled, so it was largely me confirming the documents I had matched with what was prefilled, and I think there was less than a handful of manual entries I needed to make.

Completing my [transaction] took me all of 15 minutes.” (C12)

He values the convenience and efficiency afforded by access to information that is **clear** and **easy to understand**, as well as assurances that he is using the system correctly.

“The website itself is clean and functional. The search engine was a lot better at finding information I needed than the previous version, and the added functionality to use quick access features for topics that are often asked for, makes using the system less frustrating and more efficient. The information was clear and was actually really helpful to clarify exactly what items I could deduct and whether there were caps on those items. It gave me some assurance that I wasn’t stepping over the line.” (C12)

He trusts government with the **security** of his data and is confident that it will be used for the purpose for which it was collected.

“I don’t know a huge amount about the security capabilities of these systems, but I assume they are relatively good because it would be quite an indictment on the government if they weren’t. I have an innate trust in government that they are able to secure my records. In my opinion, we provide our information to so many people for so many different reasons, that once you start using those e-government systems, it’s all out there.” (C12)

He values the convenience of e-government and aspires to undertake all government activities online. When a particular transaction cannot be conducted online, he wants interactions with government to be **responsive**.

“Not all [my] experiences with government helpdesks have been good.

Generally, the poor experiences relate to the waiting times and the resources they have in the call centres to be able to answer your call. The call wait times for some departments are so long that my preference in these situations is to go into my local service centre to deal with the issue, because it’s often quicker driving, parking, going in, and doing it there than waiting on a call. I have often needed to bring in documentation that needs to be sighted, that you can’t do through the myGov portal. Some payments allow you to upload your documents online and some don’t. In my opinion, I believe that this inconsistency is a problem”. (C12)

He values systems that are **reliable and available** and wants consistency across the functionality of all applications of the system.

“People have an expectation that the online system will work, how they need it and when they need it. There have been a few issues with reliability and availability of the online system. The first time I went to log in [..], the system was disabled for a period of time because they were doing updates, which was during business hours, which in itself was odd as they usually run those things overnight. Although that was slightly frustrating, I was able to get in to the system after maybe two hours.” (C12)

Although he does not generally provide feedback online, he feels that citizens participating and engaging openly and actively with government through online systems will build **trust, social cohesion** and promote **equity** for all. C12 had an effective use of e-government in submitting NDIS payment information to the tax office. Figure 4.13

provides an ideograph outlining the stages and outcomes of this experience. C12 was able to engage the resources of e-government without difficulty, finding them clear and simple to use (A). He accomplished his goal outcome quickly and efficiently employing the functionality of the system (B). He also utilises the system to store all of his medical records and to use as evidence to support his claims across many departments, providing a sense of the effectiveness of government organisations (C).

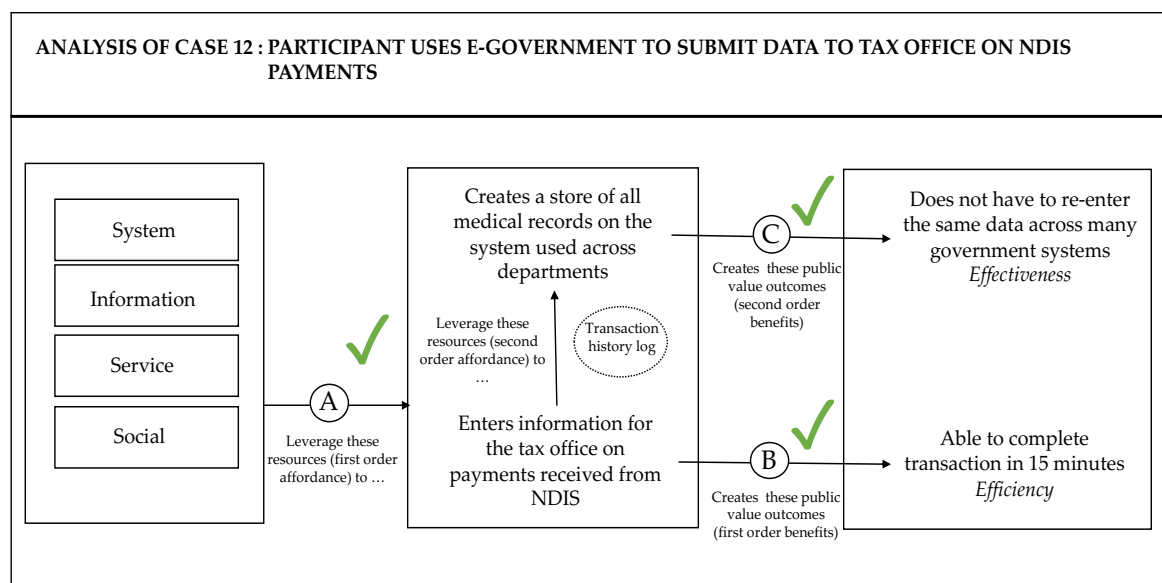


Figure 4.13. Analysis of C12's experience using the conceptual framework

4.3.1.13. Case 13: 49-year-old woman diagnosed with hereditary neuropathy living and working in a metropolitan area

C13 self-identifies as having an excellent level of computing skills and is educated to the PhD level. She is categorised as having HIGH FUNCTION. Her symptoms include muscle tremor, fatigue and frequent falls, and frequent or prolonged use of technology can aggravate her condition. As a working single parent, she is **time poor** and finds it frustrating to contend with the inefficiency of public services.

“I had to go into a servicing centre three times to resolve an issue. And using the phone service was impossible to get through. I could see the plan on the online portal, I just could not access it. And I had no recourse to have it adjusted to reflect the agreements that had been made.” (C13)

She believes the government should strive to continually improve online systems capabilities, in particular by fostering greater **consistency** across the various government online systems. C13 values systems that are **easy to use** and **intuitive** to navigate.

“At first, I found the online system lacked intuitiveness, but now that I am familiar with the way it works, it is relatively straightforward.” (C13)

She wants systems to be **easy to understand** by minimising internal jargon and inconsistent use of terminology.

“Initially I found this part of the process a little confusing because the descriptions defining the categories on the screen weren’t quite the same as what was in the planning document. They recently simplified and streamlined the process, but it still contains a lot of jargon about what the different categories are. I do not find this fully understandable and as a consequence, find it to be somewhat anxiety-provoking.” (C13)

She expects information on systems to be **relevant, clear** and concise to ensure that option selections cannot result in misuse of the systems. She is conservative regarding financial matters and is concerned that online systems potentially allow for ill-informed and inappropriate use. C13 values the effectiveness of the system to claim payment reimbursements for invoices, as well as a system that obviates the need to store separate

records for audit purposes. She wants the system to be **reliable and available** at all times and expects government to keep her records private and safe.

“On a more practical note, the system has not been very reliable. Probably about 20% of the time when I have tried to access the system it has not been available. I appreciate that the system is still very new and sometimes they have to take it down to improve the functionality.” (C13)

She **trusts** government online systems and the **operational efficiency** they provide to support daily living.

“I do trust the government with my information and understand how the privacy and personal information protection rules apply. I know that there are some risks, but I also know the government has requirements to store data in safe ways, and I know that my data can only be used for the purpose for which is being collected. I feel pretty comfortable with that and I also believe it is a reasonable trade-off between a benefit I receive versus how much information I am required to provide.

She values **responsiveness** from support functions and wants consistency when it comes to customer service interactions.

“I tried calling the helpdesk when I thought that I had allocated something against the wrong category, but I found it very challenging to get through, and the automated call response instructed me to email my issue directly to the agency instead. Since then, no-one has responded back to me and there was no recourse to correct the issue, so I guess this tells me how important

they think it is. If I get audited, I can find the email showing that I tried, but I would hope that this is something that is improved over the course of time.”
(C13)

Although she does not personally require the support of accessibility functions, C13 feels that it is the government’s responsibility to ensure that online systems support **equity** for all Australians. C13 had an effective use of e-government in submitting a payment reimbursement request. Figure 4.14 provides an ideograph outlining the stages and outcomes of this experience. She was able to utilise the resources of e-government without difficulty (A), and after becoming familiar with the system, she was able to exploit its functionality to complete her goal outcome (B). She also employs the system as a digital vault to store information required for the annual audit, even though the system was not designed for this purpose. As a citizen living with disability, she believes the government system provides her with a sense of social justice and independence in managing her affairs without assistance (C).

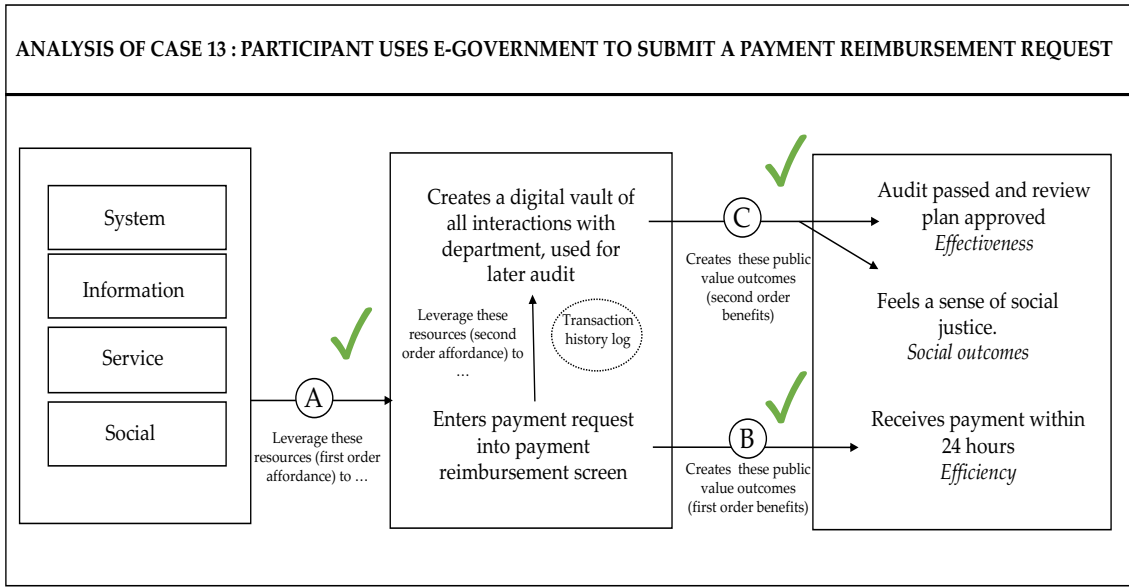


Figure 4.14. Analysis of C13’s experience using the conceptual framework

4.3.1.14. Case 14: 56-year-old woman born with spina bifida living and working in a part-time capacity in a rural area

C14 self-identifies as having a good level of computing skills, and she is categorised as having HIGH FUNCTION. She uses a wheelchair and drives a car, but she increasingly confirms the accessibility of the places she is visiting in advance. She is an active and regular user of both commercial and government systems, preferring to source information online, as she has identified inconsistencies when requesting information through staff-assisted channels. She explains:

“I would find that sometimes when you would ring up one person and get certain information, and then you could ring back like an hour later you would get completely different information on the same question. I think there was one occasion where I did complain because of the conflicting information.” (C14)

The analysis of C14’s experience with e-government demonstrates that she values the **usability of the system** to provide simple and intuitive access to e-government, which affords her **efficient** use of public services. She states:

“I actually found it pretty good once I had signed up. It was easy to navigate around the system, and I could find the information I wanted. A few times I needed to request an advance on my allowance and found it very easy to navigate to where I needed to go, and easy to understand the repayment amounts and conditions.” (C14)

She values systems that are easy to navigate, simple to use and that deliver an

efficient outcome. She wants the information on the system to be clear, **relevant**, **easy to understand** and complete, to avoid the inconvenience of contacting a service centre for a full explanation of the information. She explains:

“The information on the website is not always complete, and in most cases, it ends in a situation where you need to go into a service centre to talk to someone, or call the call centre, so they can help interpret the information that was on the online site.” (C14)

She values **responsiveness** to enquiries and wants to be treated with **empathy** when she has a query. She provides an example:

“I did have to make a number of support calls to the helpdesk when the system wasn’t working for whatever reason. I can’t say they were responsive as I always had to wait on the line for a staff member, and they certainly weren’t friendly. I felt that I was being treated just like a number.” (C14)

She feels **assured** that she can trust government with her information:

“I do trust that the government online systems will keep my information safe.” (C14)

However, she is concerned about hacking:

“I do hear a few horror stories every now and again about information getting leaked out that shouldn’t, but I think it’s the same with anything. Once the government upgrades their systems, the hackers just learn another way to get into them. I am pretty much blasé about it now. if they get in, they get in” (C14)

She is nonetheless willing to provide personal information in order to obtain an effective outcome:

“It is simple: You have to give your information; otherwise you don’t get a benefit.” (C14)

C14 also believes that rural communities are seriously disadvantaged and is hopeful that technology will continue to remove distance barriers to create better outcomes for those needing specialist services. In submitting a payment reimbursement request, C14 was able to access the resources of the system without difficulty (A) and was able to efficiently request and receive an advance payment (B). However, she was not confident that she could use the information on the system to maximise her outcome. Inconsistencies in the information and a lack of responsiveness to her queries by public service staff created a sense of social injustice in terms of customer service (C). Figure 4.15 provides an ideograph outlining the stages and outcomes of C14’s experience.

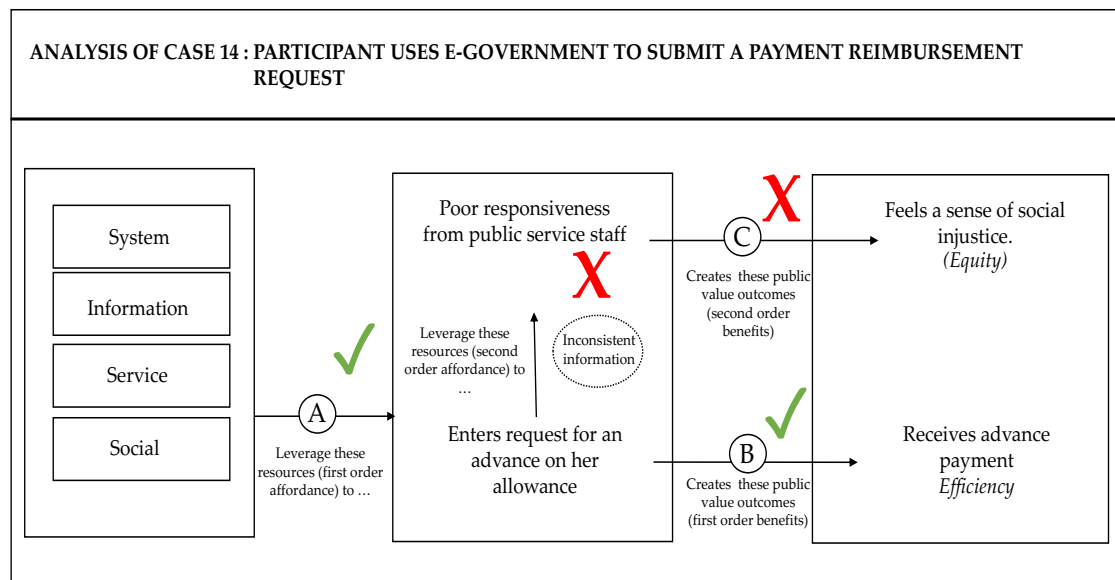


Figure 4.15. Analysis of C14’s experience using the conceptual framework

4.3.1.15. Case 15: 43-year-old woman with a vision impairment living and working in a rural area

C15 self-identifies as having a good level of computing skills and is categorised as having LOW FUNCTION. She uses several assistive technologies to support the activities of daily living. However, she finds that using technology does not always ensure the desired outcome. She explains:

“No matter how much technology you have got, there is a human aspect [to servicing] somewhere along the line, and if it falls apart at the human aspect, the technology is not going to help anyway.” (C15)

She believes that experts who construct systems for those living with disability should spend time with the people who are actually using the systems in order to truly understand the functionality they require to support their daily living.

The analysis of C15’s experience with e-government demonstrates that she values the qualities of systems, including their **usability**, simplicity and functionality to meet her daily living needs. She aspires to undertake all activities online to support her daily living in an efficient and effective manner. She expects systems to offer **complete functionality** to engage with government services and wants control over what personal information she provides, explaining:

“I tried updating my phone details. This was frustrating because the system would not accept the fact that I only wanted to use my mobile number as a contact, and so I ended up going into the service centre to get my phone details updated. This was incredibly annoying for me, as we don’t all have

immense amounts of time to waste in these situations. I feel that something as simple as changing a phone number shouldn't cause you that much stress and difficulty, and you should be able to do it online.” (C15)

She values systems that are **easy to navigate** and are **designed with the end user in mind**. Although she has a vision impairment, she can partially see the screen and therefore values the use of **assistive functions** to enhance her experience, which she believes increase her **efficiency** in accessing public services. She values the anonymity afforded by online systems, as she believes that public service personnel are occasionally judgemental. However, she expects staff supporting the system to display appropriate **empathy**.

“When I engage with department staff, I would like them to have more empathy when they talk to me because I find that as a single parent seeking a benefit, you do tend to get labelled. That's probably why I find the internet easier to use, because a lot of people can be very judgemental. They may not mean to be, but they are. Particularly, when you're in a small rural area where everybody knows everything about you.” (C15)

She **trusts** government, notwithstanding some concerns over the **privacy** of her information.

“I might not want to tell everybody about my medical conditions, but I have no choice as you can't get a benefit unless you tell them everything. I have reluctantly concluded that the government knows everything about me anyway.” (C15)

C15 did not have an effective use of e-government in updating data relating to her personal circumstances. Figure 4.16 provides an ideograph outlining the stages and outcomes of this experience.

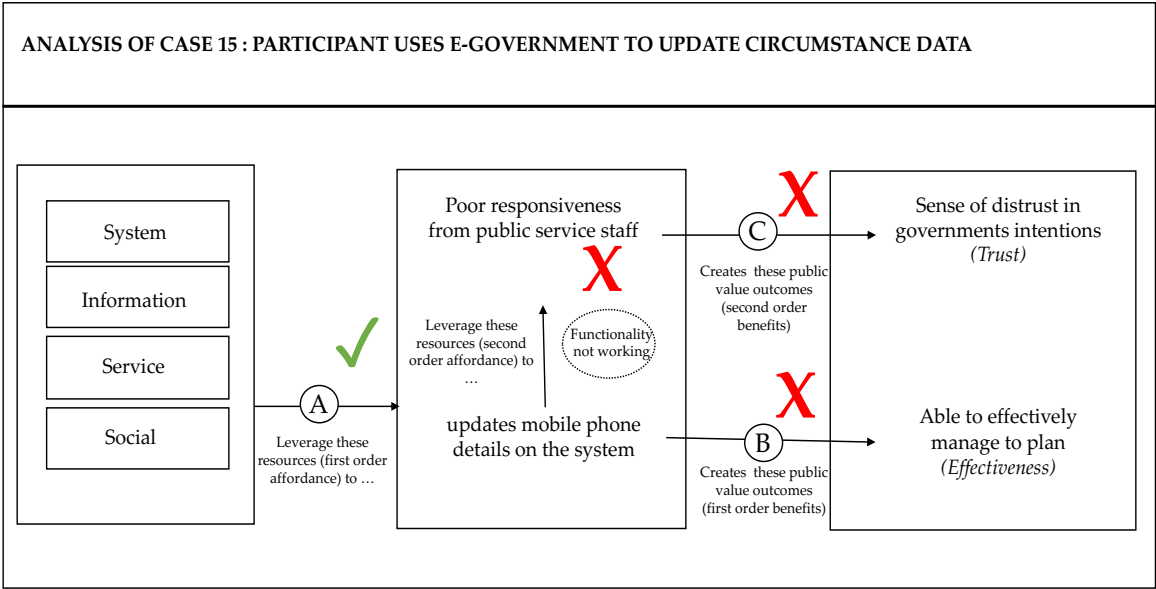


Figure 4.16. Analysis of C15's experience using the conceptual framework

C15 was able to access the resources of e-government without difficulty (A) but could not exploit the system's functionality to complete her task effectively, as the system did not allow her to change her mobile phone details without providing a home phone number, which she did not have (B). As a result, she was required to visit a service centre to achieve her goal outcome. The public service staff's lack of responsiveness and perceived judgemental attitude left her feeling mistrustful of government (C).

4.3.1.16. Case 16: 39-year old-man living as a quadriplegic in a metropolitan area

C16 self-identifies as having a good level of computing skills and is categorised as LOW FUNCTION. He runs his own business providing lifestyle choices to those living with disability. His work requires him to travel within Australia and overseas, meaning he

has limited time to interact with government online systems. He wants e-government to be **operationally efficient** in meeting his needs; otherwise, he will engage a third party to perform the interactions on his behalf. He explains:

“I’m quite busy with a lot of things across a lot of different areas of my life right now, so just having someone to deal with government for the moment until I have more time on my hands, is worth the cost.” (C16)

He expects his **trust** in the online system will increase once service providers have addressed the current start-up problems. An analysis of C16’s experience using e-government demonstrates that he values an **operationally efficient** online system and the ability to oversee activities relating to his plan. He values an **intuitive** and **easy to navigate** system, the use of which will support his independence.

“I find navigating around the system very easy and quite intuitive. I have not had many issues with its usability and am able to navigate through the screens and then use dictating software to fill in the gaps, so am quite independent in using the system.” (C16)

He values information that is clear and **relevant** and facilitates **easy understanding** of the link between his plan and the categories of benefits he can claim. He values **timely responses** to his queries to the helpdesk and expects issues to be dealt with effectively, without been transferred from one person to another.

“I [have] spent a lot of time on the phone to the helpdesk. I found it challenging, as I was passed around the organisation a bit from person to person and had to go through the identity verification process more than

once. You tend to speak to many people, and when you finally get someone who can help, the next time you call back this person may not be available, and you have to start the process again. I find this a lot with all government services.” (C16)

He expects systems to be **reliable and available**.

“The reliability of the online system is getting better. In the early days, there were blanket issues which literally stopped the system for a couple of days. This was inconvenient, but recently the system has been much more available.” (C16)

He values the independence he is afforded when he completes tasks unaided. He has an innate trust in government and values the **assurance** that his personal information is kept secure.

“I trust government to keep my information secure, even though I have a mild concern about the prevalence of hacking. We are a long way away from being a perfect world and if you choose to interact with technology of a daily basis, whether it is Google maps to get around, or Facebook to stay in connect with friends, or government systems for funding, then you have to put a little bit of faith in the system.” (C16)

He values everything about the scheme and believes it will improve as processes are fine-tuned. C16 had an effective use of e-government when using the system to manage his plan. Figure 4.17 provides an ideograph outlining the stages and outcomes of this experience. He was able to use the resources of the system without difficulty (A) and

he found the functionality that enabled him to manage his plan intuitive and easy to use (B). This has given him confidence in using the system to manage the financial aspects associated with his daily living, thereby increasing his sense of trust in government (C).

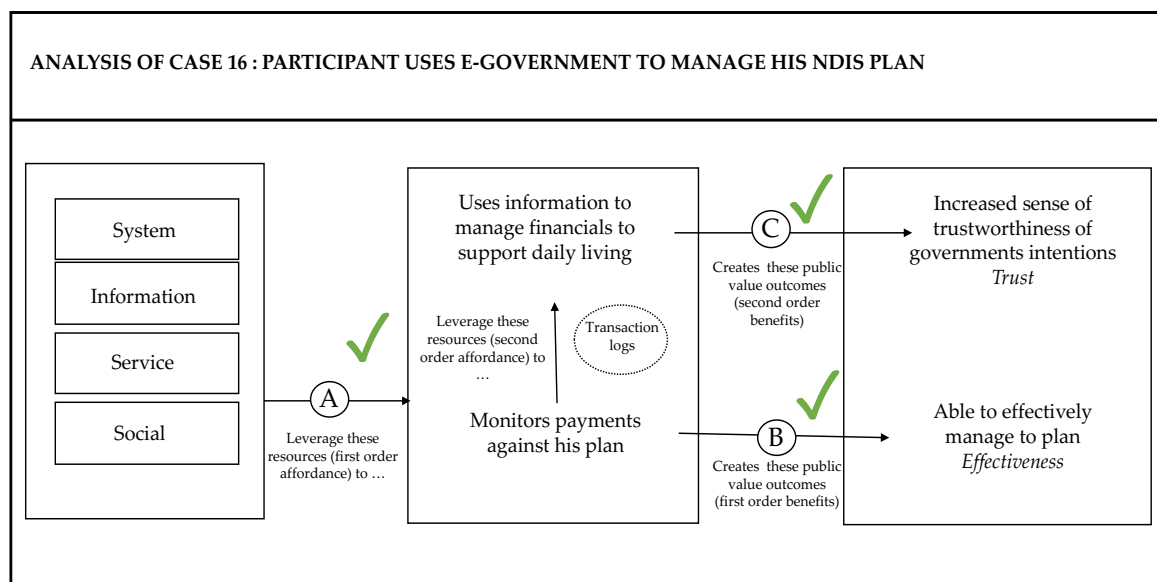


Figure 4.17. Analysis of C16's experience using the conceptual framework

4.3.1.17. Case 17: 57-year-old man living as a paraplegic in a metropolitan area

C17 acquired his disability 38 years ago. He self-identifies as having an excellent level of computing skills, having spent the early part of his career as a computer programmer. He is categorised as having HIGH FUNCTION, and his most recent employment was as the CEO of an assistive technology company. He feels that government systems play a broader role than simply supporting transactions and should therefore provide **equity** in access.

"I believe we have an innate desire to feel like we are productive and involved in the community on whatever level we can. We don't want to be stuck in some sort of charity mode where people with disability need to be

looked after. We need to empower people to be inclusive and contributing in society. If the system takes away any of this, it can be seen as a form of abuse.” (C17)

He is optimistic about emerging technologies on several levels, from voice to eye-gaze to mechanical. An analysis of C17’s experience demonstrates that he values the **convenience** of performing all activities with government online. He expects government systems to be well designed and **easy to use**.

“The error message and input field were not clear, so it is not as useable as a system should be.” (C17)

He values systems that are simple and utilitarian, enabling him to trust the **integrity and accuracy** of the information. He expects to locate the information he needs on the site, without having to search elsewhere.

“Looking up information on the online site is not much help, particularly related to understanding the categories and their match to your plan. Besides being frustrating, it is confusing if you have not worked in the business. I believe it will strongly exclude anyone that has any intellectual impairment from using the system.” (C17)

He values systems that are effective in delivering pre-defined outcomes and built with users’ needs in mind. He finds the e-government **functionality** somewhat basic, but **reliable** and **efficient** in the delivery of services required to support his daily living.

“Overall, I find the system very amateurish, but it is reliable, and I have

been very impressed at the reimbursement speed. I lodge my request and it is usually paid within three days.” (C17)

He values systems that contain **complete and relevant** information about his interactions with government and provide regular status updates to facilitate an auditable record of approvals.

“In my opinion, it would be beneficial to have a more integrated view of the whole status of my dealings with the NDIS on the online system, from an end user perspective. NDIS may have all that information in the background on their systems and I assume they do, but I don't have visibility of that. Recently I was contacted by an NDIS representative to confirm that my funds had been approved, but when I logged into the online system there was no evidence of that approval. This makes it difficult to proceed with purchasing goods with confidence and generally ends up in more phone calls, and more inefficiency.” (C17)

He has equal **trust** in government and other commercial systems and believes that the government needs to improve the quality of both the design and construction of these systems in order to incentivise citizens to use them.

“I trust government systems as much as I trust any of the commercial online systems that I use. I believe that if government want to get citizens to use online systems as default they need to build and design them better.” (C17)

C17 did not have an effective use of e-government in claiming a reimbursement payment. Figure 4.18 provides an ideograph outlining the stages and outcomes of this

experience. He was able to access the resources of e-government easily (A) and used the functionality of the system to claim a reimbursement payment, which he received within three days (B). However, was unable to use the system effectively as it did not store the information to which he required access, forcing him to contact a service centre to confirm details of the approval status of his claim (C).

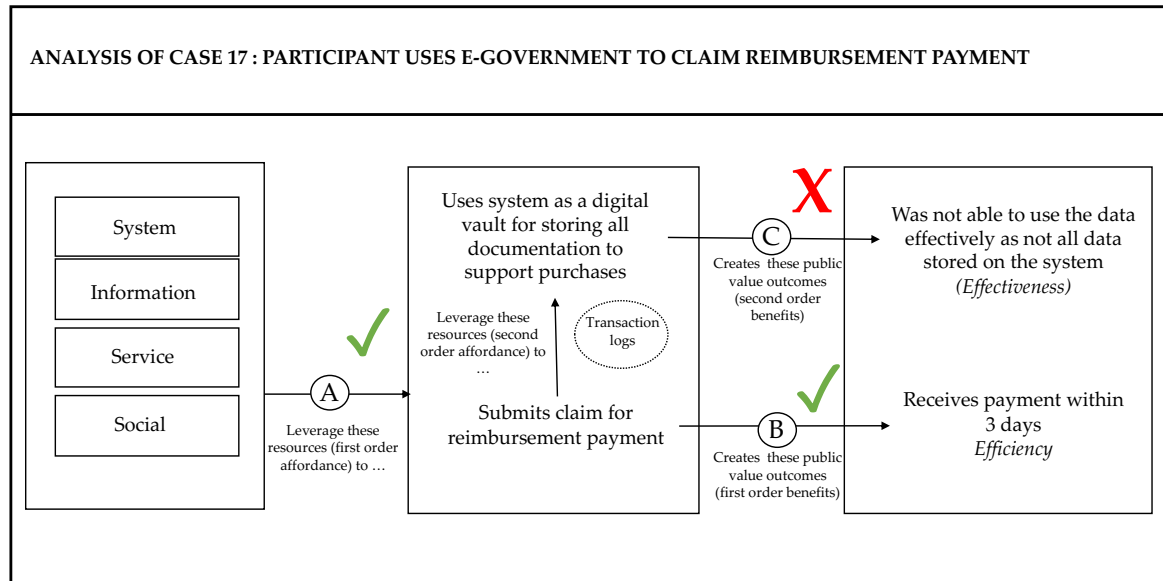


Figure 4.18. Analysis of C17's experience using the conceptual framework

4.3.1.18. Case 18: 58-year-old man living as a paraplegic in a rural area

C18 acquired his disability at the age of four and is categorised as having HIGH FUNCTION. He self-identifies as having an excellent level of computing skills, having spent most of his career as an IT manager for a multi-national company. He is an active user of all modes of computing and believes that rural areas are confronted with significant technological challenges. He noted:

"We suffer from pretty appalling network access down here. We are a designated black spot when it comes to mobile phone coverage and because

we're also a tourist location, every Christmas and every Easter our internet grinds to a halt because the network just gets overloaded with visitors making it impossible to run transactions online.” (C18)

He is a passionate advocate for improving the conditions and infrastructure in rural areas for those living with disability and believes that improved infrastructure would also create better economic conditions. An analysis of C18's experience demonstrates that he values systems that are **simple, easy to use and intuitive**. He expects e-government to provide functionally rich capabilities that allow citizens to accomplish all activities with government online, including **connections** to external service providers.

“I looked at some of the online user guides to try and understand certain sections but I'm not a great reader – I am very much an experiential learner with a preference to learn by hearing, but it was not a problem as the website is fairly intuitive.” (C18)

He wants e-government to be **useable**, with the requisite **functionality** to maintain accurate financial records, and he believes that systems should ensure financial **integrity** in order to build **trust** in online systems.

“I think the system is almost too simple as it lacks a lot of functionality, like the ability to access historical records, which would be a great help to reconcile to my manually maintained records, as your recordkeeping suddenly becomes very important if it does not match the quantum of funds remaining on the portal.” (C18)

He values systems that are **reliable and available** with fast **response times**, and he expects them to be **operationally efficient** in meeting his personal needs, as well as those of government.

“I find that overall the system works well, it's quick and relatively easy to use. I have made a couple of mistakes in terms of categorisation of items but overall have had no great issues. It has probably been simpler than I had anticipated. The system has also been reliable. It has generally been completely available, and the response times have been quick to the point that if I lodge a claim before 6 pm, the money is in my account the next day.”
(C18)

He values the **integrity** of the information on the online site, which he uses for assistance in the acquisition of services. He believes that network availability in rural areas is critical to achieving social **equity** and the creation of a socially inclusive Australia.

“I also think people in rural locations, of my age group and below, use the Internet significantly. Sourcing things down here isn't easy, and the Internet provides us with greater choice. We generally have to purchase from smaller stores, which are often not price-competitive, or utilise the Internet to become more informed before traveling great distances to one of the bigger centres.” (C18)

Although he **trusts** government online systems, he is sceptical that the security and privacy of personal information can be maintained in the modern world.

“It is a modern world we live in and if the dictates of being part of that world is that my data is potentially at risk, well that's just a fact of life. If I really cared about it, the last place I would be on is Facebook, yet I am a regular Facebook user. Despite this, it is difficult to trust any online system with your security.” (C18)

C18 had an effective use of e-government in claiming a reimbursement payment. Figure 4.19 provides an ideograph demonstrating the stages and outcomes of this experience. C18 utilised the resources of e-government without difficulty (A) and was able to exploit the functionality of the system to achieve his goal outcome without error. The response to his submission was efficient, prompt and successful (B). He was also able to use the information from the system to post adverts for support workers as a result of the effectiveness of government services (C).

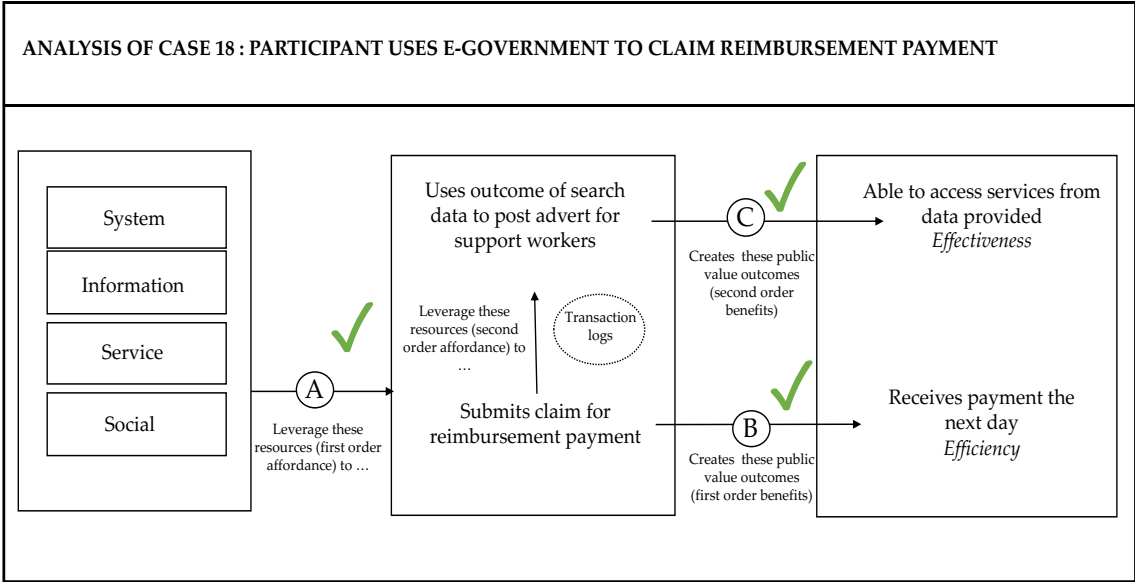


Figure 4.19. Analysis of C18's experience using the conceptual framework

4.3.1.19. Case 19: 35-year old woman living with muscular dystrophy in a rural area

C19 was diagnosed at the age of 12 and her condition has degenerated to the point that she now requires full-time care. She is categorised as having LOW FUNCTION. She nonetheless remains fiercely independent and executes all functions through government online systems herself. She self-identifies as having an excellent level of computing skills acquired from her work as an accounting administrator at a not-for-profit organisation. She feels the anonymity associated with technology carries both advantages and disadvantages.

“As a young person growing up, I played a lot of online video games and met people online socially. They were surprised when we finally met up that I was disabled and a girl. The environment provided a bridging capacity.”

She is concerned that the advantages of online technologies can be negated by abusive comments on sites devoted to disability issues, which she considers a form of social injustice. An analysis of C19’s experience demonstrates that she values the independence she gains by using e-government to support daily living. She expects e-government to be **reliable and available** and wants transactions to be simple, error-free, and easy to use in order to promote efficient interaction with government.

“I have personally found the system reliable. There have been only three occasions where it took more than 24 hours for my payment to get processed but other than that it’s been promptly paid every time.” (C19)

She values the **ease of use** of a system that is well designed and **intuitive** to use.

“Although there are a few little issues with how the screens are laid out, I find the payment process flows very intuitive.” (C19)

She expects information on the system to be clear, **easy to understand**, and **relevant** to her needs.

“The information on the website is very long winded and hard to get through, but the text itself is easy to understand. It would be helpful if they included more specific and relevant information.” (C19)

If information on the system is difficult to locate or the functions complex to use, she reverts to staff-assisted services.

“In the beginning it genuinely took me six months of continual checking with my case manager to find the appropriate codes needed for the payment reimbursement categories.” (C19)

Although she values the **security and confidentiality** of her personal data, she believes there should be an appropriate balance between convenience and privacy. She expects government staff to be both **responsive** and **empathetic** in addressing her issues, and she feels that the status of her queries could be more effectively tracked using the online system.

“I have used the helpdesk and have been somewhat underwhelmed. I find them completely unresponsive and lacking any sort of empathy for my circumstances. I have a situation where I need to make corrections to my payments where the wrong equipment was ordered. No one seemed to know

how to reverse a payment or have the authority to do so. I still have not heard back on several issues which I raised five months ago.” (C19)

“A recent response from them on another matter to a complaint I made via one of the federal members used the wrong name on the letter they sent me in response. What a joke!” (C19)

She believes government is capable of keeping her information **secure** but should be more **operationally efficient** in the delivery of public services through sharing data across public agencies and providing **connections** to third party providers. She thinks this can be achieved through minimising burdensome red tape and streamlining processes to support citizens living with disability.

“I trust government, but I don’t have a lot of confidence in their ability to do things efficiently without red tape and matters dragging on.” (C19)

She values the advancements being made to support citizens requiring **assistive technology** to remain independent and hopes the government will adopt these trends. C19 did not have an effective use of e-government in correcting a reimbursement payment. Figure 4.20 provides an ideograph outlining the stages and outcomes of this experience. She found the system resources useable and reliable and encountered no obstacles in identifying the information she needed to complete her task (A). However, the functionality of the system was cumbersome and did not enable her to complete her task effectively (B). Subsequent repeated requests to public service officials to correct the error have been unsuccessful, resulting in a loss of confidence in e-government and the government’s ability to deliver quality public services efficiently (C).

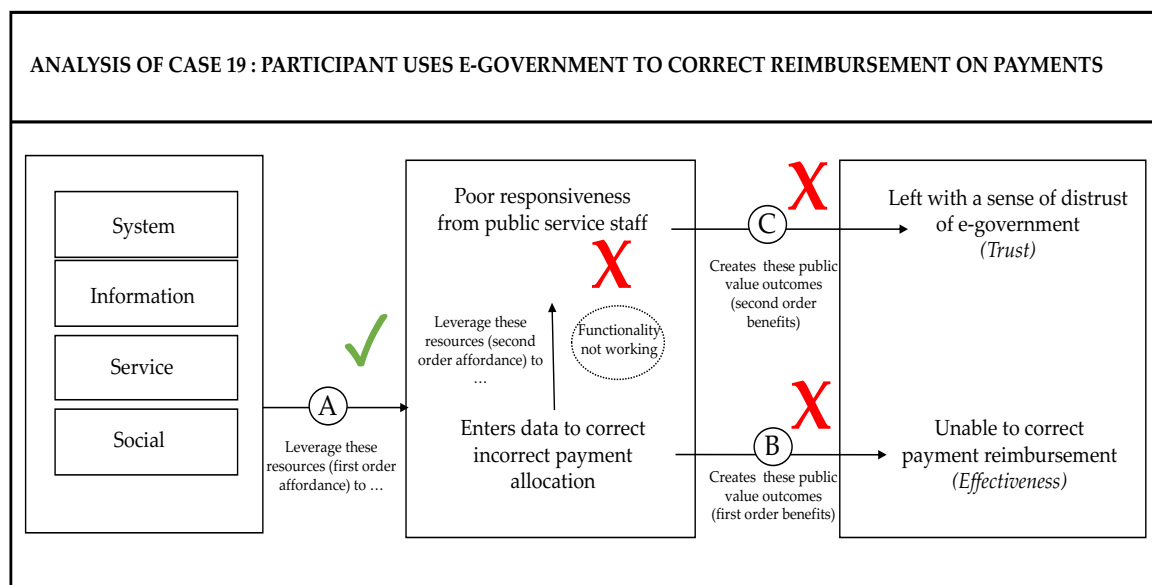


Figure 4.20. Analysis of C19's experience using the conceptual framework

4.3.1.20. Case 20: 40-year-old woman living with multiple sclerosis in a rural area

C20 self-identifies as having an excellent level of computing skills. She is categorised as having LOW FUNCTION. Her condition has impacted her daily living in a number of ways, including loss of balance, vision problems, fatigue, incontinence, memory loss and other significant side effects. She has becoming increasingly reliant on technology due to her disability, and system access is critical to support her daily living.

"I now live with technology; it is my only outlet to the outside world. I use it to connect socially, for news, research everything. I spend most of my days, when I don't have support, online because my mobility is impacted so much. I try to get as much information into my brain and retain it." (C20)

She feels that government should provide more **complete services** online and that assisted services, through phone channels and face to face, are so chronically understaffed that they are no longer feasible servicing options for individuals in rural areas living with

disability. An analysis of C20's experience demonstrates that she values the usability of online systems. She feels their designs should be more **intuitive** and user-friendly, enabling even the most physically challenged to use them.

“The NDIS online system is quite useable, but in my opinion, it could be a lot more user friendly. Having to navigate through several screens, with lots of words on them, would be particularly difficult for people with intellectual disabilities. I sometimes can get confused with where I need to navigate as the main screen has five different selections, and it is not intuitive which path to take.” (C20)

She values the control over her financial affairs provided by access to e-government information, but she initially found the system confusing, forcing her to seek assistance from her planner, which she finds inefficient. She states:

“I was pleased to see that the linkage between the plan categories and the system have improved. This was not the case with my first plan, as I did not understand it at all. This could have been partly due to the cognition difficulties that I was having at the time related to my condition, but nothing seemed to match up. I found it all too much and simply contacted my planner for help, but this time, my cognition has improved, and I feel as though I can manage it better now.” (C20)

C20 values the **security** of e-government but finds remembering her password difficult. She explains:

“Trying to remember the complex myGov password is still a challenge for

someone with my condition, but I know that they do this for security purposes. Once I have logged in, I am able to use the system effectively.”

(C20)

She wants the service provided by support staff to be **responsive** and **empathetic**.

She explains:

“A recent service experience was really great, and I was assisted promptly and with empathy. I explained to the service officer that I sometimes have cognitive difficulties as a result of my condition. She used layman terms to help me understand and put me straight through to one of the assessors in the compensation area to get the answers I needed. I was really satisfied with the empathetic and responsive way they dealt with my query.” (C20)

She prefers to interact with staff members who have knowledge about her situation.

“My experiences with [...] government helpdesks are usually incredibly poor. I find that you generally spend at least an hour and a half on the phone, and are transferred from one person to the next, requiring you to retell your story over and over again.” (C20)

She **trusts** e-government and values the convenience that online systems afford her. She wants to continue using them to improve **efficiency** in dealing with the public service.

“I am optimistic that I will continue to use government online systems more and more, as long as I can, as I do trust them. I believe that as it is a

government site, it needs to be trustworthy.” (C20)

She values the improved social outcomes that she achieves from e-government, and she derives a sense of social **equity** from being in control of certain components of her daily living. She explains:

“One of the significant things I have found with my disability is that I have lost all control and having this online facility gives me some control back, even if it is only one aspect of my life. I recently completed the first order for consumables myself and found being able to make these decisions independently very liberating.” (C20)

C20 had an effective use of e-government in purchasing items necessary to support her daily living. Figure 4.21 provides an ideograph outlining the stages and outcomes of this experience.

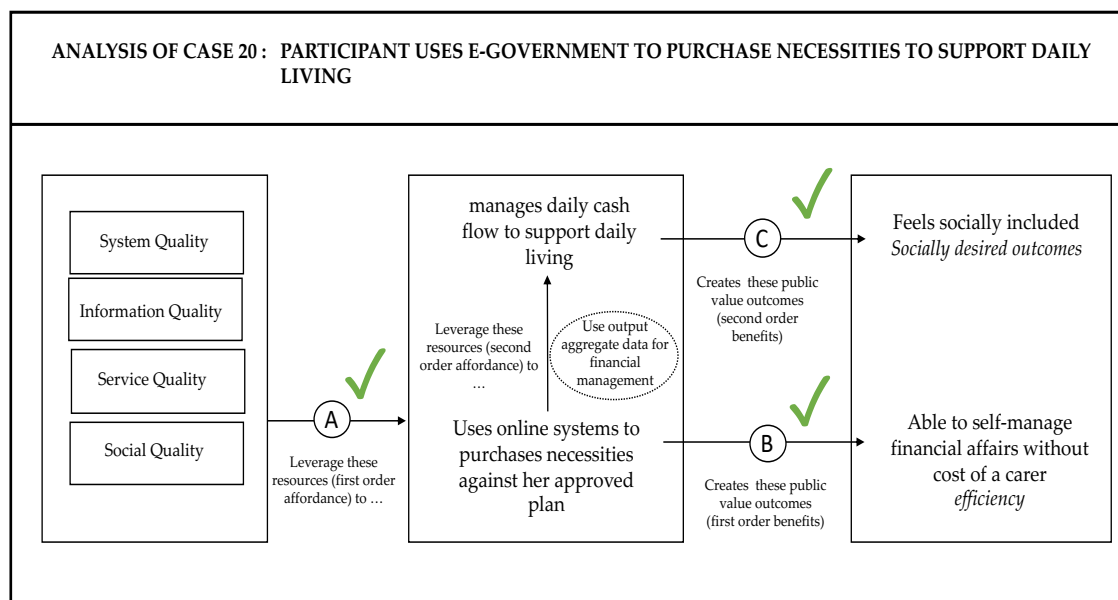


Figure 4.21. Analysis of C20's experience using the conceptual framework

C20 was able to use the resources of e-government without difficulty (A), and she was able to use the functionality of the system to accomplish her goal outcome after acclimating to the system (B). She also exploits information from the system to make informed decisions concerning the financial matters associated with her daily living. She values the efficiency of the public services afforded by e-government, as well as the social inclusion she derives from being able to manage her affairs independently (C).

4.3.2. Synthesis of within-case data

The data analysis identified 434 statements collected from participant interviews and documents relevant to the study. These statements were examined using a thematic analysis approach. Repeated examination of the statements within the context of the participants' responses served to cross reference the overall meaning of their experiences with the emerging resource quality attributes codes. These statements were initially organised into 47 resource quality codes that were ultimately narrowed to 12 focused codes: quality of information, usability, reliability, adaptability, operational efficiency, assurance, responsiveness, empathy, accessibility, equity, trustworthiness, and participatory democracy. The response frequency from the resource quality attribute codes is presented in Table 4.3.

Resource quality attributes	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20
Quality of information	3	12	1	3	1	2	3	1	2	3	3	2	3	6	0	1	3	2	4	3
Usability of the system	9	3	10	12	3	7	5	11	12	3	9	6	8	5	5	3	10	6	6	4
Reliability of the system	2	1	5	0	2	0	3	2	2	1	1	2	2	1	0	3	4	5	7	0
Adaptability of the system	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	0	1	0	0	0
Operational efficiency	1	5	1	1	1	4	0	0	0	0	0	3	1	1	1	4	1	2	2	1
Assurance	1	4	1	1	0	0	0	0	1	2	0	2	1	2	3	1	1	1	1	0
Responsiveness	1	2	3	1	0	5	0	2	4	3	2	2	3	1	0	3	0	0	2	1
Empathy	0	0	2	0	0	2	0	0	0	0	1	2	0	1	1	0	0	0	1	2
Accessibility to digital services	6	1	7	0	8	0	0	0	0	0	7	0	0	0	2	3	0	0	1	1
Equity	1	1	1	1	2	0	0	1	2	3	1	0	2	0	2	0	1	3	2	3
Trustworthiness	1	1	1	0	0	1	0	3	1	1	1	2	2	2	1	1	1	1	3	2
Participatory democracy	0	0	1	0	0	0	0	0	0	0	0	2	0	1	0	0	1	0	1	0

Table 4.3. Summary of participants' frequency of use of resource quality attributes

Further synthesis of the individual cases reveals that only 35% of the participants' experiences were effective in achieving their desired goals. Table 4.4 summarises the outcomes of all participants' experiences gained from their use of e-government, showing each stage of the standards of use either enabling effective use of e-government or creating public value outcomes.

Case No.	A: Transparent interaction				B: Representational fidelity	Public Value Outcome	C: Informed Action	Public Value Outcome
	System	Information	Service	Social				
C1	N	N	N	N	N	(Accessibility)	N	(Trust)
C2	Y	N	N	N	N	(Effectiveness)	N	(Trust)
C3	N	N	Y	N	N	(Accessibility)	N	(Trust)
C4	Y	N	Y	N	N	(Effectiveness)	N	(Equity)
C5	N	N	N	N	N	(Accessibility)	N	(Equity)
C6	Y	N	N	N	N	(Effectiveness)	N	(Trust)
C7	Y	Y	Y	Y	Y	Effectiveness	N	(Trust)
C8	Y	Y	N	N	N	(Effectiveness)	N	(Trust)
C9	Y	Y	Y	Y	Y	Efficiency	Y	Effectiveness
C10	Y	Y	Y	Y	Y	Efficiency	Y	Social inclusion
C11	N	N	N	N	N	(Accessibility)	N	(Equity)
C12	Y	Y	Y	Y	Y	Efficiency	Y	Effectiveness
C13	Y	Y	Y	Y	Y	Efficiency	Y	Effectiveness
C14	Y	N	N	N	Y	Efficiency	N	(Equity)
C15	Y	Y	Y	Y	Y	(Effectiveness)	N	(Trust)
C16	Y	Y	Y	Y	Y	Effectiveness	Y	Trust
C17	Y	Y	Y	Y	Y	Efficiency	N	(Effectiveness)
C18	Y	Y	Y	Y	Y	Efficiency	Y	Effectiveness
C19	Y	Y	Y	Y	N	(Effectiveness)	N	(Trust)
C20	Y	Y	Y	Y	Y	Efficiency	Y	Social inclusion

Public Value outcomes are created or destroyed (brackets indicates public disvalue as effective use not achieved)
 * 7 out of 20 (35 %) of participants achieved transparent interaction, representational fidelity and informed action

Table 4.4. Summary of participants' effective use of e-government

Public value outcomes were realised in all cases in which participants had an effective experience. Of the 65% of cases in which participants' experiences were not effective, 20% were related to interaction issues in which the system did not fully meet accessibility standards. The remaining 45% of the ineffective experiences were related to representational issues; i.e., the information provided by the system did not match their approved NDIS plan or the functionality of the system was not reliable. In all such cases, public disvalue was created.

4.3.3. Part 2: Cross-Case Analysis

After conducting an analysis within each individual case, a cross-case analysis was performed to compare and contrast the data among cases. The focus of the cross-case analysis was on which areas of the 20 cases suggest the same points, where they differ,

and where the cases conflict. The analysis follows George and Bennett's method of "structured, focused comparison" (2004, p.67), which requires researchers to pose the same questions for each case and deal only with certain aspects of each case. This method is particularly relevant to policy outcomes research, since it marshals historical experience to inform practical experience of the present. During the cross-case analysis, cases are compared holistically by employing three forms of focused comparison to determine their similarities and differences:

- (1) Cases are compared at the same level of function (i.e., participants with low and high function are first compared independently) using the resource quality attributes identified as being valued in each participant's experience. The results are then analysed across cases at different levels of function (i.e. participants with low vs. high function);
 - (2) Cases in which participants had an effective use of e-government are compared to test literal replication across cases; i.e., cases selected based on their similarity on the assumption that they will produce similar results. This is followed by a comparison of cases in which participants did not have an effective use of e-government to test theoretical replication across cases; i.e. cases selected on the assumption that they will produce contradictory results;
 - (3) Cases are compared within demographic groups (i.e., residential location, gender, age, and employment status of participants) to determine whether their context has an impact on their perceptions of effective use of e-government.
-

4.3.3.1. Focused comparison of cases using the resource quality attributes valued by participants during their experience using e-government

The first step in the analysis was to compare cases using the resource quality attributes perceived as valuable by citizens living with disability at the same level of function. The participants' experiences are analysed in two groups: (1) citizens living with disability with LOW FUNCTION, and (2) citizens living with disability with HIGH FUNCTION.

In this analysis, if more than half of the participants perceive a resource quality attribute as essential to their effective use of e-government, the resource quality attribute is considered crucial to the determination of success of e-government. (See, for example, the assessment of similarity across cases in table 4.5.)

In the LOW FUNCTION group, participants considered nine of the 12 resource quality attributes identified during the thematic analysis meaningful to their perceptions of a successful experience using e-government. These attributes included: (1) quality of information; (2) usability of the system; (3) reliability of the system; (4) operational efficiency of the service; (5) assurance of the data; (6) responsiveness of public officials; (7) accessibility of the system; (8) equity in the provision of services; and (9) trustworthiness of e-government. The LOW FUNCTION group deemed three resource quality attributes not essential to their effective use: (1) adaptability of the system to personalise the user experience; (2) empathy from public service officials; and (3) ability to use e-government to provide feedback to the government (i.e. participatory democracy). Overall, the analysis revealed significant similarities in participants' perceptions of the resource quality attributes they value across the cases. Table 4.5 provides a summary of

the resource quality attributes valued by participants with LOW FUNCTION. The assessment of similarity across cases indicates the ratio of participants in the group who valued the specified resource quality attribute as essential to their effective use of e-government.

Resource quality attributes	C1	C2	C3	C5	C7	C11	C15	C16	C19	C20	Assessment of similarity across cases
Quality of information	3	12	1	1	3	3	0	1	4	3	9/10
Usability of the system	9	3	10	3	5	9	5	3	6	4	10/10
Reliability of the system	2	1	5	2	3	1	0	3	7	0	8/10
Adaptability of the system	0	0	0	0	0	0	1	0	0	0	1/10
Operational efficiency	1	5	1	1	0	0	1	4	2	1	8/10
Assurance	1	4	1	0	0	0	3	1	1	0	6/10
Responsiveness	1	2	3	0	0	2	0	3	2	1	7/10
Empathy	0	0	2	0	0	1	1	0	1	2	5/10
Accessibility to digital services	6	1	7	8	0	7	2	3	1	1	9/10
Equity	1	1	1	2	0	1	2	0	2	3	8/10
Trustworthiness	1	1	1	0	0	1	1	1	3	2	8/10
Participatory democracy	0	0	1	0	0	0	0	0	1	0	2/10

Table 4.5. Summary of LOW FUNCTION participants' perceptions of resource quality attributes

The notable exception in this group is C7. Although this participant passed the initial screening, it was revealed during the interview that he suffered from a secondary condition of hydrocephalus, which makes it difficult for him to read and absorb complex

sentences, thereby diminishing his ability to process any form of complex writing or comprehend screens with detailed information. For example, when asked to confirm his approval to proceed with the interview by signing the acceptance form, he was unable to comply and requested to do it verbally based on his secondary condition. Consequently, his use of e-government is limited to tracking simple plan functions, and his experience using e-government was quite limited in comparison to the remainder of the group.

In the HIGH FUNCTION group, participants consistently considered eight of the 12 resource quality attributes identified during the thematic analysis meaningful to their perceptions of success, while four were deemed not significant. The resource quality attributes considered important by participants in this group included: (1) quality of information; (2) usability of the system; (3) reliability of the system; (4) operational efficiency of the service; (5) assurance of the data; (6) responsiveness of public officials; (7) equity in the provision of digital services; and (8) trustworthiness of e-government. The majority of participants in the HIGH FUNCTION group viewed four resource quality attributes as non-essential to their effective use: (1) adaptability of the system to personalise the user experience; (2) empathy from public service officials; (3) accessibility of the system; and (4) ability to use e-government to provide feedback to government (i.e. participatory democracy).

Table 4.6 provides a summary of the resource quality attributes participants with HIGH FUNCTION considered valuable to their experience using e-government, analysed across cases at the same level of function. The assessment of similarity across cases indicates the ratio of participants in the group who valued the specified resource quality attribute as essential to their effective use of e-government.

Resource quality attributes	C4	C6	C8	C9	C10	C12	C13	C14	C17	C18	Assessment of similarity across cases
Quality of information	3	2	1	2	3	2	3	6	3	2	10/10
Usability of the system	12	7	11	12	3	6	8	5	10	6	10/10
Reliability of the system	0	0	2	2	1	2	2	1	4	5	8/10
Adaptability of the system	0	0	1	0	0	2	0	0	1	0	3/10
Operational efficiency	1	4	0	0	0	3	1	1	1	2	7/10
Assurance	1	0	0	1	2	2	1	2	1	1	8/10
Responsiveness	1	5	2	4	3	2	3	1	0	0	8/10
Empathy	0	2	0	0	0	2	0	1	0	0	3/10
Accessibility to digital services	0	0	0	0	0	0	0	0	0	0	0/10
Equity	1	0	1	2	3	0	2	0	1	3	7/10
Trustworthiness	0	1	3	1	1	2	2	2	1	1	9/10
Participatory democracy	0	0	0	0	0	2	0	1	1	0	3/10

Table 4.6. Summary of HIGH FUNCTION participants' perceptions of resource quality attributes

The second step in the analysis was to compare the cases at different levels of function. This comparison reveals that a meaningful difference exists between the two groups, in spite of significant similarities. Table 4.7 provides a summary of the comparative ranking of resource quality attributes that participants considered valuable to their experience using e-government, analysed across cases at different levels of function.

Data Source 1: HIGH FUNCTION			Data Source 2: LOW FUNCTION		
Ranking	Resources of e-government	Frequency	Ranking	Resources of e-government	Frequency
1	Quality of information	10	1	Usability of the system	10
2	Usability of system	10	2	Quality of information	9
3	Trustworthiness	9	3	Accessibility	9
4	Reliability	8	4	Reliability	8
5	Assurance	8	5	Operational efficiency	8
6	Responsiveness	8	6	Equity	8
7	Operational efficiency	7	7	Trustworthiness	8
8	Equity	7	8	Responsiveness	7
9	Empathy	3	9	Assurance	6
10	Participatory democracy	3	10	Empathy	5
11	Adaptability of system	3	11	Participatory democracy	2
12	Accessibility	0	12	Adaptability of system	1
Sample size: N = 10			Sample size: N = 10		

Table 4.7. Summary of LOW / HIGH FUNCTION comparison of participants' perceptions of what they consider essential to their effective use of e-government

Of the 12 resource quality attributes, participants in both the LOW and HIGH FUNCTION groups considered eight essential for e-government success. Also, both groups considered three of the resource quality attributes not essential to their perceptions of success: (1) empathy from public service staff; (2) adaptability of the system; and (3) participatory democracy features of the system.

Participants generally do not deem features related to participatory democracy, empathy and adaptability highly essential to achieving an effective use of e-government. Participants' anecdotal explanations for not valuing participatory democratic features of e-government suggest that there is a skew in the power relationship between the government and citizens where benefit outcomes are involved; e-government therefore does not represent the ideal means for participatory open engagement, as participants may fear that negative comments regarding a government service could impact their individual

benefit outcomes. Participants viewed empathy from public service staff as important but not essential, due primarily to their low expectations of receiving empathetic servicing from public service personnel.

The adaptability of systems was the only instance of a significant difference in value perception between participants younger than 50 and those over 50. Although the adaptability or personalisation of e-government is still not perceived by participants as essential to achieving a positive outcome using e-government irrespective of age, such a demographic variance suggests this value is likely to increase in importance as the portion of the population with high-level computer skills increases over time.

The most considerable difference between the two groups is the value assigned to accessibility of the system (HIGH FUNCTION 0, LOW FUNCTION 9). It is logical that the HIGH FUNCTION group does not consistently perceive accessibility as a crucial influence on the effective use of e-government, as they do not rely on assistive technology for accessibility to the system. Comparison of cases across groups raises questions concerning the inclusion of accessibility as a crucial resource quality that influences the effective use of e-government for citizens living with disability.

A **rival explanation** to this outcome is apparent in comparing the data collected in the third interview session regarding the resource quality attributes participants consider essential to the success of e-government. Table 4.8 provides a summary of the comparative ranking of resource quality attributes that participants considered essential for the success of e-government.

Data Source 1: HIGH FUNCTION			Data Source 2: LOW FUNCTION		
Ranking	Resources of e-government	Frequency	Ranking	Resources of e-government	Frequency
1	Reliability	9	1	Usability of system	10
2	Accessibility	9	2	Quality of information	9
3	Usability of system	8	3	Equity	9
4	Equity	8	4	Trustworthiness	9
5	Trustworthiness	8	5	Accessibility	8
6	Responsiveness	7	6	Reliability	7
7	Operational efficiency	6	7	Operational efficiency	7
8	Assurance	6	8	Responsiveness	7
9	Quality of information	6	9	Assurance	6
10	Participatory democracy	4	10	Participatory democracy	5
11	Adaptability of system	3	11	Empathy	4
12	Empathy	2	12	Adaptability of system	3

Sample size: N = 10

Sample size: N = 10

Table 4.8. Summary of LOW / HIGH FUNCTION comparison of participants' perceptions of what they consider essential to the success of e-government

Nine of the 12 resource quality attributes were consistently rated by both HIGH and LOW FUNCTION groups as essential to the success of e-government. Notably, participants in the HIGH FUNCTION group deemed accessibility resource qualities highly relevant in evaluating the overall success of e-government, even if they were perceived as not essential to their individual experiences when using e-government. Of the ten participants in each group, the resource quality attribute of accessibility was perceived as essential to success by nine participants in the HIGH FUNCTION group and eight participants in the LOW FUNCTION group. Both groups judged adaptability of the system, empathy and participatory democracy as not essential to the success of e-government.

The foregoing analysis suggests that it is not only the resource quality attributes of e-government that participants actually use to determine which resource attributes are

crucial to its success, but also the perceived essential nature of the resource qualities that determine the broader outcomes achieved by citizens living with disability as a result of interacting with government in a digital manner. This supports the inclusion of accessibility as a crucial resource quality attribute in the evaluation of e-government success and the removal of adaptability of the system, empathy and participatory democracy.

This structured, focused comparison of the resource quality attributes valued by participants during their experience using e-government provides insights into (RQ1):

What are the crucial qualities of e-government that determine success from the viewpoint of citizens living with disability?

The overall analysis revealed that most participants perceive nine resource quality attributes of e-government as determinants of success. These attributes are: (1) quality of information; (2) usability of the system; (3) reliability of the system; (4) operational efficiency of the service; (5) assurance of the data; (6) responsiveness of public officials; (7) accessibility of the system; (8) equity in the provision of services; and (9) trustworthiness of e-government.

4.3.3.2. Focused comparison of cases based on participants' effective / ineffective use of e-government

The first step of the analysis was to test **literal replication** across the cases by comparing the experiences of citizens living with disability who had an effective use of e-government; i.e., cases in which all three standards of use were met and where similar

results were also predicted. Using the conceptual framework as a guide, analysis across the cases reveals that public value outcomes were created when participants had an effective use of e-government (see Table 4.9.). That is, public value outcomes are created by the effective use of e-government when citizens are both the creator (through their effective use of e-government) and recipient of public value outcomes created by effective use of e-government (as citizens living with disability). Table 4.9 provides a summary of the use of e-government across these cases, analysed against the three standards of effective use (A, B, C).

Case No.	Standards of Use			Public Value Outcome / Public (dis)value Outcomes
	A: Transparent interaction	B: Representational fidelity	C: Informed Action	
	<i>Use of resources of the system without difficulty</i>	<i>Use of the functionality of the system to complete a task without difficulty</i>	<i>Act on the information from the system in a way that maximised the outcome</i>	
C9	✓	✓	✓	Efficiency Effectiveness
C10	✓	✓	✓	Efficiency Social inclusion
C12	✓	✓	✓	Efficiency Effectiveness
C13	✓	✓	✓	Efficiency Effectiveness
C16	✓	✓	✓	Effectiveness Trust
C18	✓	✓	✓	Efficiency Effectiveness
C20	✓	✓	✓	Efficiency, Social inclusion

Table 4.9. Summary of analysis of participants who had an effective use of e-government against standards of use

Seven of the 20 cases in the study had an effective use of e-government (C9, C10, C12, C13, C16, C18, and C20), and public value outcomes were created in each of these cases. These participants perceived the success of e-government based primarily on increased efficiency in the delivery of quality public services afforded by e-government

(assessed in terms of goal achievement for a set of inputs). The exception was C16, who used e-government to manage plan outcomes, which produced a first order benefit of effectiveness. Furthermore, these participants were able to apply information from e-government to maximise outcomes and thereby enhance their perceptions of either the effectiveness of government agencies or improvements in social outcomes. These outcomes included feelings of social inclusion, increased trustworthiness of government, and increased personal independence. The analysis implies that literal replication across the cases was achieved, thus supporting the theoretical proposition that effective use of e-government determines the creation of public value outcomes.

The second step of the analysis was to test **theoretical replication**. This was accomplished by comparing the cases in which participants did not have an effective use of e-government based on the conceptual framework; i.e., the cases did not meet all three standards of use and are therefore predicted to produce contradictory results. The conceptual framework predicts that citizens living with disability will not create public value outcomes if their use of e-government is not effective. 13 participants did not experience an effective use of e-government, and in these cases *negative value (or public disvalue)* was created from interactions with e-government. During the data collection phase of the study, three distinct case patterns emerged when participants did not have an effective use of e-government: (1) Cases in which participants were not able to access the resources of e-government without difficulty and could not complete their tasks; (2) Cases in which participants were able to use e-government resources easily but could not use the functionality of e-government to complete their task; and (3) Cases in which participants were able to complete their task efficiently but were not able to use the information from e-government to maximise their outcomes.

In the **first pattern**, there were five cases (C1, C2, C3, C5, and C11) in which participants failed to use the resources of e-government effectively. Table 4.10 provides a summary of the public value (disvalue) outcomes created by these participants using e-government.

Case No.	Standards of Use			Public Value Outcome / Public (disvalue) outcomes
	A: Transparent interaction	B: Representational fidelity	C: Informed Action	
	<i>Use of resources of the system without difficulty</i>	<i>Use of the functionality of the system to complete a task without difficulty</i>	<i>Act on the information from the system in a way that maximised the outcome</i>	
C1	X	X	X	(Accessibility) (Trust)
C2	X	X	X	(Effectiveness) (Trust)
C3	X	X	X	(Accessibility) (Trust)
C5	X	X	X	(Accessibility) (Equity)
C11	X	X	X	(Accessibility) (Equity)

Table 4.10. Summary of performance of participants who did not an effective use (pattern 1) against standards of use

The failure of C1, C3, C5 and C11 to use the resources of e-government was the direct result of the system's lack of compliance with accessibility standards, while C2 could not use the system effectively due to the perceived poor quality of information on the system. In all of these cases, participants were unable to accomplish their goals using e-government and had to revert to staff assisted channels, creating a sense of mistrust in e-government and calling into question the trustworthiness of the government's intentions.

In the **second pattern**, there were five cases (C4, C6, C8, C15 and C19) in which participants were able to use the resources of e-government without difficulty but were

unable to use the functionality of the system to complete their tasks. All of these encounters resulted in participants resorting to alternative channels to complete or partially complete their task, creating an impression of ineffectiveness on the part of government agencies. Table 4.11 provides a summary of the public value (disvalue) outcomes created by these participants using e-government.

Case No.	Standards of Use			Public Value Outcome / Public (disvalue) outcomes
	A: Transparent interaction	B: Representational fidelity	C: Informed Action	
	<i>Use of resources of the system without difficulty</i>	<i>Use of the functionality of the system to complete a task without difficulty</i>	<i>Act on the information from the system in a way that maximised the outcome</i>	
C4	✓	X	X	(Effectiveness) (Equity)
C6	✓	X	X	(Effectiveness) (Trust)
C8	✓	X	X	(Effectiveness) (Trust)
C15	✓	X	X	(Effectiveness) (Trust)
C19	✓	X	X	(Effectiveness) (Trust)

Table 4.11. Summary of performance of participants who did not an effective use (pattern 2) against standards of use

In the **third pattern**, there were three cases (C7, C14 and C17) in which participants were able to use the resources of e-government without difficulty and complete their task efficiently and effectively, but the information from the system could not be applied to maximise their outcomes, creating a sense of inequity in the provision of services and mistrust in government. In these cases, public value was created through first order benefits, but second order benefits could not be created (refer to ideograms for first order and second order benefits). In this study, it was essential that all three standards of use be met to achieve effective use. However, the results from this analysis raises the issue

of whether public disvalue outcomes derived from second order benefits override the public value outcomes from first order benefits.

Information from the interviews suggests that public disvalue has an amplifying effect on participant's perceptions of success, which impacts on social values by requiring them to seek the assistance of third parties. This supports the position that all three standards of use need to be met to create effective use. Table 4.12 provides a summary of the public value (disvalue) outcomes created by these participants using e-government.

Case No.	Standards of Use			Public Value Outcome / Public (disvalue) outcomes
	A: Transparent interaction	B: Representational fidelity	C: Informed Action	
	<i>Use of resources of the system without difficulty</i>	<i>Use of the functionality of the system to complete a task without difficulty</i>	<i>Act on the information from the system in a way that maximised the outcome</i>	
C7	✓	✓	X	Effectiveness (Trust)
C14	✓	✓	X	Efficiency (Equity)
C17	✓	✓	X	Efficiency (Effectiveness)

Table 4.12. Summary of performance of participants who did not an effective use (pattern 3) against standards of use

This focused comparison of participants' experience in using e-government provides insights into RQ2:

How are public value outcomes successfully created for citizens living with disability through their use of e-government?

The overall analysis revealed that all participants who experienced an effective use of e-government (as defined in this research) created public value outcomes, and those who did not have an effective use created public disvalue outcomes, which is

potentially significant in understanding the determinants of a successful encounter with e-government. The results from this analysis support both literal and theoretical replication, thus verifying the proposition in the conceptual framework that effective use of e-government determines the creation of public value outcomes.

4.3.3.3. Focused comparison of cases based on participants' contexts and their impacts on e-government use

In this study, participants' contexts relate to the demographic data of participants: residential location, gender, age, employment status and computer skills. The objective of this comparison is to determine the extent to which participants' contexts impact on their use of e-government, analysed through the lens of their demographic data. The study was limited in that it included only participants who were active, experienced and skilled users of e-government. It is therefore unsurprising that computer skills were not a meaningful differentiating factor among cases and are therefore not analysed in this study.

Attribute coding was completed for all participant data. Cases in which the analysis exhibited identifiable variations in participant perceptions within demographic groups are highlighted as significant in determining whether participant demographics influenced perceptions of the effective use of e-government. The data analysis results were plotted on a *radar chart*, which is used to visually illustrate the comparison of participant perceptions of the multiple resource quality attributes identified in this study. Radar charts are useful in demonstrating which resource quality attributes have similar values, as well as identifying any outliers among each resource quality attribute. Radar charts are also valuable in visualising high and low scores within a data set of resource quality attributes,

making them ideal for displaying comparative performance. In this analysis, the resource quality attribute is considered essential to the demographic group if the result is above 50% (i.e., outside the red circle).

4.3.3.3.1. Residential location of participants

A comparison between the perceptions of participants living in rural and metropolitan areas regarding the essential nature of resource quality attributes to their effective use of e-government is shown in figure 4.22.

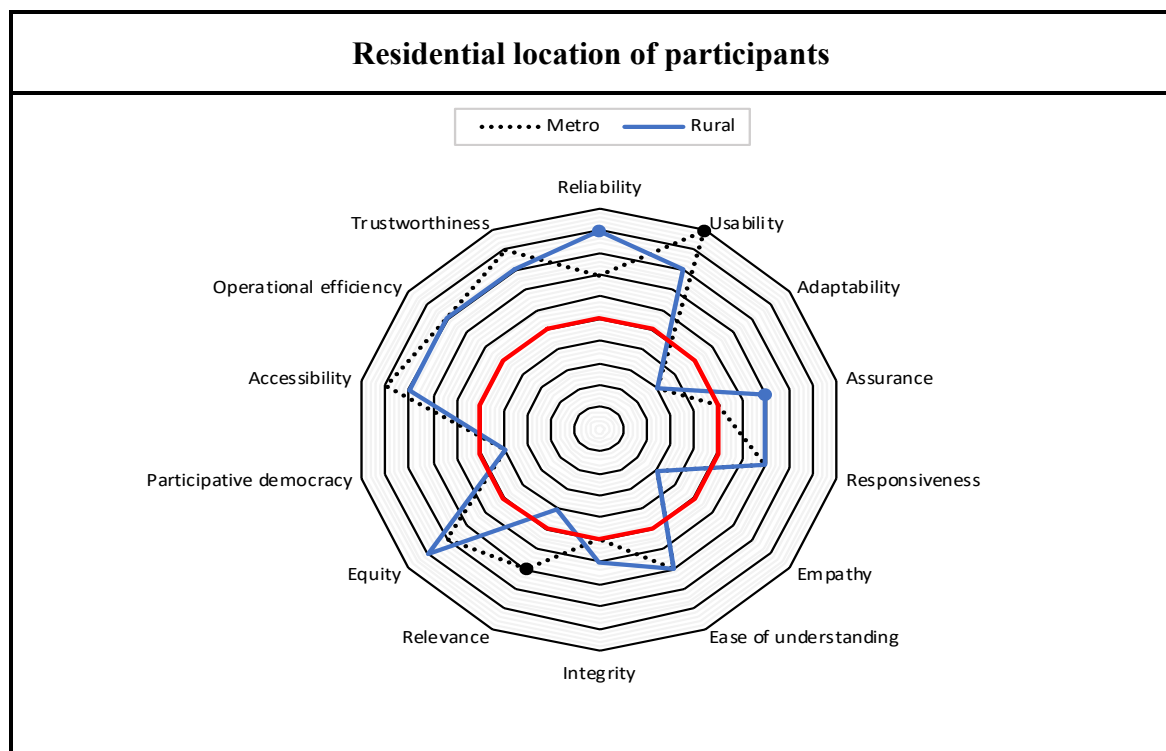


Figure 4.22. Overall participant perceptions on the essential nature of resource quality attributes analysed by residential location

Participants living in rural locations consider reliability of the systems and assurance of data confidentiality as more essential to their effective use than their metro counterparts. This is explained by the critical nature of network connectivity in rural areas

that can affect the associated reliability of the system and a relative lack of anonymity in smaller towns. Conversely, rural participants consider the relevance of information on e-government less essential than those in metro areas. The interview data reveals that rural residents rely heavily on staff-assisted channels to obtain clear explanations of information. On the other hand, participants from metropolitan areas deem the usability of the system highly essential to their effective use of e-government, more so than their regional counterparts. This is driven by how participants in metro areas perceive the inefficiency of non-digital channels.

Both groups value equity, accessibility, operational efficiency, trustworthiness, responsiveness, and ease of understanding information as essential to their effective use of e-government, while neither group regards participatory democracy, empathy or adaptability as essential to their use of the service. A notable difference between the rural and metro participants is the fact that metro participants judge the relevance of information as essential to their effective use, while rural participants do not. Overall, the analysis reveals that the residential location of participants has a bearing on their perceptions of the essential nature of e-government resource qualities to their effective use of the service.

4.3.3.3.2. Gender of participants

A comparison of cases analysed by gender, detailed in Figure 4.23, exhibits several significant differences between male and female participants in terms of the resource quality attributes they consider essential to their effective use of e-government.

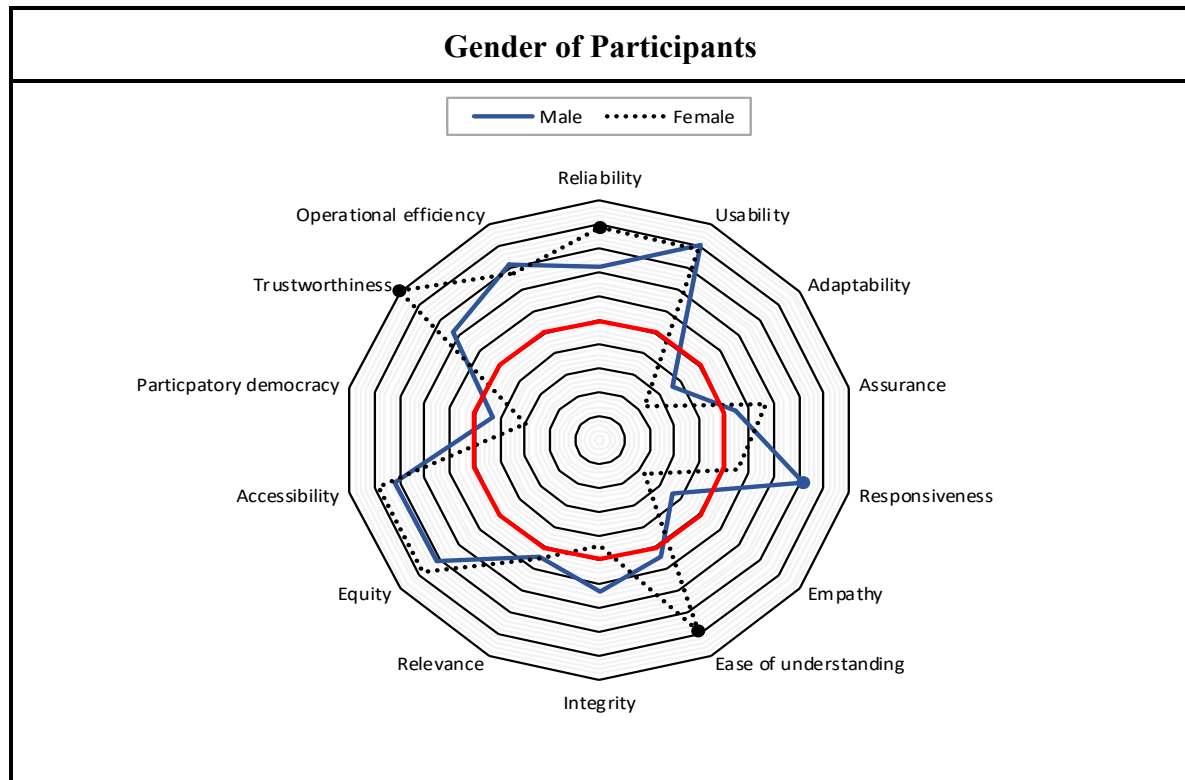


Figure 4.23. Overall participant perceptions on the essential nature of resource quality attributes analysed by gender of participant

There are three resource quality attributes female participants believe are highly essential to their context that differ from their male counterparts: trustworthiness, ease of understanding of information, and reliability of the system. Male participants in the study, however, consider responsiveness to online enquiries more essential than their female counterparts.

Both male and female participants value equity, accessibility, operational efficiency, usability and integrity as essential to their effective use of e-government, while neither group regards participatory democracy, empathy or adaptability as essential to their use of the service. A notable difference between the male and female participants is that men view the integrity of information as essential to their effective use, while women do not. Overall, the analysis reveals that the gender of participants has a bearing on their

perceptions of the essential nature of the quality of e-government resources to their effective use of the service.

4.3.3.3. Age of participants

In Figure 4.24, participants are grouped into two age categories: (1) those below 50 years old (the younger group); and (2) those over 50 years old (the older group). This delineation of the groups, although subjective, was based on aligning computing skill levels to the working age of participants and the availability of e-government in Australia.

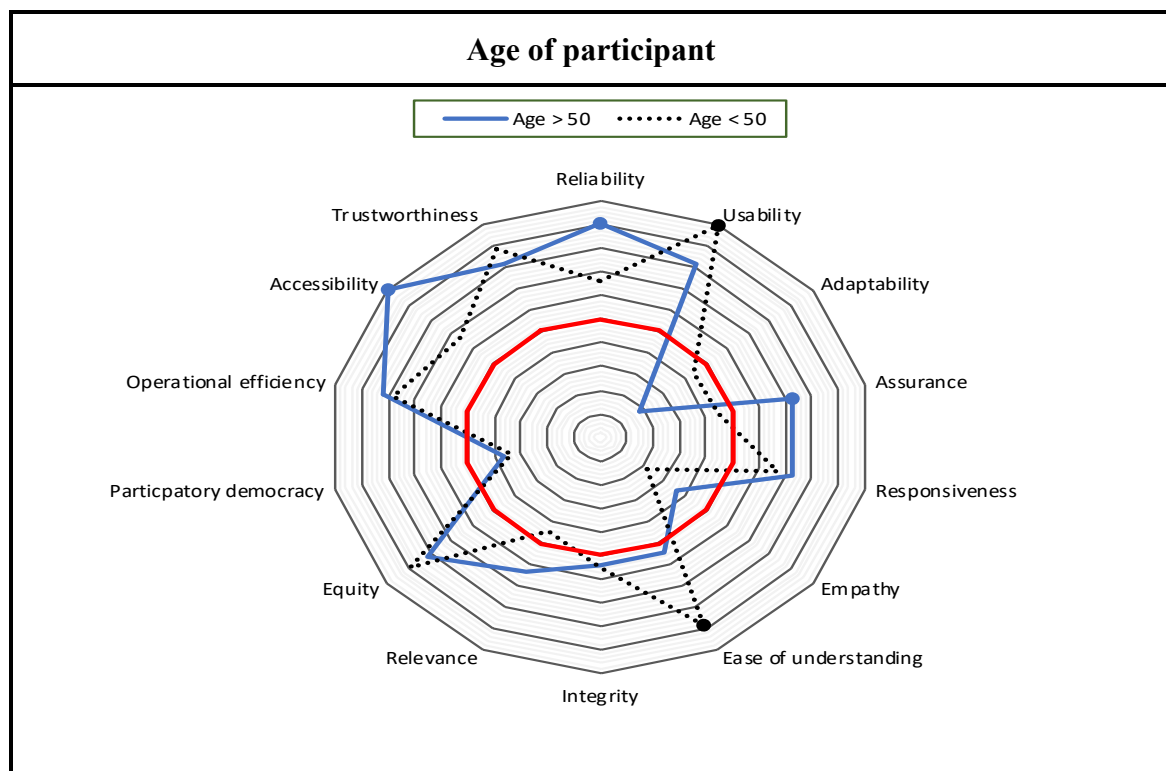


Figure 4.24. Overall participant perceptions on the essential nature of resource quality attributes analysed by age of participant

The analysis exposes several meaningful differences in the perceptions of younger and older participants regarding the essential nature of individual resource quality attributes to their effective use of e-government. Younger participants consider the

usability of the system and ease of understanding information more essential to their effective use than those in the older group, whereas older participants deem accessibility, reliability and assurance more essential than those in the younger group.

Both groups value equity, operational efficiency, trustworthiness and responsiveness as essential to their use of e-government, while neither group regards participatory democracy, empathy or adaptability as essential to their use of the service. A notable distinction is that participants in the older group considers the relevance of information and assurance of data confidentiality as essential to their effective use, while those in the younger group do not. Overall, the analysis reveals that the age of participants has a bearing on their perceptions of the essential nature of e-government resource quality to their effective use of the service.

4.3.3.3.4. Employment status of participants

A comparison of cases according to participant employment status, as shown in Figure 4.25, highlights significant differences between employed and unemployed participants with regard to which resource quality attributes are considered essential. Employed participants consider all resource quality attributes to be less essential to their effective use of e-government than do participants who are not employed, with the exception of the resource quality attribute of responsiveness. This exception can be explained in that employed participants have limited time in their schedules to interact with e-government due to their work commitments.

Furthermore, participants who are not employed see trustworthiness, reliability, usability and equity as highly essential to their use of e-government. Both groups value

accessibility and operational efficiency as essential to their use of e-government, while neither group regards empathy or adaptability as essential to their use of the service. A notable difference between these demographic groups relates to their perceptions of the need for participatory democracy. Unemployed participants value participatory democracy as essential to their effective use of e-government, while employed participants do not. Overall, the analysis reveals that the employment status of participants has a bearing on their perceptions of the essential nature of e-government resource quality to their effective use of the service.

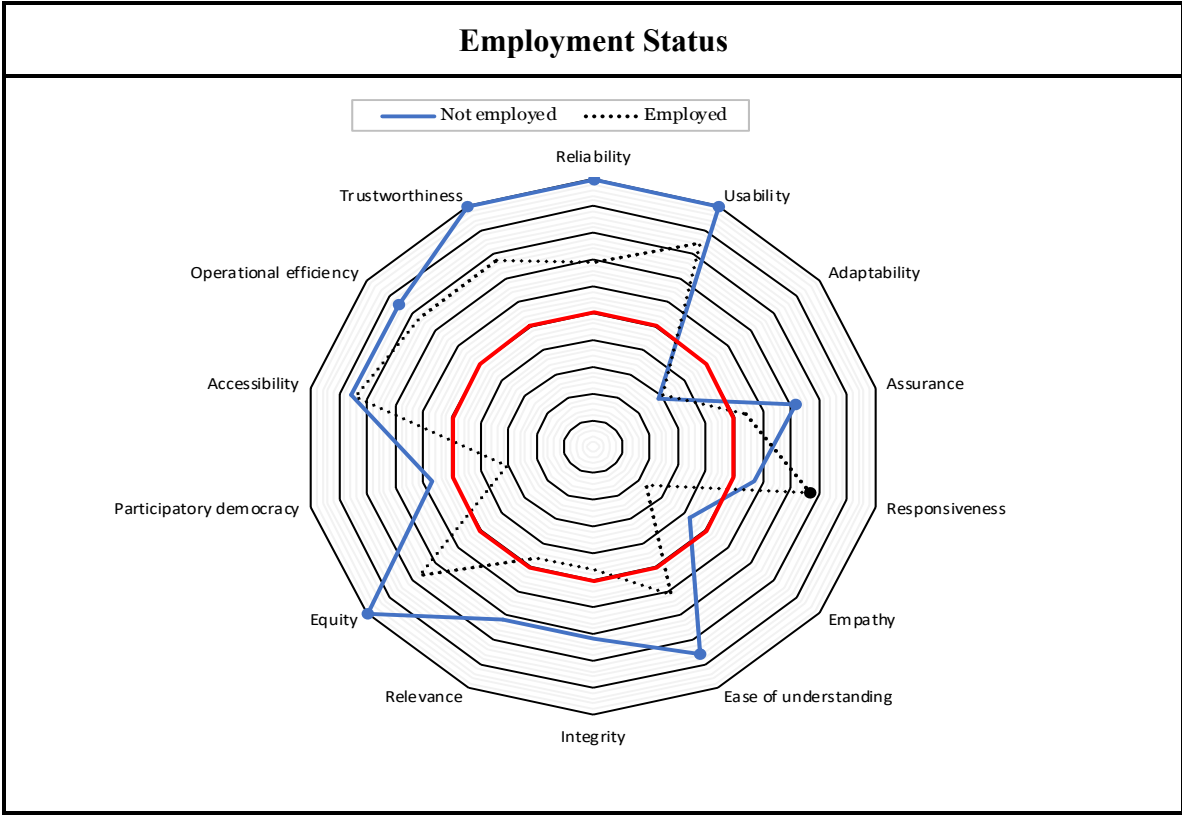


Figure 4.25. Overall participant perceptions on the essential nature of resource quality attributes analysed by employment status

This focused comparison of participants' "lived" experiences using e-government provides insights into RQ3:

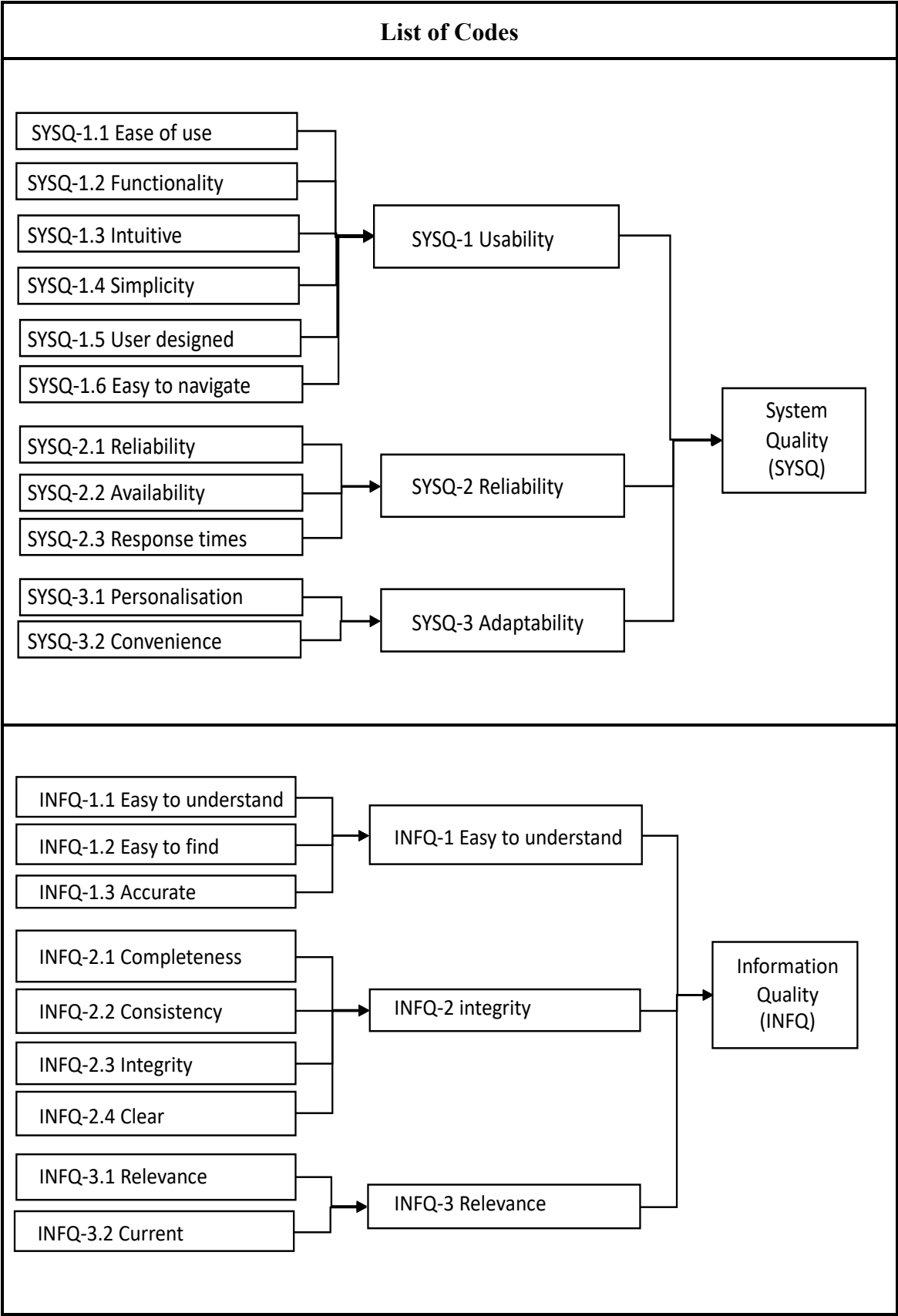
How do citizens' "lived" contexts impact their perceptions of success through their effective use of e-government?

The analysis shows that residential location, gender, age and employment status all have a bearing on how citizens living with disability perceive the essential nature of resource quality attributes to their effective use of e-government.

4.4. Results of the thematic analysis

In this study, 47 codes were derived based on (a) theoretical interests regarding the social construction of e-government use, and (b) recurrent resource qualities raised in the interviews regarding participants' use of e-government. These two foci were combined and by examining the transcripts and documents, the most salient constructs were identified and shaped into a finite set of codes that were sufficiently discrete to avoid redundancy while global enough to be meaningful in answering the research questions.

The transcripts were then dissected, classified and organised according to these codes. Figure 4.26. details a list of the codes that emerged during the thematic analysis process across all cases.



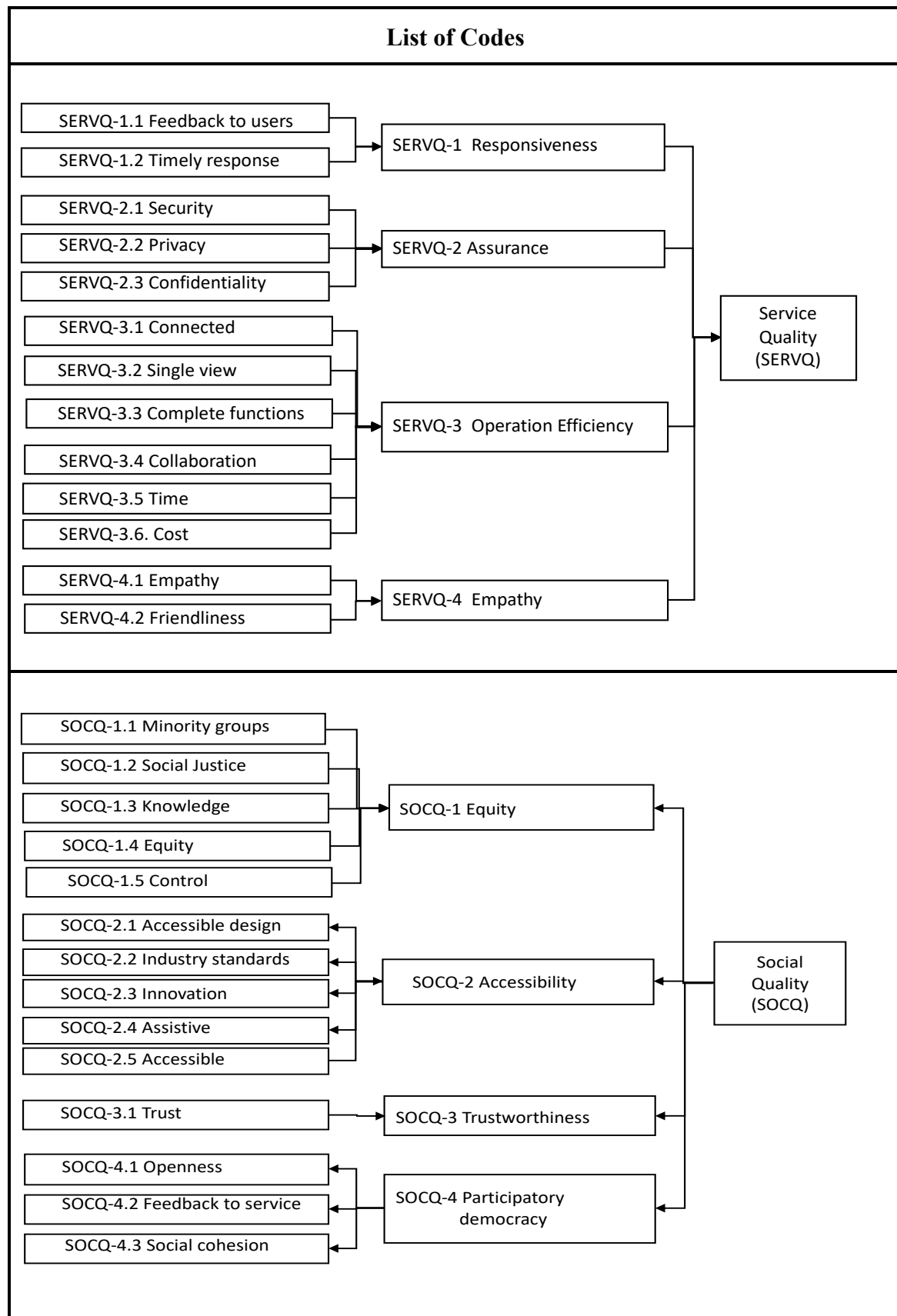


Figure 4.26. List of codes emerging from the thematic analysis

The 47 codes were grouped into 12 focused codes, and each code's text segments were reviewed, and themes were created. Three categories of themes exist in thematic analysis: basic, organising and core themes. A basic theme is a lowest-order theme derived from the initial code that is attached to fragments of data. An organising theme is a middle-order theme that organises the set of basic themes allocated into groups that represent similar topics. A core theme, sometimes referred to as a global theme, is a highest-order theme that holistically incorporates the principal representations of the data. They are used to group interrelated organising themes in order to present an argument that addresses the research questions.

Figure 4.27 illustrates the outputs of steps 2 to 4 in the construction of the thematic analysis using the procedures outlined in Section 4.2.3. The 12 focused codes were eventually merged into three broad groupings based on related conceptual content. Taking each group in turn, the elements in the basic themes, now interpreted as Basic Themes, were assembled into 12 groups, again based on conceptual correspondence. The 12 groups of Basic Themes were then interpreted as Organising Themes, and the underlying resource quality attributes shared between the Basic Themes were identified and made explicit, thereby naming each Organising Theme.

Taking each of the three groups of themes identified in turn, three Core Themes unifying the Organising Themes emerged; these summarised the main propositions of the 12 Organizing Themes and the 12 Basic Themes. Figure 4.27 provides a list of the codes linked to emerging themes.

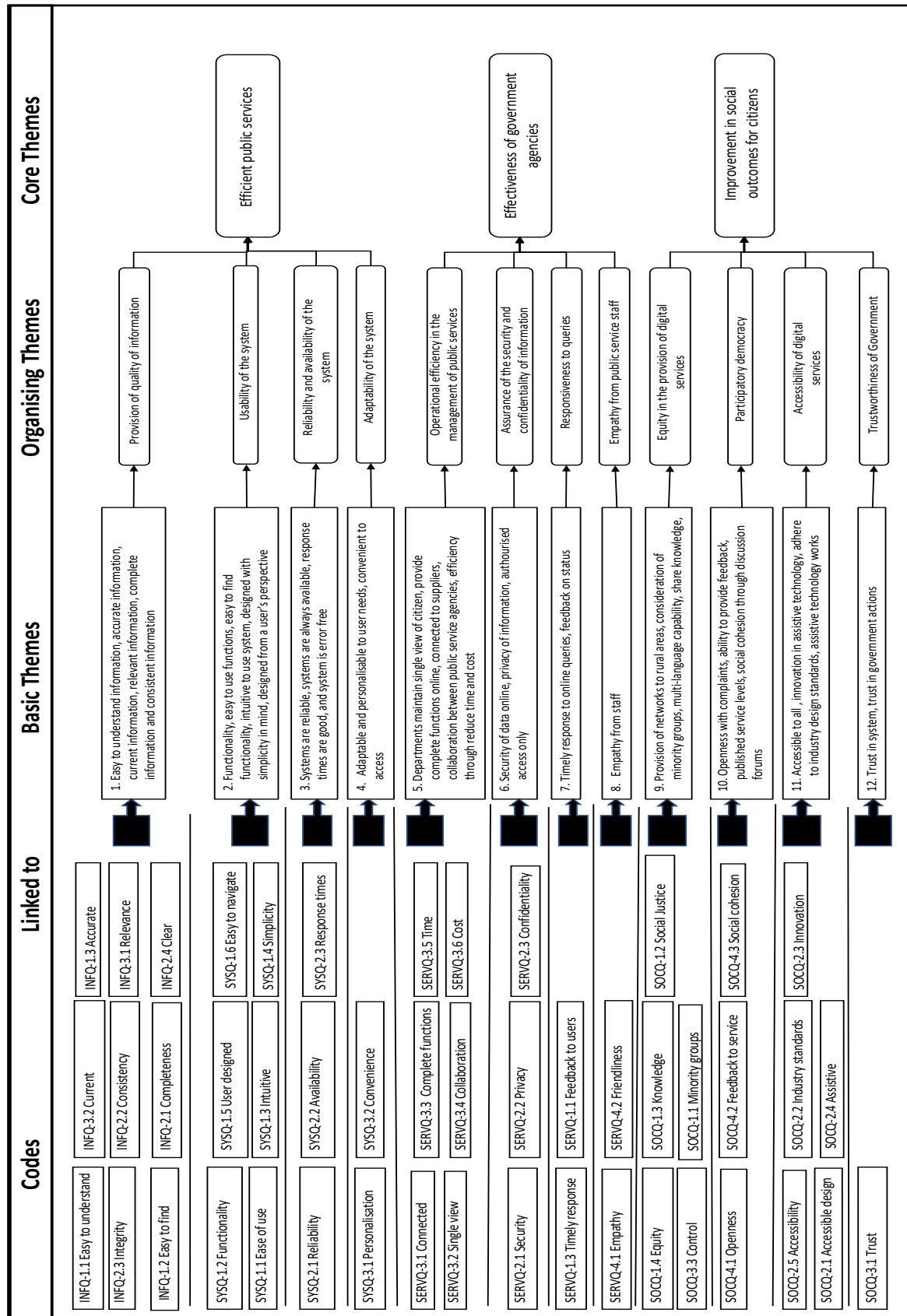


Figure 4.27. Emerging themes

The emerging themes were checked against the research questions and how they related to the previously coded extracts as a way to close the thematic loop. They were subsequently used as the basis for creating a thematic map, after which the themes were finalised. Entries with similar or identical themes were merged or grouped to answer the research questions. Figure 4.28 shows the final thematic network map developed as part of the research.

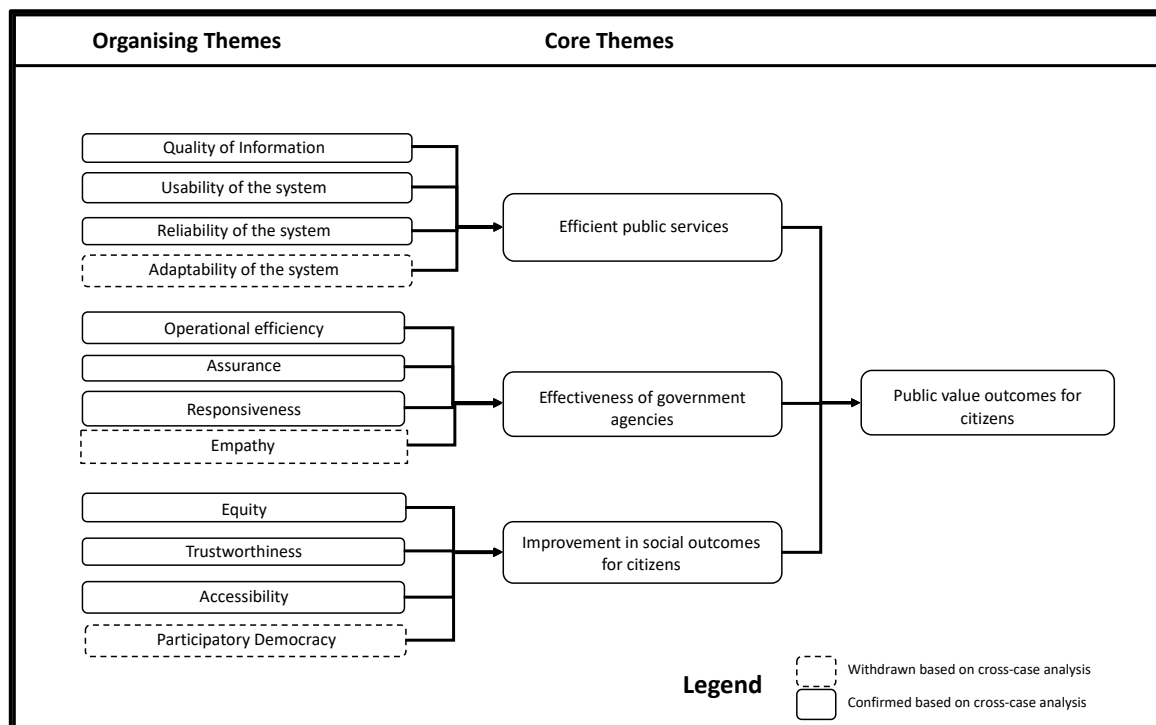


Figure 4.28. Thematic map of core public value themes emerging from the analysis

4.5. Themes of explanation to the research questions

The thematic analysis of the 20 cases in the study revealed the nine crucial resource quality attributes that determine participants' effective use of e-government: (1) the quality of information; (2) the usability of the system; (3) the reliability of the system; (4) the operational efficiency in the management of public services; (5) responsiveness of

public officials to service requests; (6) assurance of security and confidentiality of personal data stored in e-government; (7) equity in the provision of digital services (8) accessibility of the system; and (9) trustworthiness of e-government. Figure 4.29. presents the crucial resource quality attributes that participants perceive as essential to their effective use of e-government.

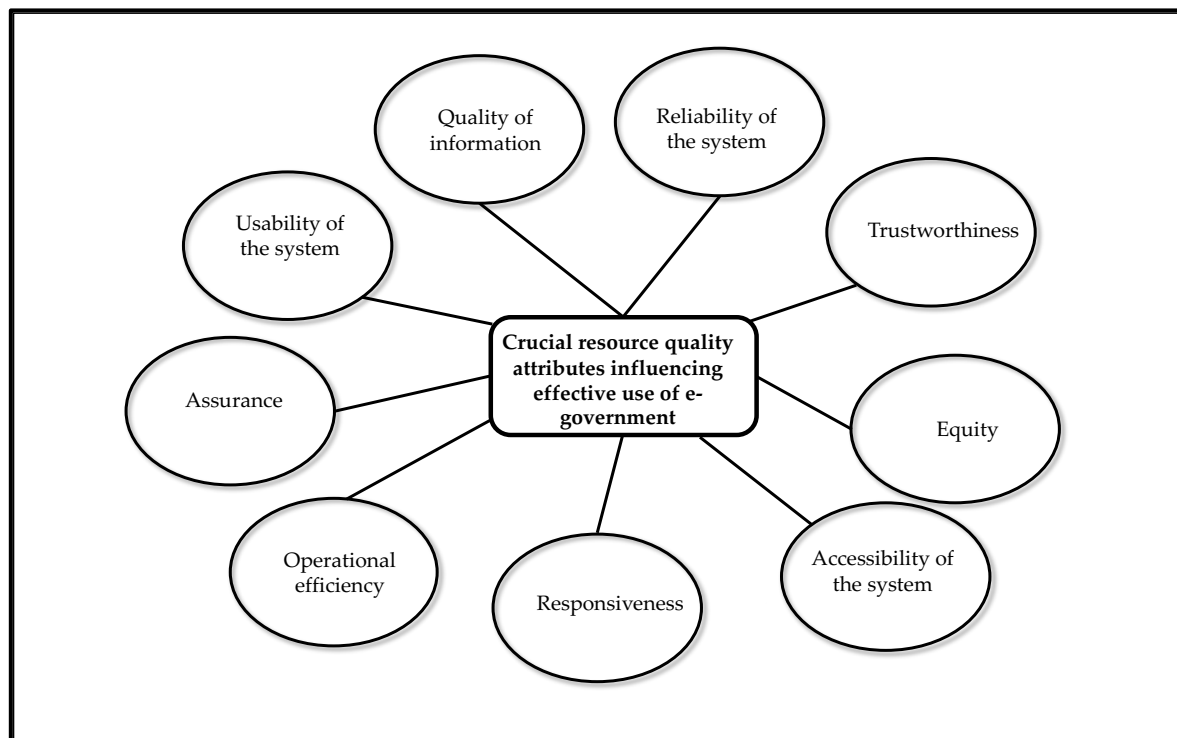


Figure 4.29. Crucial resource quality attributes that determine participants' effective use of e-government

The thematic analysis led to the explanation that e-government success can be evaluated through three core public value outcomes themes. The findings demonstrate that study participants value the public value outcomes they gain through their effective use of e-government, which they assess through: (1) efficient public services; (2) effectiveness of government agencies; and (3) improvements in social outcomes. The identification of public value outcomes as an objective measure of e-government success from the

perspective of study participants answers the main research question concerning evaluating the performance of e-government from the perspective of citizens.

4.5.1. Core theme 1: Efficient public services

Study participants value efficient public services, which they derive from the provision of quality information via e-government, the usability of system functions to fully complete tasks online, and the reliability and availability of the technical infrastructure enabling the system. E-government supports efficient public services through the quality of system resources available to support participants in achieving their goals with minimal effort or inconvenience.

Study participants value access to quality information available on e-government, which they believe enhances their ability to obtain public services efficiently. The quality of information on the system supports them in making better decisions, submitting applications in a more timely manner, requesting payments more appropriately and communicating with the public service more efficiently. Participants value access to quality information online, as they believe these facilities make public services more efficient, saving them time and money and making their lives easier. Participants also feel that the usability of e-government has a significant impact on their perceptions of an efficient public service. Participants consider public services efficient when e-government systems function in an open, user-friendly manner that fulfils citizens' needs. They also value functional e-government services that are simple and structured to address their needs and that are designed with the needs of users in mind.

Participants in the study expect the technological infrastructure supporting e-government to be consistently reliable and available. They believe that the efficiency of public services is enhanced when tasks can be completed through e-government without interruption and when response times are acceptable. The participants value systems that are error free and that do not require technical support to complete a public service task. Ease of access to e-government as a result of its reliability and availability significantly impacts participants' confidence in e-government and their decision to use the service, which in turn influences their judgment of the ability of public organisations to provide efficient public services.

4.5.2. Core theme 2: Effectiveness of government agencies

Participants in the study value the effectiveness of government agencies in delivering outcomes to citizens by providing complete services online. The effectiveness of government agencies is manifested through the operational efficiency of public administrators in delivering outcomes to citizens, the inter-connectedness of government agencies (and third parties) in sharing citizen data to increase the effectiveness of outcomes to citizens, assurance of confidentiality and privacy of citizen data, and the responsiveness of public service staff to online queries to support citizens within the online channel.

Participants displayed positive perceptions regarding the operational efficiency in the management of public services when they were able to achieve the desired outcome in their engagement with e-government without resorting to staff-assisted functions by phone or in person. Participants also felt that connecting e-government systems across multiple

agencies, as well as between private and public sector service providers, generates further benefits to citizens and thereby maximises the effectiveness of government agencies. Connecting the computer systems of different government organisations and enabling them to share public information makes it unnecessary for citizens to obtain data from multiple organisations in order to complete public service tasks, which influences their perceptions of the effectiveness of government agencies. In addition, the responsiveness of public service staff in dealing with online queries is crucial in bolstering the effectiveness of government agencies. Study participants felt that this value is realised through timely responses to enquiries and the opportunity to track progress on the status of applications or other communications with government. Ensuring minimal delay in addressing citizen issues or enquiries proved a significant determinant in participants' perceptions of the effectiveness of government agencies.

Providing assurance of the security and privacy of personal information stored within e-government is essential to participants' perceptions of the effectiveness of government agencies. They also expect government to provide assurances that public service officials use their personal information in an appropriate manner. It is therefore essential for the government to maintain the confidentiality of citizens' information, as a failure to do so may diminish the overall sense of the effectiveness of government agencies.

4.5.3. Core theme 3: Improvements in social outcomes

Participants in the study value the improvements to social outcomes derived from e-government's support of citizens' participation in the social, economic and cultural lives

of their communities to enhance their sense of well-being and individual potential. These beneficial social outcomes are evidenced by equity in the provision of digital services, the accessibility of e-government, and the trustworthiness of e-government, all of which contribute to citizens' perceptions of social equity, social empowerment and social inclusion.

Participants in the study value equity in the delivery of digital services, which they view as a socially desired outcome. Participants revealed that equity is demonstrated by the level of access to digital services in rural and remote communities and the degree to which e-government is compliant with industry accessibility standards. Participants' perceptions of the trustworthiness of e-government also constitute a crucial factor in creating public value outcomes, particularly as e-government is employed by public organisations to deliver program outcomes that contribute to building a trustworthy society. Citizens' perceptions regarding the capability of public organisation to provide digital services and equity in the provision of such services often reflect their perceptions of the trustworthiness of government, which is a socially desired outcome.

Participants further stressed that the accessibility of e-government supports the socially desired outcomes of independence and social empowerment. Participants unanimously judged the accessibility of e-government as both valuable to society and essential in creating a sense of social inclusion.

4.6. Summary

This chapter details the analysis of the data in this multiple case study research. After articulating justifications for the selected data analysis techniques (thematic analysis

and comparative case analysis), the cases are analysed using both within-case and cross-case analysis. The analyses demonstrate that e-government success can be measured through three public value outcomes: (1) efficient public services; (2) effectiveness of government agencies; and (3) improvements in social outcomes for citizens. The following chapter engages the findings of the research with extant literature in a critical discussion of the results, highlighting the theoretical contributions of this study to the body of knowledge on public value outcomes created from the use of e-government. ■

Chapter 5

Research Findings and Discussion

5.1. Introduction

It is particularly noteworthy that citizens perceive the success of e-government from the public value outcomes emanating from its use. The findings from the study reveal that citizens living with disability value (1) efficient public services; (2) effectiveness of government agencies; and (3) improvements in social outcomes. This chapter utilises these findings as a springboard from which to engage with extant literature with the objective of demonstrating how this study enriches the literature and current research on e-government performance evaluations.

Sections 5.2, 5.3 and 5.4 engage in a discussion of the research results against the backdrop of the extant literature, through the lens of the success dimensions of e-government identified in this study. In doing so, the propositions raised in Chapter two as part of the conceptual framework are assessed (incorporating sub-categories to aid in aligning the original propositions with the findings), while simultaneously highlighting elements in the findings that further the knowledge on e-government and public value research. Section 5.5 concludes the chapter with an outline of the revised conceptual model for evaluating e-government performance developed from this research.

5.2. Public Value outcome: Efficient public services

The study reveals that citizens living with disability value efficient public services. This public value outcome, conveyed through effective use of e-government, is reflected in citizens' perceptions of (1) the quality of the information provided on the system; (2) the usability of the system; and (3) the reliability of the system. The research also reveals that citizens living with disability do not perceive the ability to adapt or personalise the system as essential to their effective use of e-government in determining efficient public services.

E-government has the potential to dramatically increase the efficiency of support for the activities of daily living for citizens living with disability, as they often face mobility challenges. As the findings demonstrate, the potential also exists to further disadvantage those living with disability. The benefits of efficient public services for citizens (convenience, or cost and time savings) enabled by e-government can be eroded through institutionalised inefficiencies embedded within e-government, thereby increasing costs and delivering inefficient services as compared with staff assisted channels.

While several studies identify quality public services as an outcomes measure of e-government success (Golubeva, 2007; Karunasena, 2012; Kearns, 2004; Omar, 2015), the findings of the current study are distinguishable in that they emanate from a different aspect of public service performance. In the current study, efficient public services were identified by citizens living with disability as a measure of success, as opposed to the quality of public services. This differentiation between quality and efficiency, though nuanced, is a key distinction that emerged from the findings. While the dimensions of quality employed in past studies are indisputable drivers of efficiency, the findings from

the current study emphasise the value citizens living with disability place on the efficiency outcomes they derive from the reliability and availability of the technology infrastructure, which constitute the foundational capabilities required to achieve their desired goals from using the system. Citizens chose to revert to staff assisted channels when the reliability or availability of the technology enabling e-government failed or when the functionality or usability of the system did not allow them to complete their task, resulting in inefficient public services.

The significant impact of efficient public services on the success of e-government revealed in this study is consistent with the views of Irani and Love (2008) and Gunasekaran et al. (2006) that any comprehensive methodology for evaluating systems performance should include an assessment of the system's efficiency. The current study's findings make a strong case for the inclusion of efficient public services as an explicit outcome measure of success of e-government for citizens living with disability in light of the significant social impacts that can result from system failure. This study adds to the knowledge base on e-government performance by demonstrating that citizens value the role of technology in enabling efficient public services, and that the public value outcome measure of efficient public services is a key determinant of citizens' perceptions of e-government success.

Thus, Proposition 6 (a) is retained: Public value outcomes (**efficient public services**) have an affirmative effect on citizens' perceptions of the success of e-government.

5.2.1. Usability of the system

System usability can be a polemic topic for citizens living with disability. The factors that render the system useable by one disability group do not necessarily translate across all disability groups (e.g., vision impairment vs. physical impairment). An added complication is the inter-relationship between accessibility and usability of systems, which are related but distinct concepts that are often used interchangeably. Accessibility is aimed at ensuring that there are no system-related barriers to equal participation (Henry & McGee, 2016). Usability, on the other hand, relates to the interaction between people and systems and is concerned with the degree to which a system is effective, efficient and satisfying to use (Huang & Benyoucef, 2014).

The current study's findings reveal that citizens living with disability consider the usability of the system an essential element in enabling their effective use of e-government to deliver efficient public services. Citizens participating in the study also emphasised that impediments to system usability constituted their primary motivation for reverting to staff-assisted service or for paying third parties to interact with the system on their behalf, actions that effectively undermine the efficiency of public services. This highlights the critical role of systems usability in realising effective use of the system, echoing a study by Huang and Benyoucef (2014) concluding that e-government will succeed only if prevailing and emerging usability challenges are identified and solved. Perceived poor usability of the system was a key factor in citizens' perceptions of e-government failure, confirming the findings of prior studies by Bwalya and Healy (2010), Asimwe and Lim (2010), and Kirui and Kemei (2014).

System usability has been identified as a means to determine citizen satisfaction (Verdegem & Verleye, 2009), to directly influence user preferences, opinions and attitudes regarding the service (Lee & Koubek, 2010), to determine the successful uptake of e-government (Botha, Calteaux, Herselman, Grover, & Barnard, 2012), and to contribute to outcomes of e-government services by promoting cooperative relationships between government and citizens (Inglesant & Sasse, 2007). System usability has also been shown to play a pivotal role in e-government success (Kirui & Kemei, 2014; Venkatesh, Hoehle, & Aljafari, 2014; Youngblood & Mackiewicz, 2012). The current study adds to this extensive body of knowledge on systems usability by identifying it as a crucial factor in determining the effective use of e-government. Recognition of the influence of systems usability on citizens' effective use of e-government to support daily living (a measurable standard of use required to achieve goals) establishes an objective set of criteria with which to evaluate the success of the system.

The current study further contributes to e-government research based on the findings that the residential location, age and employment status of citizens living with disability impact their perceptions of the essential nature of system usability on effective use of e-government. Residential location has a measurable impact on whether citizens consider system usability essential to effective use of e-government, with citizens living in metropolitan areas viewing usability as more essential than those living in rural areas (100% vs. 80%). Metropolitan residents perceive non-digital channels to be inefficient compared to digital channels. This could explain the higher frequency with which they deemed it essential to their effective use of the system, as well as the fact that early consumers of digital services are more likely to reside in metropolitan rather than in rural

areas, making them more comfortable with digital channels (Rusten & Skerratt, 2008; Strover, 2001; Tookey, Whalley, & Howick, 2006).

Age also plays a role in citizens' perceptions, with younger groups considering ease of use of e-government more essential to their adoption of the system than older groups (100% vs. 82%), due to the fact that younger citizens are relatively new to government servicing and still need to learn the system (Colesca & Dobrica, 2008; Sanmukhiya, 2019). Unemployed citizens were more likely to perceive systems usability as essential than those who are employed (100% vs. 85%), which can be explained by the fact that internet skills can be acquired and improved through employment, making employed citizens more adept at surmounting systems usability challenges (Ebbbers, 2017).

Meaningful differences were identified across several demographic categories in the perceptions of citizens living with disability on whether the usability of e-government constitutes an essential element in their effective use. Nonetheless, there was overwhelming support across all demographic categories assessed (90%) that usability of the system has a positive impact on citizens' effective use of e-government.

Thus, Proposition 1(a) is retained: Quality of system resources (**usability**) has an affirmative effect on citizens' effective use of e-government.

5.2.2. Reliability and availability of the system

Reliability and availability of the system are core performance elements, and these system resource quality attributes highlight the critical role of technology in determining

whether citizens succeed or fail to accomplish their goals using e-government. The current study demonstrates that citizens living with disability expect the technological infrastructure that supports e-government to be consistently reliable and available, echoing findings of earlier studies by Wolfinbarger and Gilly (2003), Papadomichelaki and Mentzas (2012), and Jiang and Ji (2014). These previous studies found reliability and availability of the system to be key determinants of service quality but did not examine how these system quality attributes of e-government contribute to citizens' effective use of the system to achieve desired goals.

The current study addresses this shortcoming in the research by highlighting the consequences to performance outcomes when system reliability and availability fail. Citizens participating in the study stressed that, although e-government was available without interruption and response times were acceptable, the systems were not always reliable. Many of these citizens reported bugs in the system that required technical assistance, often forcing them to seek staff assisted servicing and thereby undermining their confidence in e-government as a service channel.

Although several past studies have identified reliability and availability of e-government as critical factors in supporting the delivery of public services, there has been a lack of focus on the contributions of the technical infrastructure itself. For example, Omar's (2015) reference to the reliability of e-government as a determinant of quality public services is in fact related to the dimensions of information quality rather than the reliability of the technical infrastructure that enables e-government. Another example is Karunasena (2012), whose study identifies the need for ICT infrastructure to be available to improve the organisational effectiveness of public organisations but overlooks the

reliability of the technical infrastructure supporting the system as a relevant issue in efficient public service delivery. Similarly, earlier studies by Kearns (2004) and Golubeva (2007) do not recognise reliability and availability as critical factors in determining the quality of public services. This study fills the conspicuous gap in all of these studies regarding the role of the technical infrastructure itself in creating public value through e-government. The findings demonstrate that the reliability and availability of the technical infrastructure supporting e-government are essential to citizens' effective use of e-government in determining efficient public services and therefore essential to the citizens' perceptions of success.

This study also adds to e-government research through its findings that the age and residential location of citizens living with disability influence whether they view the reliability and availability of the system as essential to their effective use of e-government. Older citizens tend to value reliability of systems more than their younger counterparts (90% vs 67%) because younger citizens can more readily manage systems issues, an observation supported by Fisk, Rogers, Charness, Czaja, and Sharit (2009). Citizens living in rural areas value reliability more than those living in urban areas (90% vs 70%), which is logical in light of the fact that unreliable network connectivity in rural areas can impact access to the system. This confirms findings from previous Australian studies by Goggin, Hollier and Hawkins (2017) and was also cited in a secondary government report on e-government (AGIMO, 2005). These divergences notwithstanding, citizens participating in the study across all demographic categories assessed (80%) feel that reliability and availability of the system have a positive impact on citizens' effective use of e-government.

Thus, Proposition 1(b) is retained: Quality of system resources (**reliability and availability**) has an affirmative effect on citizens' effective use of e-government.

5.2.3. *Adaptability of the system*

Adaptability features of the system enable citizens to assemble an individualised collection of resources according to their preferences to achieve the desired outcome. Adaptability is measured by the extent to which the system enables citizens to personalise and organise system resources based on their needs and abilities, to focus on issues relevant to them rather than all content, and to choose the means of servicing that cater to their personal needs and styles. Studies by Weinberger (2002), Kolsaker and Lee-Kelley (2008), Zimbra, Fu and Li (2009), and Morgeson and Mithas (2009) all observed that adaptability of the system constitutes a critical factor in service quality.

The findings of the current study, however, reveal that citizens living with disability do not consider adaptability of the system as essential to their effective use of e-government (30%), which contradicts the results of the previous studies mentioned above. The lack of emphasis on the significance of adaptability in the current study is likely due to the citizens' perceptions of the system's substandard usability overall; system adaptability should emerge as a more important factor as the system matures over time. Nonetheless, the conclusions of the current study do not currently support this proposition.

Thus, Proposition 1(c) is withdrawn: Quality of system resources (**adaptability**) has an affirmative effect on citizens' effective use of e-government.

5.2.4. *Quality of information on the system*

Information is an extraordinarily valuable resource in public administration, but only if its quality is unassailable. Substandard information is at best inconsequential and at worst can result in significant social and economic costs. However, the quality of information is determined not simply by whether the data is good or bad; it needs to be assessed in context. The quality of information is therefore best understood in terms of its fitness for a particular purpose (McNab & Ladd, 2014). In other words, its application needs to be effective in helping citizens achieve a particular goal.

Previous studies have examined the quality of information from citizens' perspectives with respect to its impact on the quality of e-government services (see, e.g., Barnes & Vidgen, 2003; Papadomichelaki & Mentzas, 2012; Wangpipatwong et al., 2009), or its influence on citizens' use of or intention to use e-government (see, e.g., Alenezi et al., 2015; DeLone & McLean, 2004; Lee et al., 2012; Wang & Liao, 2008). Other studies have focused on its impact on the outcomes resulting from its use. For example, Karunasena (2012) and Kamau (2017) both identify information quality as a determinant in the creation of public value outcomes through the delivery of quality public services, citing quality characteristics of information that improve citizens' perceptions of public service delivery, including its accuracy, simplicity, relevance, level of detail, and whether it is up-to-date.

The results of the current study augment the existing deep knowledge base on information quality by demonstrating that access to information that is relevant, easy to understand and has integrity support citizens' effective use of e-government, thereby impacting their views of efficient public services. The distinction between the current

findings and those of previous studies is the context in which the information is applied. This study is focused on the perceptions of citizens living with disability regarding the impact of information quality on their ability to achieve desired goals from the use of e-government. It also identifies the resource quality attribute of information integrity as essential to the effective use of e-government as perceived by citizens living with disability. Information integrity is the trustworthiness and dependability of information; i.e., the dependability and reliability of its content based on both the information's consistency with policy and its representational faithfulness. This is critical in the government context due to the "official" jargon often employed by public organisations. This identification of the reliability of information content as essential to efficient public services is consistent with earlier findings by Omar (2015).

This study makes a further contribution to e-government research by revealing that the residential location, gender, age and employment status of citizens living with disability all play a role in their perceptions of whether information quality is an essential element in their effective use of e-government. For example, women deem ease of understanding information more essential than men (89% vs. 55%), while younger citizens place more value on ease of understanding information than do older ones (88% vs. 54%). Older citizens consider the relevance of information more essential to their effective use than do younger citizens (63% vs. 44%), and those living in metro areas view relevance as more essential than those in rural areas (70% vs. 40%). Unemployed citizens perceive the quality of information as more essential than do employed ones consistently across all resource quality attributes (76% vs. 51%).

Although there is support in the literature for these findings, there are also contradictory views. For example, Lee and Levy (2014) found no difference in perceptions between citizens living in rural and metro locations on whether information quality is essential to the effective use of e-government. On the other hand, an Australian government report sourced as part of the secondary data for this study (AGIMO, 2005) found that citizens living in rural areas remain highly reliant on staff-assisted channels to obtain quality information, suggesting that e-government was not seen as a particularly valuable source for information. Comparable feedback was received in the current study from citizens living in rural areas, who often found the information on e-government irrelevant to their personal situations. Similarly, several studies found no relationship between e-government use and gender (see, e.g., Chan, & Chong, 2013; Gauld et al., 2010; Li, Detenber, Lee, & Chia, 2005), while others reached the opposite conclusion (see, e.g., Choudrie & Dwivedi, 2005; Liu et al., 2014; Venkatesh et al., 2014). Notwithstanding these disparate views on demographic influences, the current research findings support the proposition that the quality of information (60%) has a positive impact on citizens' effective use of e-government.

Thus:

Proposition 2(a) is retained: Quality of information resources (**integrity**) has an affirmative effect on citizens' effective use of e-government.

Proposition 2(b) is retained: Quality of information resources (**ease of understanding**) has an affirmative effect on citizens' effective use of e-government.

Proposition 2(c) is retained: Quality of information resources (**relevance**) has an affirmative effect on a citizens' effective use of e-government.

5.3. Public Value Outcome: Effectiveness of government agencies

The study reveals that citizens living with disability value the effectiveness of government agencies in delivering outcomes for citizens. This public value outcome, afforded by the effective use of e-government, is reflected in citizens' perceptions of (1) the operational efficiency in the management of public services; (2) the assurance regarding security and confidentiality of citizens' personal information; and (3) the responsiveness of public service staff. The research also reveals that citizens living with disability do not perceive empathy from public service staff as essential to their effective use of e-government in determining the effectiveness of government agencies in delivering outcomes to citizens.

Although these findings support those in previous studies (see: Bannister & Connolly, 2014; Castelnovo, 2013; Karkin & Janssen, 2014; Karunasena, 2012; Osmani, Weerakkody, Sivarajah, & El-Haddadeh, 2014), they diverge in that the contributions of external parties were identified as equally important to those delivered by public organisations to the effectiveness of government agencies. This addresses a shortcoming in the knowledge base on the evaluation of e-government performance. As more public services are being delivered outside of the public sector, the contributions of external providers will need to be considered in assessing the ultimate success of e-government, as identified in the current study.

This study's findings highlight the fact that citizens living with disability value the outcomes they achieve by using e-government, not just the individual contributions of service providers that make these outcomes possible. In fact, they expect public

organisations to manage the activities required to produce these outcomes. E-government constitutes the face of the service through which citizens interact to achieve their desired objectives; as such, they expect the responsible public organisation to facilitate the activities needed to complete the service. This makes it imperative that government agencies merge the service contributions of external providers, as well as those of other government agencies, into a single service experience with a single performance measure.

By identifying the role of public organisation as an integrator of the service experience to enable delivery of outcomes to citizens (inclusive of all parties' contributions to these outcomes), the study highlights the impact of the effectiveness of government agencies on the success of e-government.

Thus, Proposition 6(b) is retained: Public value outcomes (**effectiveness of government agencies**) have an affirmative effect on citizens' perception of the success of e-government.

5.3.1. Operational efficiency in the management of public services

Operational efficiency in public organisations refers to their capability to deliver services to citizens in the most cost-effective manner possible, while still ensuring high quality service and support (Al-Omari & Al-Omari, 2006). This can prove complicated for public organisations, as many services provided by one department require information from another, which is frequently not shared. In Australia, for example, a citizen needs a proof of income certificate from the tax department in order to claim a social service benefit from the social services agencies, thereby requiring citizens to engage with two

separate departments to achieve a single goal. Connecting e-government across multiple departments has the potential to create significant value for citizens.

The findings from the current study reveal that removing government agency *information silos* would improve citizens' perceptions of operational efficiency in the management of public services. Citizens identified the improved efficiency of public service operations generated from integrating data and services among government agencies as a significant determinant of success, a finding that corroborates those of previous studies by the European Commission (2006) and Al-Omari and Al-Omari (2006). The fact that different government agencies do not consistently share information compels citizens to interact with multiple organisations to obtain the data required to complete public service tasks, creating the perception of inefficiency on the part of public organisations. Previous studies have concluded that enhancing collaboration, cooperation and communication in and across public administration through e-government enhances the operational efficiency of public organisations (Bannister & Connolly, 2014; Castelnovo, 2013; Karkin & Janssen, 2014).

The current study adds to the knowledge base on e-government performance evaluations by revealing that operational efficiency in the management of public services is a determinant of citizens' effective use of e-government. Specifically, the findings from the study establish that providing more complete online services through a single data portal improves citizens' perceptions of the effectiveness of government agencies. Citizens participating in the study stressed that they expect public organisations to ensure a seamless service experience by providing effective functionality that includes the

integration of service elements from external parties so that citizens are not forced to manage interrelated servicing activities themselves.

Citizens participating in the study stressed that their primary concern is achieving their goal, not who is involved in the process. They explained that many activities initiated on e-government could not be completed without resorting to staff-assisted functions by phone or in person to achieve their desired outcome, and citizens were particularly frustrated by being referred to third party organisations to track progress outside of e-government. This significantly affected their perceptions of the effective use of e-government to achieve outcomes, as well as the effectiveness of government agencies to deliver outcomes to citizens. Put simply, citizens expect public organisations to employ the appropriate technology to improve their operational efficiency (Pe´rez, Boli´var, & Herna´ndez, 2008). The study augments existing research on e-government evaluations by highlighting the fact that operational efficiency in the management of public services is a significant determinant of the effective use of e-government.

Thus, Proposition 3(a) is retained: Quality of service resources (**operational efficiency**) has an affirmative effect on citizens' effective use of e-government.

5.3.2. Assurance of the security and confidentiality of information

Citizens are becoming increasingly worried about identity theft and the loss of data privacy as technological advancements permeate society, creating a sense of vulnerability over which they have no control. As a result, the capacity of government to secure the confidentiality and privacy of their personal information stored on e-government is a

growing concern. Both privacy and security play substantial roles in bolstering citizens' confidence in government, which highlights the importance of this service quality to the success of e-government. Extant literature highlights the significance of privacy and security of data and information in that participation in e-government services measurably increases when citizens are guaranteed of data security and information privacy (Alfawaz, May, & Mohanak, 2008; Bélanger & Carter, 2008; Conklin, 2007; Mundy & Musa, 2010).

In spite of decisive literature findings that the assurance of e-government is a key determinant of service quality and citizen use and adoption of e-government, the research falls short of establishing whether assurance of e-government influences performance outcomes from its use. The current study shows that the element of assurance relating to the security and privacy of citizens' information influences their perceptions of effective use of e-government. In the study, citizens deemed the following aspects of assurance central to effective use of the system: (1) communications regarding security essentials; (2) the government's guarantee of confidentiality; and (3) online security notifications confirming that activities had been completed, all of which provided citizens with confidence about entering their personal details online.

The study's findings highlight the fact that citizens believe the government has a responsibility to prevent unauthorised access to their personal information in order to ensure they continue to use e-government, which is consistent with the findings from Bélanger and Carter (2008). Citizens participating in the study displayed an inherent trust in government regarding the security of their data held in e-government despite their concerns about the assurance of personal data in general. The vast majority of these citizens understood that it was reasonable and necessary to divulge personal information

in order to receive a benefit from government, notwithstanding their security concerns. Several noted that providing information to the government carried the same risk as entering it into any commercial system online.

Citizens participating in the study also indicated that they felt powerless to control the privacy of their data and believe they have no choice but to disclose personal details if they want to achieve an outcome from government. Despite this sense of vulnerability, citizens expect that public service staff who are authorised to have access to their personal data will not exploit this information. This finding corroborates earlier studies by Sakowicz (2002), Dempsey, Anderson, and Schwartz (2003), Lebech (2003), and the United Nations (2003) that concluded citizens will not entrust e-government with personal information unless government provide adequate assurance that the information will be handled responsibly and secured against abuse.

This study's finding that the age of citizens living with disability has a bearing on whether they perceive assurance of the system as essential to their effective use of e-government constitutes an additional contribution to existing e-government research. Older citizens view assurance as essential, whereas younger ones do not (73% vs 44%), which echoes findings from Phang, Li, Sutanto, and Kankanhalli (2005) and Rehman, Esichaikul, and Kamal (2012). A lack of concern around data security and confidentiality among younger citizens can be explained by their greater familiarity with and attitude toward openness when using social media as compared to the older citizen group; a point noted by Prensky (2001).

Notwithstanding these differences, the research supports the findings in this study that the assurance of the security and confidentiality of citizens' personal information (60%) has a positive impact on their effective use of e-government.

Thus, Proposition 3(b) is retained: Quality of service resources (**assurance**) has an affirmative effect on citizens' effective use of e-government.

5.3.3. Responsiveness of public service staff

Responsiveness is a fundamental component in the entire service process. If properly executed, it gives citizens the impression that they are being taken seriously, that service is in progress, and that they can trust that the service provider is doing what is necessary. The increasingly fast pace of modern life has made responsiveness a key element of success (Decman, 2007). With advances in technology, citizens have higher expectations of responsiveness from public organisations and expect an almost immediate response to online enquiries. In reality, responses are frequently delayed due to the need for human intervention, which influences citizens' perceptions of the effectiveness of government agencies.

The impact of timely responses to enquiries has been examined from the perspective of citizens (Decman, 2007; Gauld, Gray, & McComb, 2009; West, 2004), as has their ability to track the status of applications submitted to public organisations (Karunasena & Deng, 2010). Several other studies have suggested that public trust can be maintained and enhanced by increasing responsiveness (Gauld et al., 2009; Tolbert & Mossberger, 2006; Welch et al., 2005) and that responsiveness is a key element of trust in

e-government services (Decman, 2007; Horsburgh, Goldfinch, & Gauld, 2011; Huang & Benyoucef, 2014). Despite the value of these studies, they tend to maintain a narrow focus on the impacts of responsiveness on the immediate service experience, rather than taking a holistic view of the effect of responsiveness on the overall transaction in terms of achieving performance outcomes. In complex government servicing environments, both human supported and system automated responses are frequently employed to support citizens in achieving their goals.

The current study addresses this research shortcoming by focusing on how responsiveness enables a citizen's effective use of e-government to achieve goals. In this study, poor responsiveness exhibited by public officials to citizen enquiries throughout the end-to-end process negatively impacted their perceptions of the effectiveness of government agencies. The absence of timely responses from public officials to their enquiries and limited or no facility to track the progress of applications or other online communications with government created a sense of frustration, often resulting in the need for citizens to engage in a face-to-face visit to a service centre to achieve their goals. This had the unintended consequence of degrading citizens' overall perception of the trustworthiness of e-government due to the failure of public officials to follow up on emails, an absence of feedback on the status of enquiries, or the delivery of conflicting information from public service staff. Thus, this study augments the body of knowledge relating to e-government performance evaluation by highlighting the impact of the responsiveness of public service staff on the perception of the digital experience.

This study also adds to e-government research in concluding that the gender and employment status of citizens living with disability have a bearing on whether they

consider responsiveness essential to their effective use of e-government. For example, men view the responsiveness of public service staff to their online queries as more essential than women in supporting their effective use of e-government (82% vs 56%), while employed citizens deem responsiveness more essential than those not employed (77% vs 57%). Notwithstanding these differences, all demographic categories see responsiveness of public service staff as essential to their effective use of e-government (70%), a finding consistent with those in previous studies by Barnes and Vidgen (2006) and Sharma (2015).

Thus, Proposition 3(c) is retained: Quality of service resources (**responsiveness**) has an affirmative effect on citizens' effective use of e-government.

5.3.4. Empathy from public service staff

The findings of the study reveal that citizens living with disability believe that the effectiveness of government agencies is enhanced when e-government provides them with personalised attention and focus, ensuring that their interests are met. This empathy relates to both service content (i.e., staff provides the information needed) and the manner in which this content is delivered (i.e., staff are pleasant and helpful). Greater empathy can be fostered if the e-government system recognises a citizen as a repeat user, demonstrates understanding of the user's circumstances, or provides different service choices to address different disability needs. Because empathy reflects the degree to which citizens believe they are receiving individualised attention from the service provider (Parasuraman, Zeithaml, & Berry, 1988), the absence of a human intermediary for a number of

e-government services ensures that empathy is expressed exclusively through the extent to which personalisable systems options are made available to citizens. Studies on the online environment have tended to replace the empathy dimension with systems adaptability, since there is often no direct human interaction between citizens and public service staff in a virtual environment (Li & Suomi, 2009). In other research, the empathy dimension was labelled as customisation (Sohn & Tadisina, 2008) and personalisation (Nusair & Kandampully, 2008). The current study features a combination of both human and automated interactions between citizens, systems and the government agency, which is quite common in complex social and health related service environments in Australia.

Citizens participating in the study considered empathy, which was frequently mentioned during interviews, an important resource quality attribute, but it was not perceived as essential to achieving a positive outcome (30%), due primarily to their low expectations regarding empathetic servicing from public service officials. In contrast, Wangpipatwong et al. (2009) found that empathy from public officials was a significant determinant of service quality that impacted citizens' continued use of the system. When responsiveness and empathy are combined, they create a powerful resource in delivering effective public service; when not combined, they can create a negative outcome. Notwithstanding these findings, this study concludes that the proposition that empathy is a key factor in success is not supported at this time by citizens living with disability.

Thus, Proposition 3(d) is withdrawn: Quality of service resources (**empathy**) has an affirmative effect on citizens' effective use of e-government.

5.4. Improvements in social outcomes for citizens

The research reveals that citizens living with disability value the improvements in social outcomes afforded by the effective use of e-government, enabled through: (1) equity in the provision of digital services; (2) trustworthiness of e-government; and (3) accessibility of e-government, measured by the outcomes of social inclusion, social empowerment and economic participation in society. The research also revealed that citizens living with disability do not perceive participatory democracy features of e-government, such as discussion forums or feedback on services, as crucial determinants of effective use.

The significance of social outcomes as a measure of e-government success was common among all citizens in this study, which addresses a shortcoming in the current research concerning the need for including social outcomes measures in the evaluation of e-government success. Social outcomes are created for citizens through the improved confidence and trust in government they gain from using e-government (Rose, Persso, Heeager, & Irani, 2015), by the social inclusion created from equity in access to e-government (Abanumy, Al-Badi, & Mayhew, 2005; Bertot & Jaeger, 2006), and by the social empowerment enabled through the use of compatible industry-standard assistive technologies to access e-government to participate within the community (Skjerve, Giannoumis, & Naseem, 2016).

The current study further adds to this knowledge base by linking the measurement of improved social outcomes citizens receive from e-government to the goals and objectives of the policy program for which it has been deployed. This differentiates the current research findings from those of other studies concerning e-government evaluation.

For example, although studies conducted by Karunasena (2012), Omar (2015) and Kamau (2017) include social outcomes measures in their evaluation of e-government, they focus on identifying a broad base of social outcomes delivered via e-government and do not link them to the delivery of any specific government policy programs, making it difficult to determine whether the quantum of social improvements facilitated by e-government is sufficient to provide an assessment of success. This linkage of the evaluation measures of e-government to the policy outcomes it was intended to deliver provides the necessary context required to create objective and comparative measures that can be employed to assess success or failure.

Thus, Proposition 6(c) is retained: Public value outcomes (**improvement in social outcomes for citizens**) have an affirmative effect on citizens' perception of the success of e-government.

5.4.1. Accessibility of e-government

In the study, citizens frequently raised the issue of the accessibility of e-government and stressed that the government is required to ensure that public services provided via the internet meet Web Content Accessibility Standards (WCAG). Not only is it a legislative right for citizens living with disability to have equal access to e-government services, it also makes economic sense given the potential cost savings to public organisations from reduced staff assisted efforts. However, the study showed that most of the citizens living with profound disabilities described online government systems as not always complying to these requirements, noting that even when they do, they are inconsistently applied or implemented to the minimum extent possible. Goggin et al.

(2017) recent examination of the accessibility status of government systems in Australia reached similar results, and the findings of the current study further confirm other past Australian studies by Burgess and Houghton (2006) and Chugh and Grandhi (2013), both of which highlight similar concerns with the accessibility of e-government.

The current study adds to this rich base of knowledge on systems accessibility by focusing on enablers of use. Specifically, the study explores the social resource qualities of systems accessibility as enablers to the effective use of e-government for citizens living with disability. The findings show that citizens living with disability value systems that do not make them feel different to other citizens and attach importance to systems that (1) support inclusive access for all disability groups; (2) empower citizens to participate in society; (3) are interoperable with commonly employed assistive technologies; and (4) allow them to access the system independently and without difficulty. These social resource qualities enable citizens living with disability to effectively use e-government, thereby facilitating social outcomes critical to support their daily living, including social inclusion, social empowerment and economic participation. Although some studies have identified the link between system accessibility and social inclusion of citizens living with disability (Blanck, 2008; Cantabrana, Minguell, & Tedesco, 2015; Giannoumis & Halvorsen, 2012; Krach & Jelenic, 2009; Skjerve et al., 2016), this is the first study to identify accessibility of systems as a social resource quality and its impact on citizens' effective use of e-government.

This study also adds to e-government research by concluding that the age of citizens living with disability has a bearing on whether they perceive accessibility as essential to their effective use of e-government, with older citizens valuing accessibility

more than younger ones (100% vs 67%). Studies in the private sector by Sourbati (2009) and Jun and Wang (2012) provide a comparative explanation that younger citizens' familiarity with technology from an early age translated to enhanced proficiency in dealing with accessibility issues.

Citizens participating in this study unanimously concur that enabling citizens living with disability to access e-government independently is not only economically valuable to society, but essential to creating social equity. The crucial importance of system accessibility for citizens living with disability to e-government success is extensively supported in the literature (see, e.g., Al-Khalifa, 2012; Henry & McGee, 2016; Kuzma, 2010; Rowland, Whiting, & Smith, 2015; Rubaii-Barrett & Wise, 2008). Ensuring that e-government is accessible is a fundamental requirement for citizens living with disability to operate systems efficiently, and in Australia it is enshrined in law as a right for those living with disability (Digital Transformation Agency (DTA), 2018b). It is therefore surprising that this study revealed this is not always the case, which was confirmed by secondary data sourced from the DTA (2018b) status report on e-government. According to Rubaii-Barrett and Wise (2008), Bonacin, Melo, Simoni, and Baranauskas (2010), and Makoza and Chigona (2013), accessible e-government has the potential of creating independence and self-actualisation for citizens living with disability and can help promote social inclusion. Unfortunately, several studies (including the current study) have shown that e-government has failed to integrate citizens living with disability into the digital society due to accessibility issues (Abu-Doush, Bany-Mohammed, Ali, & Al-Betar, 2013; Boussarhan & Daoudi, 2014; Freire, Bittar, & Fortes, 2008; Kuzma, Dorothy, & Oestreicher, 2009).

The removal of accessibility barriers to e-government for citizens living with disability will become an increasingly urgent item on the government's agenda if it is to transition from a basic level of e-government to more complex transaction applications (Carvin, Hill, & Smothers, 2004). Those barriers are not removed by simply making computers more available in public places (Becker, 2004), as they are frequently embedded in website designs themselves (Rubaii-Barrett & Wise, 2008). According to Dugdale, Daly, Papandrea and Maley (2005), failure to consider accessibility issues as a component of e-government design could result in systems that further disadvantage this cohort of the population, as illustrated in the current study.

The implication of the current study's findings is that the government is neglecting a significant opportunity to connect with a growing number of users and better serve its citizens. Citizens living with disability want and expect government to serve as an exemplar in ensuring that its online systems are fully accessible, and they would benefit from affirmative government action to develop an overall strategy to compel all public organisations to comply with disability accessibility standards.

Thus, Proposition 4(a) is retained: Quality of social resources (**accessibility**) has an affirmative effect on citizens' effective use of e-government.

5.4.2. Trustworthiness of e-government

Trust is a complex, multi-dimensional phenomenon that is difficult to evaluate (Wang & Emurian, 2005), and several studies have proposed models for trust in e-government. Warkentin, Gefen, Pavlou and Rose (2002) posited that trust in e-government is an overall belief influencing intention to engage in e-government. Carter

and Bélanger (2005) examine trust in two subconstructs: trust in the internet and trust in the government. Carter and Weerakkody (2008) found that trust in an e-government service is a key determinant of citizens' intention to use the system, while in Tan, Benbasat, and Cenfetelli's study (2008), citizen trust in e-government is linked to the adoption of e-government services. Welch et al. (2005), Parent, Vandebeek, and Gemino (2005), Grimsley and Meehan (2007), and Alzahrani, Al-Karaghoul, and Weerakkody (2018) all found that trust in government is a germane variable associated with e-government and is also inevitably affected by it.

The current study uses Horst, Kuttschreuter and Gutteling's (2007) conceptualisation of trust as trust in government services provided online, which identified trust in e-government services as a determinant of the perceived usefulness of e-government services. In other words, citizens should trust that e-government will offer essential services and that requested services will be delivered. The current study is distinct from previous studies on the trustworthiness of e-government, which dealt primarily with general perceptions of trust, in that it focusses on recent citizen experiences vis-à-vis e-government and the impact of trustworthiness on their effective use of the system during those experiences.

The trustworthiness of government is a prerequisite for the success of a number of government policies, programmes and regulations that depend on the cooperation and compliance of citizens (OECD, 2013), which underscores the importance of e-government as a vehicle in building this trust between citizens and government. This aligns with the view of Avgerou, Ganzaroli, Poulymenakou and Reinhard (2009) that citizens' perceptions of the trustworthiness of government and the services it provides are

influenced by their judgment of e-government as a “trustworthy interface to the government agency, or a trustworthy actor involved in the performance of the agency’s task” (p.5).

This study further augments e-government research in concluding that the gender and employment status of citizens living with disability have a bearing on the extent to which they perceive trustworthiness as essential to their effective use of e-government. In this study, women deemed trustworthiness more essential than men (100% vs. 73%). There is a limited amount of support in the literature that women identify trustworthiness of e-government as more essential to their intention to use these services than men, but it is not conclusive. Tolbert and Mossberger (2006), Colesca (2009) and Lee and Levy (2014) found that gender did not play a meaningful role of perceptions of the trustworthiness of e-government, whereas a more recent study by Alzahrani et al. (2018) concluded the opposite. Such contradictory findings may lie in regional, cultural or other contextual differences, given that the Alzahrani et al. study focused on e-government in Saudi Arabia, where woman traditionally assume management of the household.

Employment status played a role in this study’s findings, with those not employed viewing trustworthiness as more essential than those employed (100% vs 77%). It is noteworthy that there is a paucity of past studies on the relationship between employment status and e-government use, and those that do exist show that the higher the socio-economic status of citizens, the higher the adoption rate of online systems (Choudrie & Dwivedi, 2005). The assumption behind these results is that higher economic status relates to employed citizens, who are frequent users of online systems and therefore have an inherent trust in the technology.

Notwithstanding these divergent views on demographic influences, research overwhelmingly supports the finding that citizens living with disability perceive trustworthiness (85%) as having a positive impact on their effective use of e-government.

Thus, Proposition 4(b) is retained: Quality of social resources (**trustworthiness**) has an affirmative effect on citizens' effective use of e-government.

5.4.3. Participatory democracy

This study reveals that citizens living with disability do not value the participatory democracy features of e-government in realising public value outcomes (37%).

Participatory democracy features include discussion forums aimed at supporting social cohesion, opportunities to provide feedback, and the government providing visible and easily located service-level information online. In the study, citizens' explanations for not valuing the participatory democracy features of e-government suggest that the power relationship between the government and citizens is skewed when it comes to benefit outcomes. Citizens living with disability did not favour e-government as a vehicle for participatory engagement with government, given their perceived fear that any negative comments regarding a government service could impact their individual benefit outcomes.

Several past studies support the inclusion of participatory democracy features as an essential element of e-government success. Macintosh (2004) found that citizens value e-government for keeping them informed about upcoming policies, Anttiroiko (2003) concluded that citizens value e-government for providing the ability to participate in online discussions, and the United Nations (2005) observed that citizens value

e-government for the opportunity to post topics or set agendas for public discussions online.

The contradiction between the above results and the current study appears to be related to the nature and context of the e-government being evaluated. The current study examined an e-government benefits payments service, while other studies involved informational e-government sites. Another possible explanation can be drawn from the Karunasena study (2012) concerning the maturity of e-government. Karunasena concluded that participatory democracy is not a critical factor in evaluating the public value of e-government in Sri Lanka due to citizens' mistrust of participatory democracy initiatives and lack of maturity of the e-government environment, which has some parallels with the e-government in the current study.

Notwithstanding the disparate findings on whether participatory democracy is an essential factor in e-government use, this study concludes that in the context of citizens living with disability in Australia, participatory democracy does not exert an influence over citizens' effective use of e-government.

Thus, Proposition 4(c) is withdrawn: Quality of social resources (**participatory democracy**) has an affirmative effect on citizens' effective use of e-government.

5.4.4. Equity in the provision of digital services

There is a substantial digital exclusion gap between Australians living with disability and other Australians that grew wider in 2018 (Thomas et al., 2018). Australians living with disability experience a low level of digital inclusion compared to other

Australians. Their inclusion level increased steadily between 2014 and 2017 and outpaced the national average during that period. However, much of that relative gain has been lost over the past 12 months due to increased costs and issue of access to these services. (Thomas et al., 2018). Many of these citizens with low levels of internet use are recipients of significant government support (Dugdale, Daly, & Papandrea, 2004).

The findings from the current study show that citizens consider equity in the provision of digital services essential to their effective use of e-government. Equity is realised through the social inclusion and empowerment enjoyed by citizens as a result of the independence they achieve through the use of these digital services. Although several studies that evaluate e-government performance consider equity a critical factor in determining desirable social outcomes for citizens, they all apply different standards to measure equity. For example, Karunasena (2012) found that equity is important for enabling socially desired outcomes from e-government in Sri Lanka, where equity is assessed based on the availability of e-government information and services in local languages, compliance of government websites with accessibility standards, the availability of specific e-government content for ethnic minorities, the establishment of kiosks in rural and semi-urban areas to provide access to e-government, and affordable access to ICT infrastructure in rural and semi-urban areas. On the other hand, Omar's (2015) study of Victorian state e-government systems found that equity in access to e-government services was a significant factor in citizens' perceptions of fair treatment, as measured by the ability of all citizens to access the same information, services and the council dialogue, the opportunity for all voices to be heard by council officials and other citizens, and the ability of citizens to gain council services via e-government without the need to interact with council officials.

Despite the value of these individual studies, they raise questions concerning the contextual elements of equity applied in evaluating e-government performance. Several of the evaluation measures employed in these studies to determine equity are specific to the context of the local user base and the environment within which the e-government operates. This emphasises the need for specific equity performance measures for services that support those living with disability. Equity, as defined in this study, aims to provide everyone with the means to be successful and focuses on “equality of outcomes.” This involves considering structures that might put particular groups at a disadvantage. The current study focuses this definition of equity value on the provision of digital services in the context of the technological nature of the service, rather than attempting to encompass broader equity elements, and adds to the knowledge on e-government performance evaluation by identifying two major equity factors that determine the effective use of e-government from the perspective of citizens living with disability: (1) compliance with the legislative rights of citizens to access government services, including those rights that relate specifically to citizens living with disability; and (2) access to reliable and affordable network infrastructures from any location, in both rural and metropolitan areas.

The implementation of e-government as the “default” means of delivering government services has transformed how the government interacts with its citizens (Rubaii-Barrett & Wise, 2008), which has created a responsibility on the part of governments to provide digital services to all citizens in a fair and equitable manner. Providing an increasing amount of government services and information through e-government carries the potential unintended risk of excluding citizens within the community from these services. Consequently, ensuring equity in the provision of digital services to all Australian citizens is fundamental to the success of e-government.

Thus, Proposition 4(d) is retained: Quality of social resources (**equity**) has an affirmative effect on citizens' effective use of e-government.

5.5. A revised conceptual framework for evaluating e-government success

Ultimately, the research led to the confirmation that citizen's perceptions of success can be evaluated from the three core public value outcomes that were identified in the study. The findings show that citizens living with disability gain public value outcomes through their effective use of e-government from (1) efficient public services, (2) effectiveness of government agencies and (3) improvements in social outcomes for citizens. These public value outcomes are impacted by the citizens 'lived' context, and the stakeholder role of the citizen through which this value is perceived.

Specifically:

- Citizens living with disability value **efficient public services** delivered through (a) the provision of quality information, (b) the usability of the system, and (c) having a reliable system that is available when they need it.
- Citizens living with disability value the **effectiveness of government agencies** gained from expectations of (a) operational efficiency in the management of public services, (b) assurance of the security and confidentiality of citizens personal information, and (c) responsiveness from public service staff.

- Citizens living with disability value **improvements in social outcomes** afforded by e-government through (a) equity in the provision of digital services, (b) trustworthiness of e-government; and (c) accessibility of e-government services necessary to support economic and social inclusion in society.

In this study, representation theory is used to model a citizen's effective use of e-government to define the context of the evaluation and provides a performance dimension on how goals are attained, and then public value theory is used to determine the success outcomes measures resulting from a citizen achieving their goals, which is the objective of the evaluation.

The distinction between 'use' and 'effective use' of e-government is important in the context of evaluating e-government performance. The research findings show that there were several instances where a citizen's repeated use of e-government ended in failure to complete the desired tasks seamlessly. While whenever a citizen had an effective use experience, they created public value outcomes. These examples support the view that it is effective use of e-government — rather than just use itself — that determines success. The implication being that a standard of use needs to be applied in the evaluation of e-government performance. In addition to the economic consequence related to inefficiency in the delivery of public services, these experiences invariably resulted in a citizen's increased sense of distrust in the government's intentions.

There are several comparable studies by LeRouge, Hevner, and Collins (2007), Pavlou, Dimoka, and Housel (2008), Agarwal et al. (2010), and Bonaretti and Piccoli (2018), that demonstrate that it is 'effective use' that is important in determining success of a system. A contribution of this research is that it shows the link between effective use

of e-government and public value outcomes. This addresses a significant shortcoming in the current research.

Thereby, Proposition 5 is confirmed: The effective use of e-government has an affirmative effect on the creation of public value outcomes.

In the context of this study and the definitions provided in chapter two, and in view of the discussion of the findings it is now appropriate to advance a revised conceptual framework that can be used to *evaluate the success of e-government from the perspective of citizens living with disability in Australia*. Figure 5.1 illustrates such a process.

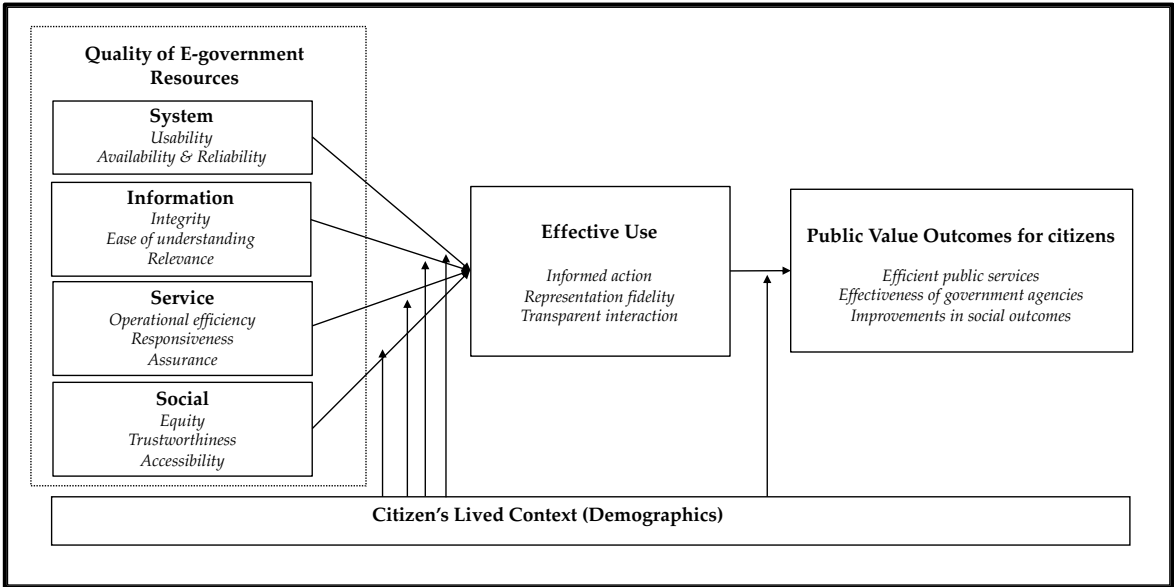


Figure 5.1. Revised conceptual evaluation framework for e-government from the perspective of citizens living with disability

Given that the framework is explicitly developed by studying the specific nature of e-government in Australia, and the crucial resource quality attributes proposed in the framework are true representations of those that citizens living with disability in Australia

perceive as essential to their effective use of e-government, it is possible to conduct a comprehensive investigation of the success of e-government in Australia, in a similar setting, with the use of this framework. Past research has focused on determining ‘what’ creates public value using e-government, this is the first research that determines ‘how’ this public value is created through the ‘lived’ experience using e-government of citizens living with disability.

Previous research has not directly explored success through the citizens ‘lived’ experience using e-government (Tate et al., 2011) in the manner used in this study, and so findings here substantially add to knowledge about e-government performance evaluation. The results of this research contribute to the field of e-government by presenting a framework for evaluating e-government success based on the perspectives of citizens living with disability. The framework provides a thorough and multi-perspective approach to evaluating e-government performance, offering a degree of confidence in its applicability and practicality as a framework to understand the potential impact of e-government on government policy and program outcomes. This revised conceptual framework has several advantages over the existing frameworks for evaluating the success of e-government, which address several additional shortcomings in the current research.

- The main advantage of the framework is the focus of the evaluation of success of e-government is based on the **perceptions of citizens**.
- Furthermore, the framework **recognises the context and situation** within which e-government services are used, framed around measures that include both economic and social outcomes.

- Finally, the use of public value outcomes as the objective measure of success has the advantages that it includes: (1) the **contributions of all parties to the achievement of citizen goals**; (2) provides the **economic and social outcomes dimensions** necessary to evaluate government programs; and (3) is **aligned to the goals of the government program** for which it was intended to deliver.

To the current body of knowledge, this research adds not only the synthesis of dimensions for e-government success from the citizens' perspectives but also introduces a holistic perspective for evaluating e-government success. It is clear from the research findings that there is a significant difference in what outcomes citizens (the service receiver) perceive as essential in the evaluation of e-government success compared to those outcomes perceived as essential by the public organisation (the service provider); confirming the concerns raised in chapter one that the current success evaluation measures fall short of evaluating success against citizen expectations. If government intends to use these citizen-focussed e-government services to create value for citizens, they need to evaluate success from a citizen's perspective. The outcomes of this research will assist the Government improve the evaluation of e-government initiatives supporting those living with disability; ensuring they deliver increased value to its citizens through comparing performance against citizen expectations.

The study also lays the foundation for e-government researchers to undertake further quantitative research using this framework for evaluating e-government success across the different attributes identified, as it facilitates a more integrated analysis of this

complicated phenomenon and avoids partial and inadequate understandings that arise from studies focusing on individual dimensions of success.

5.6. Summary

This chapter examined the research findings and engaged them with the extant literature. It discussed the context of the public value outcomes themes that emerged from the study as objective measures of e-government performance and highlighted the findings that explicitly address shortcomings in the current literature. Table 5.1 provides a summary of the assessments of the propositions from the conceptual framework used in this study.

Proposition	Description	Outcome
P1 (original)	Quality of system resources has an affirmative effect on citizens' effective use of e-government.	
P1 (a)	Quality of system resources (usability) has an affirmative effect on citizens' effective use of e-government.	Retained
P1 (b)	Quality of system resources (reliability and availability) has an affirmative effect on citizens' effective use of e-government.	Retained
P1 (c)	Quality of system resources (adaptability) has an affirmative effect on a citizens' effective use of e-government.	Withdrawn
P2 (original)	Quality of information resources has an affirmative effect on a citizens' effective use of e-government.	
P2 (a)	Quality of information resources (integrity) has an affirmative effect on citizens' effective use of e-government.	Retained
P2 (b)	Quality of information resources (ease of understanding) has an affirmative effect on citizens' effective use of e-government.	Retained

Proposition	Description	Outcome
P2 (c)	Quality of information resources (relevance) has an affirmative effect on citizens' effective use of e-government.	Retained
P3 (original)	Quality of service resources has an affirmative effect on citizens' effective use of e-government.	
P3 (a)	Quality of service resources (operational efficiency) has an affirmative effect on citizens' effective use of e-government.	Retained
P3 (b)	Quality of service resources (assurance) has an affirmative effect on citizens' effective use of e-government.	Retained
P3 (c)	Quality of service resources (responsiveness) has an affirmative effect on citizens' effective use of e-government.	Retained
P3 (d)	Quality of service resources (empathy) has an affirmative effect on citizens' effective use of e-government.	Withdrawn
P4 (original)	Quality of social resources has an affirmative effect on citizens' effective use of e-government.	
P4 (a)	Quality of social resources (accessibility) has an affirmative effect on citizens' effective use of e-government.	Retained
P4 (b)	Quality of social resources (trustworthiness) has an affirmative effect on citizens' effective use of e-government.	Retained
P4 (c)	Quality of social resources (participatory democracy) has an affirmative effect on citizens' effective use of e-government.	Withdrawn
P4 (d)	Quality of social resources (equity) has an affirmative effect on citizens' effective use of e-government.	Retained
P5 (original)	The effective use of e-government has an affirmative effect on the creation of public value outcomes.	Retained
P6 (original)	Public value outcomes have an affirmative effect on citizens' perception of the success of e-government.	
P6 (a)	Public value outcomes (efficient public services) has an affirmative effect on citizens' perception of the success of e-government.	Retained
P6 (b)	Public value outcomes (effectiveness of government agencies) has an affirmative effect on citizens' perception of the success of e-government.	Retained

Proposition	Description	Outcome
P6 (c)	Public value outcomes (improvement in social outcomes for citizens) has an affirmative effect on citizens' perception of the success of e-government.	Retained

Table 5.1. Summary of assessment of proposition from the conceptual model

Finally, a revised conceptual framework is proposed based on the propositions held within this research. The following chapter presents the conclusions of this study. ■

Chapter 6

Conclusion

6.1. Introduction

The prevalence of disability across the globe is substantial and is predicted to increase as the population ages. As of 2018, almost one in five citizens in Australia has a disability, and the majority of them rely on e-government services to support aspects of their daily living. To cope with the growing service demands and cost pressures, the Australian government is increasingly employing e-government as a “default” means of delivering services to these citizens. It is therefore critical that e-government succeed, as failure to provide adequate services to citizens living with disability can lead to measurable economic and social consequences.

This more prominent role of e-government increases the importance of developing a consistent, appropriate and transparent way to evaluate its performance. Most of the current e-government performance evaluation frameworks tend to reflect the perspectives of public organisations rather than those of citizens, with an emphasis on measuring economic benefits rather than broader social outcomes derived from these services. This approach has proved inadequate in evaluating the success of e-government, as the primary objective of e-government is to deliver value to citizens, and the citizen (in liberal democracies) is ultimately the legitimate arbiter of this value.

The literature review identified shortcomings in the research on evaluation of e-government performance that had not been empirically addressed in previous studies.

These shortcomings reveal that (1) existing frameworks fail to recognise the context and situation within which e-government services are employed; (2) not all frameworks include both economic and social outcomes; and (3) the perceptions of citizens, and how they use technology to achieve goals, are not always the focus of the evaluation. The overall purpose of the study is therefore to conceptualise the success of e-government to address these research shortcomings and to allow for its measurement.

The scope and parameters of the study were established by developing a conceptual evaluation framework from the perspective of citizens living with disability using theoretical concepts from a combination of representation theory and public value theory. This framework is based on constructs identified from a critical review of the literature and composed of theoretically derived propositions that explain relationships among the constructs. The framework proposes public value as the objective measure of e-government success, determined from the perspective of citizens living with disability.

To achieve the study purpose, this research adopts an exploratory qualitative multiple case study research design, examining 20 cases of citizens living with disability to be interviewed. Using a structured focussed comparison technique, data collected from interviews and documents from the multiple cases are analysed through an inductive thematic analysis. The findings from the thematic analysis relate to citizens' perceptions of the public value outcomes that determine the success of e-government. A case replication strategy is employed during the comparison and analysis of the cases to strengthen and validate the quality of the research and to determine analytical generalisation of the findings for this citizen group. This endeavour is premised on the assumption that traditional means of evaluating e-government fail to consider critical

social and economic dimensions necessary to determine their ultimate success, and that any evaluation of success must be conducted from the perspective of those using e-government.

This chapter presents the conclusions emerging from this research, as follows:

- Section 6.2 offers a summary of how the research objectives were met;
- Section 6.3. highlights the key findings and answers to the research questions;
- Section 6.4 provides the conclusions drawn from the study;
- Section 6.5 sets out the theoretical and methodological research contributions;
- Section 6.6 discusses the implications for government policy;
- Section 6.7 details the implications for practitioners;
- Section 6.8 provides recommendations to the Australian government; and
- Section 6.9 outlines the limitations of this study and suggests directions for future research.

The chapter concludes with the researcher's reflections on the study.

6.2. Achievement of research objectives

The study is guided by five specific objectives that are both theoretically and empirically derived. They provide the direction of the research in general and specifically aid in the formulation of the research design. Drawing on the empirical results of the study, the focus is on achieving five research objectives to accomplish the study purpose.

The first research objective is to define e-government success measures according to the public value outcomes gained by citizens living with disability from their use of e-government. Based on the results of the thematic and comparative analyses, the study concludes that citizens living with disability value the outcomes they gain from their effective use of e-government, which they assess through three public value outcomes measures: (1) efficient public services; (2) effectiveness of government agencies; and (3) improvements in social outcomes. The identification of public value outcomes as the objective measure of e-government success from the perspective of the citizens in the study answers the primary research question on how the success of e-government should be evaluated from the perspective of citizens living with disability in Australia.

The second research objective is to identify the crucial qualities that determine the effective use of e-government from the perspective of citizens living with disability in Australia. The study concludes that they value nine crucial resource quality attributes that determine their effective use of e-government: (1) quality of information; (2) usability of the system; (3) reliability of the system; (4) operational efficiency in the management of public services; (5) responsiveness of public officials to service requests; (6) assurance of security and confidentiality of personal data stored in e-government; (7) equity in the provision of digital systems; (8) accessibility of e-government; and (9) trustworthiness of e-government.

The third research objective is to analyse the impact of citizens' experiences using e-government on their perceptions of whether the quality of e-government resources is essential to their effective use of e-government. The study concludes that the residential location, gender, age and employment status of citizens living with disability all have a

bearing on the extent to which they consider the resource qualities of e-government essential (system, information, services, social). These citizens' contexts act as moderators that influence how citizens in the study effectively use e-government and how public value outcomes are created through this use.

The fourth research objective is to propose a conceptual framework to evaluate the success of e-government from the perspective of citizens living with disability. The revised e-government performance framework (refer Section 5.5, Figure 5.1.) incorporates the insights acquired from citizen interviews concerning the evaluation of e-government success from the perspective of citizens living with disability in Australia. This revised framework provides enhancements over existing evaluation tools by addressing shortcomings identified by this study in extant literature.

A key dimension of the framework is "effective use" of e-government, which is essential to the creation of public value outcomes from the perspective of citizens living with disability. It is supported by four resource quality sub-dimensions, with the crucial resource quality attributes described within each of these dimensions. The success of e-government can be measured from citizens' perceptions of the public value outcomes that are created from their effective use of e-government, determined through the quality of the system, information, service and social resources of e-government. Genuine shortcomings in extant knowledge on how to evaluate e-government success have verified the need for and legitimacy of this study. Table 6.1 summarises how the revised evaluation framework addresses these research shortcomings.

Limitations of current evaluation frameworks	Addressed by the revised framework
1) The frameworks do not recognise the context and situation within which e-government services are used.	• Aims of the program provide the economic and social policy outcomes (context) within which the evaluation takes place
	• Citizens' "lived" situation considered
	• Public value outcomes include contributions from all parties in the service encounter
2) The frameworks do not all include both economic and social outcomes.	• Includes both social and economic measures in the evaluation of public value outcomes
3) The perceptions of citizens and how they use technology to achieve goals are not always the focus of the evaluation.	• Assessment based on the perspectives of citizens living with disability
	• Technology affordances included in effective use and public value outcomes
	• Applying "effective use" rather than simply "use" shows how goals are achieved through technology

Table 6.1. Summary of how the revised evaluation framework addresses research shortcomings

Finally, the fifth research objective was to recommend strategies for public administrators in Australia on the use of evaluation frameworks to measure performance of e-government. Section 6.8 provides seven recommendations to government. Three are directly related to evaluating e-government performance and four are additional recommendations on e-government specific to the disability sector.

6.3. Key findings of the research

The central research aim of the study was: *to evaluate the success of e-government from the perspective of citizens living with disability in Australia*. Exploration of citizens' experiences led to the conclusion that the success of e-government can be conceptualised from the public value outcomes gained by citizens living with disability from their effective use of e-government. In addition, these public value outcomes can be evaluated through: (1) efficient public services; (2) effectiveness of government agencies; and (3) improvements in social outcomes for citizens. Table 6.2 provides a summary of the answers to the associated questions used to support the main conclusions of the study.

Research questions	Findings
RQ1. What are the crucial qualities of e-government that determine success from the viewpoint of citizens living with disability?	1. Usability and reliability of the system
	2. Quality of information: Ease of understanding information, and integrity and relevance of the information provided
	3. Operational efficiency in the management of public organisations, responsiveness of public officials to service requests, and assurance of security and confidentiality of personal data
	4. Equity in the provision of digital services, accessibility to e-government and increased trustworthiness in e-government
RQ2. How are public value outcomes successfully created for citizens living with disability through their use of e-government?	5. Through “effective use,” rather than “use” itself
	6. Through technology affordances that play a significant role in the creation of public value outcomes
RQ3. How does citizens' “lived” context impact on their perceptions of success	7. Gender (e.g., women value trustworthiness more than men)
	8. Age

Research questions	Findings
through their effective use of e-government?	9. Location
	10. Employment

Table 6.2. Summary of study findings

6.4. Conclusions drawn from the study

E-government can no longer be viewed simply as an administrative tool of convenience; it plays a complex role in supporting multiple aspects of how citizens living with disability conduct their lives. Advancements in technology have created enormous new opportunities for citizens living with disability, but the speed and impact of these changes have made it difficult for governments to keep up and respond appropriately. This has created a gap in the expectation of value when citizens compare e-government performance with similar services provided by the private sector.

In many ways, technology is not neutral because its impacts are determined by the manner in which it is utilised. By examining the “lived” experiences of citizens’ use of e-government, this study has provided unique insights into how citizens living with disability use e-government to support their daily living. Cases in which citizens experienced effective use of e-government showed significant positive social impacts beyond individual experiences, as they enhanced citizens’ perceptions of public value outcomes, particularly independence and social inclusion. The study also noted the negative impact on citizens’ perceptions resulting from their failure to achieve outcomes using e-government. The inability to effectively use e-government has a compounding

effect; it not only reduces the efficiency of overall public service but also increases citizens' mistrust in government actions, thereby creating public disvalue. This mistrust is magnified because it not only affects the citizen themselves but also their carers and family members, who are called upon to assist when e-government does not meet citizens' needs.

This recognition of the impacts of public disvalue is significant, as it highlights the fact that e-government performance measures are the net result of citizens' views of success and failure, rather than just the proportion of those who experienced a successful encounter. Most strikingly, it also highlights that it is the effective use of e-government by citizens, rather than "use" itself, that creates public value outcomes, which emphasises the consequence of technology itself in value creation. Through the effective use of e-government, citizens not only create public value outcomes but have primacy in determining the value of these outcomes as members of society. This underscores the legitimacy of citizen perspectives and the role of technology affordance in performance measurement.

In this study, public value outcomes emerged as the objective performance measure of e-government success when evaluated from the perspective of citizens living with disability and include three dimensions of performance: efficiency, effectiveness and improvements in social outcomes. Although other studies have noted the increasing importance of improved social outcomes as a performance measure of e-government, this research highlights a broader range of social improvements than previously articulated, which include domains of socio-economic security, social inclusion and social empowerment, which align to the goals of government programs like NDIS. These social

outcome measures are important in a government context and emphasize a complex field of conditional, constitutional and normative factors.

This implies that the view of the importance of social outcomes needs to be altered in relation to the measurement of e-government success. Existing frameworks are too simplistic to adequately measure the performance of e-government, which provides interconnected services between the public and private sector that are embedded in supporting the activities associated with citizens' daily living, as are many Australian e-government services. As a result, a more sophisticated understanding is needed regarding the role of technology in bringing about social outcomes from citizens' perspectives and in determining the success of e-government services, particularly when the government identifies e-government as the "default" delivery channel of government policy.

This policy approach has dramatically transformed how government agencies interact with citizens, which implies that ensuring the ongoing success of e-government is no longer optional. As more government services are provided online, the risk of potential inequities in society increases. Citizens living with disability are increasingly vulnerable in this respect due to their reliance on technology to support daily living. Citizens in the study cited the growing emphasis they place on e-government to support their efforts to participate independently in society. This creates enormous risks and more dire consequences for citizens living with disability when it comes to technology failure, as they can no longer fall back on human assistance in accessing services.

In conclusion, the transparent real-time nature of e-government services enables citizens to make instant assessments of government's performance of its official actions.

This increased transparency will require novel strategies by governments in how they engage with citizens and new ways to measure their performance. The implication is that governments will need to constantly monitor the performance of e-government to ensure they continue to deliver the intended program outcomes.

6.5. Research contributions

This study provides both theoretical and methodological contributions to research on e-government, public value and information system success. From a theoretical perspective, the research delivers a framework that places the voice of the citizen living with disability at the centre of e-government performance evaluation. From a methodological perspective, the research demonstrates the value of applying an explorative interpretive approach to information systems success studies. The findings will assist public administrators in understanding what factors influence the effective use of e-government and provide a valuable tool to assist them in evaluating the performance of e-government services supporting those living with disability.

6.5.1. Theoretical contributions

The main theoretical contribution of this study is an evaluation framework that can be employed to assess e-government success from the perspective of citizens living with disability. In doing so, it addresses several shortcomings highlighted in the literature review on e-government performance evaluation: (1) existing frameworks do not recognise the context or situation within which e-government services are used; (2) not all frameworks include both economic and social outcomes; and (3) the perceptions of

citizens and how they apply technology to achieve goals are not always the focus of the evaluation. This study contributes to filling these knowledge gaps, as presented below.

Context or situation. While there has been notable progress in the development of e-government evaluation frameworks drawn from information systems and economic theories, the relationships between e-government, public value and context remain particularly under-theorised. This study places the evaluation framework firmly within the context parameters of the policy outcomes e-government was intended to produce, as well as consideration of the demographic particulars of e-government users, thus providing an appropriate contextual setting within which the evaluation takes place.

Economic and social outcomes. This study focuses on the relationship between public value outcomes for citizens and e-government success, emphasising the balance of economic and social measures necessary for evaluating government programs like e-government. It identifies and highlights public value outcomes as experienced by citizens living with disability as the most appropriate measure of success. The study further contributes by demonstrating how public value outcomes are created from citizens' effective use of e-government, which can be evaluated through their perceptions of: (1) efficient public services; (2) effectiveness of government agencies; and (3) improvements in social outcomes. By focusing on public value outcomes for citizens as the measure of e-government success, the study demonstrates how to incorporate the contributions of all parties involved, including those from internal and external service providers.

Perceptions of citizens. This study contributes to e-government research through an interdisciplinary combination of public value theory and representation theory that helped conceptualise the success of e-government from the viewpoint of citizens living

with disability, thereby redefining how governments should evaluate the success of citizen centric e-government services. The study extends current approaches utilised in evaluation frameworks by focusing on the outcomes created for citizens by e-government, as opposed to focusing on the technology itself. It places primary significance on citizens as the legitimate arbiters of value, in contrast to the traditional approach that relies on indicators created by government agencies. Thus, this study essentially creates a framework for democratising information systems.

Technology use. The study develops an evaluation framework incorporating the qualities of e-government resources and linking them to effective use and the public value outcomes of e-government services, an approach that has not been addressed in the existing literature. Hence, the study advances knowledge in the field of e-government by offering a clearer understanding of the crucial factors that determine the effective use of e-government that create public value outcomes from the perspectives of citizens living with disability. In doing so, the study has shifted the emphasis from the general definition of use (number of interactions) to effective use (a standard of use) as the new standard for determining public value outcomes.

The thesis makes a further theoretical contribution by responding to calls for e-government researchers to embrace the application of mixed theories from different disciplines to research e-government. This study positions e-government as a socio-technical phenomenon at the crossroads of information systems, public administration and sociology. In essence, by deviating from domain-specific theories and incorporating theories from other disciplines, the study illustrates how value is created from several vantage points, thus providing new insights into evaluating the success of e-government.

6.5.2. Methodological contributions

This research contributes to the literature on qualitative approaches to the study of information systems research by demonstrating how an exploratory interpretive approach can be utilised in research on e-government success. Using the multiple case study approach and its intrinsic literal and theoretical replication analysis offers an important means of understanding the phenomenon, while simultaneously ensuring reliability and trustworthiness of the data and findings.

This approach provides insights into how qualitative methods and procedures can be applied to collect and analyse the qualitative data required to accomplish the overall research objective. This research offers a unique example of how to apply an interpretive qualitative approach to e-government performance evaluation to gain a deep and comprehensive understanding of the phenomenon from the perspective of citizens through their “lived” experiences using e-government, before any quantitative approach is conducted.

6.6. Implications for government policy

The research findings have several major implications for government policy, including:

- (1) *How e-government initiatives are initiated and funded.* Using technology to create broader public value outcomes related to improved social outcomes will require an in-depth examination of how technology initiatives are funded and conceived. The role of technology in supporting government policy outcomes
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has traditionally been limited to efficiency and effectiveness measures. It will now require public administrators to view technology as central to social policy, embedded in the legislation, rather than just a means to deliver it.

- (2) *How and whom to engage on e-government initiatives.* The government will need a structured governance framework that will ensure it can improve its ability to engage directly with users of the service and the intended beneficiaries of the policy to seek their input. This can occur at various stages of the policymaking life cycle, including during development of the agenda (allowing citizens to raise issues for discussion), as well as during policy creation, implementation and/or monitoring, in order to minimise risks and ensure high-quality, workable policies.
- (3) *How government policies will be applied across non-government providers included in service provision.* E-government services are becoming increasingly open, with connections to external stakeholders, resulting in a seamless service experience. Consideration will need to be given to extending many of the current government policies beyond the realm of public service to incorporate the broader service environment, including aspects of data security and privacy policies.

6.7. Implications for practice

This research offers unique insights into how citizens living with disability in Australia evaluate e-government success and establishes the practical significance of

evaluating e-government success from the perspective of these citizens based on their “lived” experiences using e-government.

Applying the proposed conceptual framework to the evaluation of e-government services provided to citizens living with disability will enable government policymakers in Australia to evaluate the current performance of these services from the perspective of those who use them. Using public value outcomes as the measure of success will provide the specificity required to assess the capabilities of e-government to meet program objectives. This approach will aid the Australian government to improve its capacity to measure the performance of its programs and to help formulate appropriate e-government strategies for future government initiatives.

In addition, the evaluation framework developed in this research provides the Australian government with a practical means of exhibiting transparent accountability for its investment in online services. Transparency regarding performance is becoming increasingly pivotal in the relationship between citizens and the government. This is in alignment with the mandate of the Open Government Partnership, an international inter-governmental initiative to increase transparency and strengthen democratic governance, of which the Australian government became a member in 2015.

Furthermore, the evaluation approach developed in this research is uncomplicated and easily understandable, as its elements are generated by the very people who use it. It has the advantage of being contextual, which facilitates the examination of specific resource qualities of perceived value to citizens living with disability. The framework, therefore, provides a pragmatic method for government agencies to evaluate and

communicate e-government performance, given that programs frequently comprise multifaceted outcomes for citizens living with disability.

Finally, the primacy of citizens in the evaluation of e-government performance suggests that government departments will need to be more inclusive of and responsive to citizens' views concerning their service performance. As public value takes hold through policy formulation and implementation, the public value outcome dimensions advanced in this study are well positioned to assist public administrators in the evaluation of e-government performance from the perspective of citizens living with disability. It will also assist the government in understanding the central role of citizens in creating public value outcomes and how this can influence the design of programs to achieve policy objectives.

6.8. Recommendations to the Australian Government

While this research has been conducted within the context of citizens living with disability in Australia and their experiences using e-government, the following recommendations can also be applied to broader aspects of e-government. Citizens living with disability represent an extreme case of disadvantage when accessing technology, so addressing their needs through e-government is likely to provide a powerful set of core principles that can guide e-government implementations for other cohorts.

6.8.1. Key recommendations

Based on the study conclusions, the following three recommendations are made for the evaluation of e-government performance by the Australian government.

The *first* recommendation is that the Australian government incorporate public value outcomes as the measure for evaluating e-government performance. The current performance metrics used by the Australian government (see Section 2.83, Table 2.7) to evaluate the ongoing success of e-government have proved to be insufficient or incomplete. Using the public value outcomes identified within specific program objectives will afford the specificity needed to provide a measure of assurance of success that would support utilising comparative assessments of e-government services.

The *second* recommendation is that the Australian government utilise public value outcomes to manage portfolio decisions. The study has shown that public value outcomes provide a broad schema to assess value to citizens. Given that the government endeavours to deliver value to citizens, public value outcomes would serve as a more appropriate lens through which to evaluate e-government investment choices than current value for money analyses.

The *third* recommendation is that the Australian government undertake annual public value performance reviews of e-government. The pace of advancements in technology, citizen expectations and what they value are evolving at a rapid pace, requiring regular assessments of the appropriateness of e-government in meeting these changing needs. It is further recommended that performance evaluations of e-government are undertaken annually to ensure that they continue to contribute to the government's agenda as planned, given the evolving nature of public value perceptions by citizens in society.

6.8.2. Additional recommendations

Based on the research findings, four additional recommendations are offered for potential improvements to e-government performance, relevant specifically to those living with disability (recommendations four to seven).

The *fourth* recommendation is that the Australian government assure accessibility to government systems using industry-standard assistive technologies. To ensure that equity in the provision of services is not compromised, e-government must be “designed to be accessible” to all citizens and continuously tested to guarantee that ongoing improvements to the system comply with standards after its initial implementation. It is recommended that the government conduct independent accessibility tests annually on e-government to confirm that these systems remain compliant with industry accessibility standards. It is further recommended that people living with disability be engaged as the primary testers of assistive technologies and their usability with e-government.

The *fifth* recommendation is that the Australian Government adopt a common approach to accessibility design across all e-government services. Most citizens use more than one e-government service, and inconsistency in the manner in which individual departments approach accessibility solutions creates confusion for citizens living with disability when they are required to use different services. It is recommended that the Australian government unify their accessibility procedures across all e-government and publish these standards for others in the community to adopt.

The *sixth* recommendation is that the Australian government adopt a service “ecosystem” approach to integrate and connect government and non-government services

into a seamless service experience. The implementation of e-government will not create public value outcomes in and of itself. Instead, this technology needs to be integrated and connected seamlessly into the operations of government agencies and other non-governmental components of the end-to-end service delivery process. This does not imply that each government department should create more digital options; a whole-of-Australia strategy is required to create the digital infrastructure to support modern society.

Finally, recommendation *seven* is that government departments at the federal, state and local levels adopt the approaches contained in the findings for evaluating the success of e-government that are specific to the disability sector as a consistent evaluation method across government. In this way, the government can apply the insights gained from implementation of the framework to maximise public value outcomes from future e-government investments.

Table 6.3 summarises the foregoing recommendations.

Focus of recommendation	Recommendations to the Australian government
Evaluating e-government success	1. Adopt public value outcomes as the measure of e-government success
	2. Use public value outcomes as a means to manage IS portfolio investment decisions
	3. Undertake annual public value performance reviews of e-government
Improving e-government systems for the disability sector	4. Assure accessibility to government systems using industry-standard assistive technologies
	5. Adopt a common approach to accessibility design across all e-government services
	6. Adopt a service “ecosystem” approach to integrate and connect government and non-

Focus of recommendation	Recommendations to the Australian government
	government services into a seamless service experience
	7. Adopt the success evaluation framework developed in this study across federal, state and local levels of government

Table 6.3. Summary of study recommendations to the Australian Government

6.9. Limitations of the study and directions for future research

Despite the significant contributions of this study to e-government research, it has some inherent limitations, one of which is the specific context of citizens living with disability. As highlighted in the literature review, the meaning and interpretation of public value outcomes can vary significantly across sectors or even societies. Hence, the public value outcomes assumed in this research could diverge from the public value outcomes desired by other citizen groups within Australian society or even by disability communities in other countries. Furthermore, public value outcomes could evolve based on the needs of society. This observation implies a need to continuously assess the public value outcomes perceived as valuable to citizens.

Another limitation of the research is the under-representation of citizens who do not actively use e-government. The citizens in this study represented only a sample of citizens living with disability who are active users of e-government in Australia. This research, consequently, considers the public value outcomes of experienced users of e-government. Studies should consider the variability in citizen perceptions of public value outcomes across a broader typology of users, including active, inactive and passive

users. Furthermore, citizens living with intellectual disabilities were excluded from the study. The study also fails to represent the views of those users who act as proxies for citizens living with disability, such as carers, legal representatives or family members. This would have added another layer of complexity of behaviour not within the purview of this study. In addition to increasing the scope of citizen representation, another important extension to this research would be to seek the views of the major e-government service providers – e.g., government agencies and non-government service providers – on the findings of this study.

This study is also limited in its capacity to generalise the findings beyond analytical generalisation of the framework to evaluate the success of e-government services from the perspective of citizens living with disability, in that the determinations of e-government success did not consider the perceptions of able-bodied citizens, who constitute the largest segment of the e-government service user base in Australia. Given the study's narrow focus and qualitative nature, the findings may not apply to e-government in other countries nor to different cohorts, the citizen service expectations of which could vary. Thus, a useful extension to this research would be to conduct similar studies in other countries focused on evaluating the success of e-government from the perspective of their citizens living with disability.

This research offers a rigorous research method that could be applied in future studies and followed up with quantitative studies to test the propositions by employing surveys and experiments. Future research could expediently evaluate the framework across a full range of e-government services supporting citizens living with disability.

6.10. Concluding remarks

This study offers a conceptualisation of e-government success from the perspective of citizens living with disability. It identifies the crucial resource quality attributes that Australian citizens living with disability perceive as essential to their effective use of e-government in creating public value outcomes. The personal stories of citizens who participated in the study provide an articulate and intelligible source of knowledge about how citizens use and experience e-government. E-government is gaining importance as technology becomes embedded in the lives of many citizens who rely on these services to support their daily living. This technological transformation requires a redefinition of the success of e-government and how it is evaluated.

This research has developed a revised framework for evaluating the success of e-government from the perspective of citizens living with disability based on the rich descriptions that arose from citizens' personal stories. The framework is grounded on the understanding that it is the effective use of technology that delivers public value outcomes and not simply the "use" of technology.

The study has initiated a research dialogue with citizens regarding their effective use of e-government and how they view success. This qualitative exploration has presented a novel approach for engaging with and exploring the success of e-government through the lens of citizens' experiences. In doing so, it has progressed the discussion with citizens on the e-government phenomenon. Further investigation is now needed into how citizens interact with e-government. This research offers a pragmatic base from which to continue the conversation with citizens and thereby deepen our understanding of evaluating the success of e-government. ■

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■

Appendices

Appendix A: NDIS support and approval for study



Delivered by the
National Disability
Insurance Agency

GPO Box 700
CANBERRA ACT 2601
1800 800 110
ndis.gov.au

TO WHOM IT MAY CONCERN

I am writing in support of Mr. Gary Sterrenberg's research approach to his doctoral thesis:

Mr. Sterrenberg's research will involve consultation with a number of Australians living with a disability, with the aim of developing an evaluation framework to measure the success of e-government information systems.

This research is important from a public value perspective as the ensuing outcomes would add greatly to the understanding of an organisation such as the NDIA when making ICT decisions.

The NDIS is the first significant approach to person centred human services. Under this arrangements there is a fundamental move from Government funding programs to providing funding direct to people who then purchase services in a market.

This requires a very different form of engagement by government. Mr. Sterrenberg in his role as CIO for the Department of Human Services has been instrumental in building new platforms to enable direct engagement with scheme participants. In the case of the NDIS this is made even more challenging by the diverse needs of participants who as a result of their disability need different approaches to services and engagement by Government to ensure that it is accessible to them in the context of their disability, ranging through physical, sensory, cognitive and often associated communication impairments.

The direct engagement of people with disability in identifying testing and building new approaches is critical and Mr. Sterrenberg's research will be of great assistance in this engagement.

The NDIS is a data rich scheme and recognising the importance of this research the NDIA will provide Mr Sterrenberg with access to de-identified data that will assist in the project. The NDIA also supports Mr. Sterrenberg's propose qualitative research, involving targeted interviews with people with disability.

The NDIA will control access to participants by seeking their prior consent to participate in the research and I have approved Mr. Sterrenberg's proposed approach which complies with the NDIA research ethics by being:

- Respectful towards people living with a disability;
- Involving a transparent and consent-based methodology; and which
- Provides appropriate confidentiality—noting the resulting interview and survey data will be handled with the upmost respect for the participants' privacy.

Mr. Sterrenberg has the best interests of all involved in the study and a personal interest in improving the access to information systems of people living with a disability. I am pleased to provide my endorsement of his research.

I wish Mr. Sterrenberg success in his studies and look forward to reviewing the results.

Yours sincerely



David Bowen
Chief Executive Officer
National Disability Insurance Agency

12 July 2017.

Appendix B: DHS support and approval for study



Australian Government
Department of Human Services

Kathryn Campbell CSC
Secretary

Ref: EC17-001285

Australian National University

To whom it may concern

I am pleased to endorse Mr Gary Sterrenberg in his pursuit of a Doctor of Philosophy.

I understand that Mr Sterrenberg's studies aim to develop a framework to measure the success of e-government.

Across the modern world, governments are investing substantial funds in information systems. An evaluation framework would be extremely valuable for assessing the return-on-investment for ICT investment decisions across an increasingly complex landscape.

Using public value as a potential success measure of information systems provides distinctive insights that could greatly assist how public administrators make e-government decisions and decisions about the outlay of public funds.

I understand from Mr Sterrenberg that his research (which is being undertaken in relation to the disability sector) adopts an approach to the collection of data which involves consulting with community members and which conforms to a high ethical standard. Mr Sterrenberg has provided assurances that the information of those involved in his studies will be appropriately safeguarded, with the resulting data securely stored and protected using encryption.

While Mr Sterrenberg's studies are not being undertaken in the course of his duties as the Chief Information Officer of the Department of Human Services, I can confirm that he has provided the requisite conflict of interest declarations in relation to his research, consistent with his obligations under the APS Code of Conduct.

I commend Mr Sterrenberg on his interest in deepening the understanding of information systems success through further studies.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'K Campbell'.

Kathryn Campbell

27 July 2017

Appendix C: Invitation and information sheet



Gary Sterrenberg, ANU Student

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

Evaluating success of online government systems

Participant Information Sheet

Introduction

You are kindly invited to participate in my research project to develop a measurement for the success of online government systems, often referred to as e-government systems. The study is intended to gain citizen insights on what value is created through the use of e-government systems. The research will be undertaken through a set of interviews which are designed to seek your opinions of 'what you want and expect' from online government systems. Please read this information sheet carefully and be confident that you understand its contents before deciding whether to participate in the research.

What are the details concerning myself and this study?

I am a PhD student at the Research School of Management, Australian National University (ANU), Canberra, Australia. I was also the Chief Information Officer at the Department of Human Services until December 2017. It should be noted that this research is done through my capacity as a student researcher at ANU and not as an employee of the Public Service. All outcomes from this research will be attributed to the university. The research is in the field of e-government, and in particular evaluating the success of e-government. Given the significant reliance citizens living with disability have on technology to engage with government, I believe that this research could provide unique insights into this field of study, as it focuses on a citizen's perspectives of what constitutes success rather than those of governments.

General Outline of the Project

The principal aim of the study is to evaluate the success of e-government. It intends to achieve this through identifying the critical features of e-government that influence success and then investigating how value (from a citizen's perspective) is created through the use of these critical features of e-government.

Who are the participants on this study?

The participants will all be drawn from Australian citizens currently registered to the National Disability Insurance Scheme (NDIS). The data for this research will be collected through a series of one-on-one interviews with 20 participants.

How will the data be used and feedback on the research given to participants?

The research aims to develop a framework which can be used to evaluate the success of e-government using value creation as the basis for this evaluation. Such a framework can be utilised to show governments what characteristics of an e-government system create value from a citizen's perspective and how this can be used in determining complex future investment decisions in e-government initiatives. The results from this research will be used in my thesis as part of my doctoral studies. A summary of the results will be made available through potential publications and seminars.

Participant Involvement

Participation in the study is entirely voluntary. You have the right to withdraw your participation at any time, without prejudice, as well as the right to have any unprocessed data withdrawn and destroyed, provided it can be reliably identified. As a participant you also have the right to have any questions, in relation to the project and your participation, answered at any time. If for any reason, it is technically difficult to isolate and destroy any individual contributions you have made, alternative means will be sought to exclude them from the research. In all instances, the action taken will only be done with your consent.

What does participation in the research entail?

A small selection of citizens will be invited to participate in an interview for approximately 1 hour. During the interviews, you will be asked about your values and perceptions in relation to e-government systems. You may choose not to answer any particular question. The interview will be recorded, and you have the right to request that recording cease at any stage during the interview.

What are the risks or disadvantages associated with participation?

There are no apparent or hidden risks in participating in this research as it only involves a discussion of the perceptions about the value of e-government. If any questions may cause you concern, you are free not to answer them. You will be asked to provide personal information concerning your disability and its impact on how you choose to use e-government, however, this information will be de-identified before inclusion in any report or publication. If you are unduly concerned about your responses to any of the interview questions or if you find participation in the interview distressing, you may advise the interviewer that you either want to strike that discussion from the record or discontinue the interview. The interviewer will discuss your concerns with you confidentially and suggest appropriate follow-up if necessary.

What are the benefits associated with participation?

The research findings will be helpful to develop and validate a framework to evaluate the success of e-government. Your contribution is vitally important since you are a critical stakeholder of e-government and also the ultimate beneficiary. Participating in the study is a valuable opportunity for you to express ‘what you want and expect’ from online government systems. Outcome of the research will be presented to the Australian Government and the implementation agency of e-government projects, for further action. I would be happy to make available to you any results, papers, and other outcomes from this research.

Confidentiality, Privacy and Data Storage

How will confidentiality of participants be preserved?

The interview will be treated in a strictly confidential way. Any outcomes from this research will be of a general nature without any details of specific participants disclosed. Where a participant’s words are directly quoted in a publication, it will be with absolute anonymity or with consent of the participant.

What are the privacy guidelines for this research?

In collecting your personal information within this research, the ANU must comply with the Privacy Act 1988. The ANU Privacy Policy is available at https://policies.anu.edu.au/ppl/document/ANUP_010007 and it contains information about how a person can:

- Access or seek correction to their personal information;
- Complain about a breach of an Australian Privacy Principle by ANU, and how ANU will handle the complaint.

How will my data collected during the study be stored and used?

All recorded data will be transcribed, encrypted, and archived. The transcribed data will be kept during the analysis phase of the research on the primary researcher’s computer which is biometrically password enabled and will be stored at ANU in the School of Management. All the data will be kept for 5 years upon completion of the project at the ANU premises and then destroyed, unless you consent to its use in future research.

Whom should I contact if I have any questions?

For further requests for information or queries regarding the study participants should be directed to the Primary Investigator or supervisors, details provided: Gary.Sterrenberg@anu.edu.au and Byron.Keating@anu.edu.au

Ethics Committee Clearance

The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee (Protocol 2017/764). If you have any concerns or complaints about how this research has been conducted, please contact:

Ethics Manager
The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au

Appendix D: Advertisement for potential participants



A Research Study into what factors influence success / failure of government online systems. A study on the disability sector in Australia

An opportunity to influence the quality of services provided to you by government through providing real-lived experiences of using government online systems from the perspective of a citizen

Potential Candidates:

- Must be participants on the NDIS
- Must be between the ages of 18 and 65
- Must be living with a physical or sensory disability
- Must be active users of a government online system
- Must be active users of technology (social media, e-mail, etc.)

Commitment:

- One-hour interview to discuss your experience
- 30 minutes to confirm your contribution
- To take part in this research study or for more information, please contact the researcher:

Gary Sterrenberg

0431 027 330

gary.sterrenberg@bigpond.com

expression of interest closes on 30/4/2018

Appendix E: Participant screening interview questions

Participant Screening Interview Questions

Date:

Participant:

Phone:

Email:



1. Are you an active user of any government online systems? Yes ☐ No ☐
2. Are you a registered participant of the NDIS? Yes ☐ No ☐
3. Are you prepared to express openly an experience you have had with government online systems in the context of living with disability and what you value (or not) from that experience? Yes ☐ No ☐
4. What is your disability category?

5. What is your age group?

- 18 – 25 ☐
- 26 – 35 ☐
- 36 – 45 ☐
- 45 – 55 ☐
- 56 – 65 ☐

6. What is your occupation?

7. How would you describe your level of computer literacy?

Poor ☐ Good ☐ Excellent ☐

8. Would you agree to participate in the research via way of an interview?

Yes ☐ No ☐

9. Would you be able to recommend any other people who may be interested in participating in this research?

1. Date and time

2. Location

Appendix F: Participant consent form



WRITTEN CONSENT for Participants Evaluating the success of e-government:

I have read and understood the Information Sheet you have given me about the research project, and I have had any questions and concerns about the project addressed to my satisfaction.

I agree to participate in the project YES ☐ NO ☐

I agree to this interview being audio-recorded YES ☐ NO ☐

I agree to be identified in the following way within research outputs:

Full name YES ☐ NO ☐

Pseudonym YES ☐ NO ☐

No attribution YES ☐ NO ☐

I wish to receive a copy of the final report

e-mail :

Signature:.....

Date:.....

[An oral consent form was provided to participant's unable to complete the written consent form]

Appendix G: Semi-structured interview questions

Semi-structured Interview Questions

Participant :

Start time :

Location :



Start of interview:

My name is Gary Sterrenberg and I will to be your interviewer for the next hour or so. Thank you in advance for agreeing to do this study. I am really looking forward to our conversation.

Let me start out by telling you more about your participation in this research study and your privacy.



[HAND CONSENT FORM TO RESPONDENT]

This is a **consent form** that gives you details about your rights as a respondent in the study, and the steps that I will go through to make sure that your private information is protected.

[Read consent form with respondent, determine if the respondent has any questions. Answer questions honestly, then ask again until respondent has all questions answered. If respondent agrees to interview have respondent sign and date form]



Are you ready to start the interview? If so, I will turn on the recorders.



[TURN ON AUDIO RECORDERS]

As you know, this interview is being audio recorded. Thank you again for being in our research study, which will help us understand what influences the success or failure of a government online system. There are no right or wrong answers. Remember that you can stop at any time you like or skip any question you prefer not to answer. Also, could you please try not to use your own or other people's full names or identifying details.

[QUALITATIVE INTERVIEW STARTS]

This interview will be more like a conversation. I'd like to talk about your experiences and opinions on using government online systems. I want to hear everything you have to say.

To start, I'd like to know a little bit about your background. This will help me understand what it is like for you in your day to day activities.

1. Tell me about your disabilities and how they impact your daily life?

Goal 1: Understand the Historic Person	
Interviewer check: • Do I have list of disabilities? • How they impact on daily life of the individual? • Reliance on technology for every-day living • Contextual elements for technology usage and important?	Prompts • Tell me about how you use technology in your daily life? • When did you acquire your disability?



[CHECK TIME, SHOULD BE AROUND 15 MINUTES]

2. I would now like to change tack and talk about a recent experience you have had using a government online system. Take me through the experience step by step. What did you do (almost screen by screen if you want) and what were you feeling (positive or negative)?

Goal 2: Obtain a detailed description of a lived experience with using an online government system	
Interviewer check: • Do I understand all the steps they went through?	Question prompts • What was it like for you?

• Did they complete the experience? • How did the experience end? • Did they discuss system quality? • Did they discuss information quality? • Did they discuss service quality? • Did they discuss social quality?	• Tell me a bit more about that? • What happened next? • That was helpful - tell me more about how easy or difficult it was to access and move through the system
--	---



[CHECK TIME, SHOULD BE AROUND 45 MINUTES]

I would now like to get your personal views about government online systems and how they impact your perceptions of the overall success of government service? We may have touched on some of them in the previous conversation so don't worry about repeating your views.

3. Tell me what qualities of e-government you consider valuable in terms of their contribution to your performance in achieving your goal outcome when using of government online systems?

Goal 3: Understand what the participant believes influences efficient, effective, and socially responsible public service	
Interviewer check? • Did they discuss any of the system quality features? • Did they discuss information quality features? • Did they discuss service quality features? • Did they discuss social quality features?	Question prompts: • How does this quality impact your ability to complete the task? • How did this feature impact your ability to complete the task? • Anything else? • What services did you wish you had available?



[CHECK TIME, SHOULD BE AROUND 60 MINUTES]

That is almost all the questions I have. Thinking about all the things we just discussed, what else do you think is important for me to know? Are there any questions that I should have asked and didn't? If so, what?

[IF ANSWER NO, THEN PROCEED TO FINAL THANK YOU]

I want to thank you so much for your time and help today! That is all the questions I have.

TURN OFF TAPE RECORDERS

Date:

Time:

Appendix H: Description of medical conditions

Cerebral Palsy (CP) is a disabling physical condition in which muscle coordination is impaired due to damage to the brain. It occurs at or before childbirth. Cerebral Palsy is not a progressive condition; meaning it does not get worse with time. However, muscle disuse could increase the extent of disability over the period.

Muscular Dystrophy (MD) is a group of neuromuscular genetic disorders that cause muscle weakness and overall loss of muscle mass. MD is a progressive condition; meaning that it gets worse with the passage of time.

Multiple Sclerosis (often referred to as MS) is a disabling disease that affects Central Nervous System (CNS). It inhibits the flow of information within the brain and between brain and various body parts.

Parkinson's disease (PD) is Central Nervous System disorder which affects movement. Parkinson's disease is characterized by tremors and stiffness. It is a progressive disease, which means that it worsens with time.

Blindness is defined as the state of being sightless. A blind individual is unable to see. In a strict sense the word blindness denotes the condition of total blackness of vision with the inability of a person to distinguish darkness from bright light in either eye.

Low vision is a condition caused by eye disease, in which visual acuity is 20/70 or poorer in the better-seeing eye and cannot be corrected or improved with regular eyeglasses

Paraplegia is an impairment in motor or sensory function of the lower extremities.

Quadriplegic is one affected with partial or complete paralysis of both the arms and legs especially as a result of spinal cord injury or disease in the region of the neck.

Cystic Fibrosis (CF) primarily affects the lungs and digestive system because of a malfunction in the exocrine system that is responsible for producing saliva, sweat, tears and mucus. Lung failure is the major cause of death for someone with CF.

Spina Bifida: is a congenital defect of the spine in which part of the spinal cord and its meninges are exposed through a gap in the backbone. It often causes paralysis of the lower limbs, and sometimes learning difficulties.

Amputee: a person who has lost all or part of an arm, hand, leg, etc., by amputation.

Neurological disorders: are diseases of the central and peripheral nervous system. In other words, the brain, spinal cord, cranial nerves, peripheral nerves, nerve roots, autonomic nervous system, neuromuscular junction, and muscles resulting in various systems.

Appendix I: Historical perspective of e-government in Australia

Historical timeline, progress and events	Reference
1997: Prime Minister John Howard commits the federal government to deliver all appropriate services online by 2001. A separate government agency is established to coordinate and implement federal government internet and online policies, as well as develop strategies to reduce the "digital divide."	<i>Investing for Growth: (Department of the Prime Minister, 1997)</i>
1998: The government launches its policy supporting the information economy: presenting its vision, priorities and guiding principles for e-government. A key priority identified is to implement a world-class model for delivering affordable, equitable and accessible government services online.	<i>Identifying Priorities for Action: A Strategic Framework for the Information Economy (DCITA, 1998)</i>
1998: The government releases its first government-wide online e-government (now www.australia.gov.au).	<i>Towards an Australian Strategy for the Information Economy (DOF, 1998)</i>
1999: The government assesses agency progress against 2001 commitment and concludes that most agencies will meet original 2001 commitments.	<i>ANAO Report No. 18, 1999/2000, Electronic Service Delivery, Including Internet Use, by Commonwealth Government Agencies (Canberra: ANAO, 1999)</i>
2000: The government releases new policies for e-government, including standards for how information should be organised and accessed. This results in bringing together several e-governments. Another procedural policy included in the policy framework was the Commonwealth Electronic Procurement Implementation Strategy, which was developed to facilitate how the government did business with its suppliers.	<i>Customer Focussed Portals Framework (DCITA, 2000)</i>
2000: The government sets out eight priorities in its e-government policy, including delivering accessible, easy-to-use, low-cost and high-quality services, enhancing regional online services, developing cross-agency online services, and putting government to businesses transactions online.	<i>Government Online: The Commonwealth Government's Strategy (DCITA, 2000)</i>

Historical timeline, progress and events	Reference
2002: The government releases a new services strategy for e-government, with the focus moving from putting services and information online to developing a more integrated and comprehensive services delivery. The focus of this strategy is on demonstrating "tangible returns" from technology investments, primarily through transforming internal processes.	<i>The Better Services, Better Government (NOIE, 2002)</i>
2003: The government releases a set of technical standards for Australian government agencies to follow.	<i>Interoperability Technical Framework for the Australian Government (NOIE, 2003)</i>
2004: The government releases a new strategic framework streamlining the 1998 policy priorities, which now include: (1) ensuring citizens have the tools, capabilities and networks to participate in the digital economy; (2) ensuring the interoperability and security of digital infrastructure to give citizens confidence in online services; (3) developing government online systems as a platform for industry transformation and productivity growth; and (4) improving public sector collaboration, accessibility and productivity through the effective use of information, knowledge and ICT.	<i>Opportunities and Challenges for the Information Age: Australia's Strategic Framework for the Information Economy 2004-2006: (NOIE, 2004)</i>
2006: The government announces a new "Service Agenda," claiming that Australia will maintain its position as a leader in e-government, sending ten per cent fewer letters – either paper or electronic – to citizens each year from 2006 from 2010 in support of program outcomes. By 2010, the government will have halved the number of forms that must be filled in. The emphasis is on a "connected government" that will "become a reality" and drive reform of government business processes.	<i>Connected Government, AGIMO, 2006</i>
2009: The government creates the National Broadband Network Company (NBN). The Government 2.0 Taskforce is established to "make government information more accessible and usable and make government itself more consultative, participatory, and transparent" (Katsonis & Botros 2015, 43).	<i>Engage: Getting on with Government 2.0, 2009</i>
2010: The government issues the Open Government Declaration. It includes "public sector reform, innovation and using the national investment in broadband to achieve an informed, connected and democratic community" (Commonwealth of Australia 2010, 3). The Department of Finance is appointed as the lead agency. It establishes data.gov.au.	<i>Government 2.0 Primer (DOF, 2010)</i>
2011: The government launches a National Digital Economy Strategy (NDES) outlining a number of goals designed to advance Australia's	<i>National Digital Economy Strategy,</i>

Historical timeline, progress and events	Reference
relative global position on digital activity. One of these goals is that four out of five Australians will choose to engage with the Australian government online by 2020.	<i>(Department of Broadband, Communications and the Digital Economy (DBCDE), 2011)</i>
2013: The federal government launches its online service portal myGov, as a secure way to access government services online with one login and one password. 13 social services systems are initially made available through the portal. However, by 2013 the share of Australians using the internet for their interactions with government fell from 38 to 35 per cent.	<i>Department of Communications (DOC), 2013</i>
2015: The government issues a policy to designate the internet as the 'default' mode for interacting with citizens. The Digital Transformation Office (DTO) is established to develop and coordinate the delivery of digital services.	<i>Department of Communications (DOC, 2015).</i>
2016: The Digital Transformation Agency (DTA) replaces the DTO. DTA's new role is to provide strategic and policy leadership across the Government on ICT and digital service delivery.	<i>Department of Prime Minister and Cabinet, 2016</i>
2018: DTA publish the Government's Digital Transformation Strategy. The strategy focuses on the citizen experience and its intended outcomes and benefits, rather than defining digital transformation	<i>Vision 2025: We will Deliver World-leading Digital Services for the Benefit of all Australians (DTA, 2018)</i>

Appendix J: Code Manual

The following table provides examples of text fragments extracted from participant interviews and linked to codes using a data driven approach.

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
You can experience moments of silent when you don't know what the system is doing; I feel the system needs to be a lot more accessible for blind people. There were no voice prompts, it was not talking to me; A number of the categories that I would go into in on the site are just inaccessible; They call them accessible forms, but you certainly can't enter data into them - not without changing the form.	Accessibility is aimed at ensuring that there are no system-related barriers to equal participation.	Accessibility
I want to remain productive in society but can only do so if the design of the systems I use to support my daily living are accessible; I am confident and self-sufficient in managing and undertaking government activities through online systems if they meet the necessary accessibility standards that cater for my vision impairment; I believe government systems should be properly designed and tested in consultation with people living with disability.	Accessible design relates to the process in which the needs of people living with disabilities are specifically considered.	Accessible Design
The information was accurate; Probably the most confusing aspect is getting an accurate description of what services I can use in each category;	Accurate relates to ensuring that the information is correct and without any mistake.	Accurate
I get an official letter and a 15-page document from the NDIS, which is my plan, but it does not come in a screen readable format.	Assistive relates to parts of the system that aid a person with a disability.	Assistive
There have been quite a few times when the system is not available or just shuts down which is annoying, but it is not a regular occurrence; The first time I went to log in through myGov, the system was disabled for a period of time because they were doing updates, which was during business hours, which in itself was odd as they usually run those things overnight;	Availability relates to whether e-government has failed or is undergoing a repair action when it needs to be used.	Availability

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
Probably about 20% of the time when I have tried to access the system it has not been available; In the early days, there were blanket issues which literally stopped the system for a couple of days.		
The information provided was not clear and it is difficult to understand the structure of the system; The information was clear, and was actually really helpful to clarify exactly what items I could deduct and whether there were caps on those items; Probably the most confusing aspect is getting a clear understanding of what services I can use in each category; Although the forms that I sent through were correct, it was not clear from the information on the site that my request needed a total review and not just a change of circumstances update.	Clear information relates to perception or understanding of what a citizen is reading; freedom from indistinctness or ambiguity.	Clear
I have been trying to work with providers to understand from them as much as possible which services fall within certain categories, particularly as I use a lot of different services, including massage, personal training and Chiropractic services; I understand that they are going through a transition phase and so the more I can work with them and help them along, the better the long-term outcomes will be for all; I find it more efficient to simply email my case manager for the answer I found it all too much and simply contacted my planner for help, but this time, my cognition has improved, and I feel as though I can manage it better now.	Collaboration refers to the action of working with someone to produce something.	Collaboration
I find that the description of the categories in the plan are open to interpretation, and it is not easy to understand all of the pricing guidelines on the website concerning what activities are covered and how they relate to the plan guidelines; So, the information is not always complete, and in most cases, it ends in a situation where you need to go into a service centre to talk to someone; The portal only stores registered NDIS providers and I am self-managed so can choose providers who can be outside the scheme.	Completeness describes a state where a citizen has all the information needed to achieve a desired outcome.	Completeness
I think the system is almost too simple as it lacks a lot of functionality, like the ability to access	Complete functions refer to the ability of	Complete Functions

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
historical records, which would be a great help to reconcile to my manually maintained records, as your recordkeeping suddenly becomes very important if it does not match the quantum of funds remaining on the portal; The system won't let you search by either occupation, service or practitioner, which makes this search engine useless.	e-government to support a citizen to finish all their activities within the digital channel.	
I have to manually add, under each of those items, who I am going to give this information access to, because I have the right to keep certain parts of that information private; I want to know intrinsically that data in a government system is populated predominately by individuals and the data ownership, lies with the Australian citizen.	Confidentiality refers to any information or document that an individual wishes not to make public.	Confidentiality
I value my independence greatly and therefore rely significantly on technology and the accessibility of online systems to stay connected to the world	Connected refers to the ability of e-government to keep citizens engaged in society.	Connected
I have a friend that has very similar circumstance to me, and also has a guide dog, but the bucket of budget that he has for the guide dog support is under a different category to me, despite our plans reviewed within a month of each other; Looking up information on the online site is not much help, particularly related to understanding the categories and their match to your plan.	Consistency refers to the degree of similarity between perceived information.	Consistency
I can upload documents and I am happy to do that because it helps me feel like I am actually in control of the process; When I first logged on as a participant I was somewhat excited, because I finally had control of my own funds; Being able to review my plan and the transactions I have made against my budget gives me a sense of control.	Control refers to a citizen's ability and power to influence or direct the course of events.	Control
What they don't seem to understand is that when you are in a rural setting it is not as if you can simply ask somebody about specific information needed to get through the identification process; I was able to complete the conversation while I was a passenger driving in a car and did not need a	Convenience refers to a citizen's ability to be able to access the service without difficult.	Convenience

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
whole spread of documents in front of me to achieve my outcome; Personally, I find the online service to be less frustrating than either calling or going into a service centre.		
I consider this to be a waste of taxpayer money; The doctor would have to update his own systems and also my health records, for which he is not paid; I would be out of pocket personally to pay the GP to keep these records up to date and accurate; At the moment it is just easier and cheaper for me to get somebody to do it for me.	Cost relates to the amount that has to be paid or given up by an individual in order to get something.	Cost
Initially I found this part of the process a little confusing because the descriptions defining the categories on the screen weren't quite the same as what was in my latest planning document.	Current refers to the latest available information.	Current
Despite these issues, I find the online system very easy to use; Even with my vision impairment, once I had worked through the changes it was actually simpler to use; It is generally easy to log onto the myGov site, as you simply enter the secret question and then you are in.	Ease of use is the extent to which e-government can be used by citizens to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.	Ease of use
I found it pretty easy to find information relating to how my pension would be affected if I increased my hours at work; That information was a little less easy to find and they wanted to know more specific details; Other people find them quite easily on the system, but I seem to struggle I also find it easy to find information on the site.	Easy to find relates to the level of difficult that a citizen encounters in locating the appropriate information to meet their needs.	Easy to find
There is no easy way to navigate around the system, so I haven't really gone and used the system to get information; I find the logic behind some of the setups and the menus quite disconnected; Information that I would have expected under my profile isn't there - it's under my plan, but what's in the plan isn't connected to my profile;	Easy to navigate refers to the delivery of e-government in an open user-friendly style that is ease to access and navigate through the content, ease to action the required tasks in a	Easy to navigate

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
Navigating around the system itself and the site is quite easy; As a result, I am able to navigate through the NDIS system quite easily.	direct way, and whether the layout of the system is clear, comprehensive and well-organised.	
I want the system to use language which is simplified in its context and does not make the presumption the user has an intimate knowledge of government in house jargon; The funds are there, but the way they have set up the access makes it nearly impossible to access, it took nine months for me to actually understand how to access funds that were allocated; I do not find this fully understandable and as a consequence, find it to be somewhat anxiety-provoking; A few times I needed to request an advance on my allowance and found it easy to understand the repayment amounts and conditions; but the text itself is easy to understand.	Ease of understanding refers to a citizen's perceptions of the available information as presented via e-government, reflected by the clarity of the information provided in order to complete a service exchange.	Easy to understand
When I engage with department staff I would like them to have more empathy when they talk to me because I find that as a single parent seeking a benefit, you do tend to get labelled; I find them completely unresponsive and lacking any sort of empathy for my circumstances; Surprisingly, the other day a Centrelink service experience was really great, and I was assisted promptly and with empathy; I was really satisfied with the empathetic and responsive way they dealt with my query.	Empathy deals with a perception that the service provides personalised attention and focus on ensuring that a citizen's interests are optimised.	Empathy
I expect a government system to be ethical in its interactions with the public and equitably provided to all; The online system does not cater for my accessibility needs; Conceptually, I think the system would not be easy for all participants on the scheme to use; I believe it will strongly exclude anyone that has any intellectual impairment from using the system; I live in a designated black spot when it comes to mobile phone coverage and because we are also a tourist location every holiday period our internet grinds to a halt because the network gets overloaded.	Equity implies that citizens have equal access to all resources. It covers the promotion and protection of diversity in society, expressly in disadvantaged communities like disability or minority groups.	Equity

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
I don't normally lodge complaints however, I am coming to the belief that the more complaints there are or praise there is around certain aspects of the e-government service, the more government tends to take that feedback quite seriously; I think there was one occasion where I did complain because of the conflicting information.	The ability of a citizen to provide feedback is an important element in evolving the service over time to better adapt to the changing needs of a citizen.	Feedback to service
The system provides no tracking on the status of my requests; The system does not tell you anything; I recently had to scan some documents onto my plan, I did not get an acknowledgement that the documents had been successfully uploaded; I put in a lot of data, either requesting information, submitting applications or invoices, but I don't get any feedback on what action has been taken or notification of the status of my requests; I still have not heard back on several issues which I raised five months ago.	The ability of e-government to provide feedback and updates on progress.	Feedback to user
I can't say they were responsive as I always had to wait on the line for a staff member and they certainly weren't friendly.	Friendliness describes the quality of behaving in a pleasant, kind way towards someone.	Friendliness
You can't get full access to your funds that have been allocated; When I had the initial consultation with the Occupational Therapist, those templates weren't available, so a very detailed report was written; There doesn't seem to be a tracking feature; It is really difficult to interrogate the system to get the information you need and you can't drill down and get enough detail; You almost have to keep the information yourself on a completely different system in order to get the level of detail that you require; The search engine is a lot better than it was but can still be problematic.	Functionality refers to is how the features of the service actually work to provide a citizen with a desired outcome.	Functionality
I expect the government to keep up with industry standards to make them equitable for all;	Industry standards are a set of criteria within an industry relating to the standard functioning	Industry Standards

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
Sadly, like most government websites, this system is also not fully accessible by standard voice assistive technology; I expect a government system to allow the individual citizen to be able to update system records in an “e” environment which is familiar to them and is adapted continuously to meet current standard “e” operating environments which many Australian citizens use on a daily basis	and carrying out of operations in their respective fields of production.	
I expect a government system to allow the individual citizen to be able to update system records in an “e” environment which is familiar to them and is adapted continuously to meet current standard “e” operating environments which many Australian citizens use on a daily basis; Just being able to speak something - either speak the next link or tab it to the next text box makes it much easier. These are small innovations that make a big difference; Alternatively, on the mobile phone there are different sorts of innovative apps that I can use to help navigate the screens if needed, and I am also able to adjust my contact lenses if necessary	Innovation refers to the application of better solutions that meet new requirements, or unarticulated needs.	Innovation
There was no information entered into the system by any hospitals or dentists, even though these are also covered by the Medicare; I do not use the online system to retrieve or get information about the scheme as the consistency and correctness tends to vary, and it is my personal preference to go to the office to have face to face interactions; In past years when I used to use the system even more regularly, I would sometimes be given conflicting information; NDIS may have all that information in the background on their systems and I assume they do, but I don't have visibility of that.	Information integrity is the trustworthiness and dependability of information; i.e., the dependability and reliability of its content based on both the information's consistency with policy and its representational faithfulness	Integrity
When I use the online system, it is not intuitive and is really beyond my level of comprehension, because every area I access, I am confronted with verbose amounts of written information and there is nowhere where I can verbally ask or type in simple queries which would lead anywhere;	Intuitive refers to the ease of use of a system because the process of operating it is very obvious.	Intuitive

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
The person I was dealing with was very professional, so once done, keeping the plan updated online is pretty smooth and intuitive; At first, I found the online system lacked intuitiveness, but now that I am familiar with the way it works, it is relatively straightforward; I find navigating around the system very easy and quite intuitive, but there is a problem with reconciling your plan approved categories to those defined in the online system.		
Trying to find services that match my needs or finding out what to do next is difficult; This is my second year in the scheme, and I have worked out how to do most things; No one seemed to know how to reverse a payment or have the authority to do so.	Knowledge refers to acts, information, and skills acquired through experience or education	Knowledge
I am comfortable with the system, but I have a PhD so am able to work my way through most things intellectually, but I think for someone who might have some intellectual impairment, they may find it too difficult to use the online system; On the main menu each section is displayed in a large box which is acceptable to me, given I have fine vision, but I would imagine it would be rather difficult if you had a vision impairment; I suppose I am in the minority in so far as I live in a rural regional part of Australia, which is a compelling reason to self-manage so that I am not restricted to the NDIS list of registered providers, which has proved to be absolutely invaluable.	Minority groups are a group of people who, because of their physical or cultural characteristics, are singled out from the others in the society in which they live for differential and unequal treatment.	Minority Groups
In my opinion, government needs to be more open with their performance and share this information with all.	Openness encompasses the level of transparency of government decision making and their acceptance to answer questions concerning these decisions from citizens online.	Openness
A lot of my information that was required was already prefilled, so it was largely me confirming the documents I had matched with what was prefilled, and I think there was less than a handful of manual entries I needed to make;	Personalisation refers to the extent to which the system enables a citizen to personalise and set up the system	Personalisation

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
	resources according to their needs and abilities, to focus on the issues of their interest rather than all content, and to choose the means of servicing catering to their own style and needs.	
I do trust the government with my information and understand how the privacy and personal information protection rules apply; I am not worried about the privacy of my information on an online system; You generally have to sign a privacy statement, and in my opinion, they need to know so much information about you that really there is no privacy.	Privacy of information relates to a citizen's right to have some control over how their personal information is collected and used.	Privacy
In response to my query, the system downloaded every financial transaction that I have made over the last two years. So, it is an awful lot of data to look through, particularly when this data is detailed down to a level that even describes the composition of drugs, which is not helpful to me at all; The system does work very well for getting into where you need to go, but it does not always provide you with all the information that you want when you do get there; The NDIS site does not have any information on it that I really need; The information on the website is very long-winded and hard to get through; It would be helpful if they included more specific and relevant information.	Relevance of information refers to the extent that the need of the users is met through the availability of the information to satisfy that need.	Relevance
Every time I attempt to do so, the system seems to get itself into a knot; It should be error-free before it is rolled out; The system is responsive and reliable with its information gathering, and can provide an honest, up to date summary of an individual Australian citizen; On a more practical note, the system has not been very reliable; The reliability of the online system is getting better;	Reliability refers to a citizen's views of whether the systems were fully available without interruption during the transaction, whether response times were acceptable, whether system bugs occurred while using the system, or whether the level of technical	Reliability

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
Overall, I find the system very amateurish, but it is reliable, and I have been very impressed at the reimbursement speed; The system has also been reliable; I have personally found the system reliable.	support needed to ensure reliability are maintained.	
However, I find that overall the system works well, with quick response times; Response times have been quick to the point that if I lodge a claim before 6 pm, the money is in my account the next day; There have been only three occasions where it took more than 24 hours for my payment to get processed but other than that it's been promptly paid every time.	System response time refers to the time taken between when the citizen initiates an action on a system, and when the system delivers the result.	Response times
I am an active user of the NDIS online portal and find the major problem I have with the system is that I just don't get any response back; I logged onto the system, input all the required data, submitted the request and had no response for several weeks; I sent emails almost daily to chase up progress but got no response; I think if anything was to be improved from the participants' perspective, it would be nice to get a response that what you've uploaded has been received, and somebody knows that it's actually there; Luckily the staff members were very responsive and happy to help, and literally within two days they called back to confirm that the funds had been approved; Since then, no one has responded back to me and there was no recourse to correct the issue, so I guess this tells me how important they think it is; I have used the helpdesk and have been somewhat underwhelmed. I find them completely unresponsive.	Responsiveness refers to the timely responses to citizen inquiries, the facility to track progress of applications or claims, and the extent that service providers deliver against service levels displayed online. It often refers to the willingness to support the citizen, the provision of prompt service, and the extent to which services provided are helpful. Ultimately, it is about ensuring that there is no delay in dealing with citizen issues or enquiries.	Responsiveness
To avoid forgetting, I save the login and password on my computer and accept that this is not good security but feel that there is no other convenient way; I find the security of my records to be a minefield;	Security relates to the perceived protection and security of personal information offered by the e-government system.	Security

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
Now, I understand why the government needs to make sure that only eligible people are registering, but it doesn't make it any less frustrating; I do trust government with my own information and security and I think a government online system like the NDIS portal is a lot more secure, as there are many people accessing that system; I trust government to keep my information secure, even though I have a mild concern about the prevalence of hacking.		
I found the process relatively simple, even though there are enough typical little glitches to irritate you; It was much less complicated than the previous iteration of the system, with a simpler interface; They recently simplified and streamlined the process, but it still contains a lot of jargon about what the different categories are; I find using the online system relatively simple, probably because I have used computers a lot; Once I get to the NDIS online site the navigation from there is reasonably simple, until I get to the reimbursement screen when it becomes a little clumsy.	Simplicity refers to the quality of the e-government that makes it easy to understand or operate.	Simplicity
I would like a one stop shop (online system) for finding out my information, to be able to connect with help groups on the system and where information on the latest research both nationally and internationally is available; In my opinion, it would be beneficial to have a more integrated view of the whole status of my dealings with the NDIS on the online system, from an end-user perspective.	Single view refers to an aggregated, consistent and holistic representation of the data held within e-government about a citizen that can be viewed in one place	Single View
I want to remain productive in society but can only do so if the systems I use to support my daily living are accessible and help connect me with the rest of the world; The system as it stands now adds no value to my life at all, in keeping up to date with my health records or connected to society.	Social cohesion refers to the extent of connectedness and solidarity among groups in society	Social Cohesion
I believe government has a societal role in ensuring that all public online systems are fully accessible to those living with a disability to ensure social equality	Social justice is the view that everyone deserves equal economic, political and social rights and opportunities	Social Justice

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
This adds a lot of time to complete a transaction online; This does not consider my personal time spent populating and checking the database and keeping my records current; I also learnt a bit more about the online system because in the past, when it didn't work, or was too complex to get even very simple answers, I would go - I can't be bothered - forget it - it's not worth my time and energy; Generally, that poor experiences relate to the waiting times and the resources they have in the call centres to be able to answer your call; The call wait times for some departments is so long, that my preference in these situations is to go into my local service centre to deal with the issue, because it's often quicker driving, parking, going in, and doing it there than waiting on a call; It was time consuming and long-winded, so I was not terribly impressed; In the beginning it genuinely took me six months of continual checking with my case manager to find the appropriate codes needed for the payment re-imbursement categories.	Time refers to the time taken by a citizen to undertake or complete a process or activity.	Time
This also influences my decision to keep my own records because I know the value of keeping up-to-date and complete records, and I don't trust that government systems are able to do this; I believe the government has the right intent with the scheme, and I trust that the information that I give them will be used in a sensitive confidential and secure way; I trust in government systems and although it is good that they have all of those security protections in place, it does slow the process down a lot; I trust that government wants to do the right things and am positive that my information will be kept secure; I have an innate trust in government that they are able to secure my records; I do trust that the government online systems will keep my information safe; I trust government systems as much as I trust any of the commercial online systems that I use;	Trust is relative to the degree that citizens believe that e-government gives them greater personal control over the manner in which their needs are serviced, improves their sense of empowerment by being well-informed, ensures that their information remains secure and private and facilitates social inclusion.	Trust

<i>Text Fragments</i>	<i>Description</i>	<i>Code</i>
Despite this, it is difficult to trust any online system with your security; I am optimistic that I will continue to use government online systems more and more, as long as I can, as I do trust them; I believe that as it is a government site, it needs to be trustworthy.		
It should be aligned to the lived examples of users and should anticipate the needs of the end user with continuous feedback from a cross section of the Australian community, including minorities; Caused by the way they have designed it from their end, and not for my needs; In my view, they tried to make the system flexible for all people but ended up making it unusable for all; I don't particularly like the site at all as it seems to be designed for carers; I do not have a problem with the layout of the system either as it is reasonably well designed; The NDIS online system is quite usable, but in my opinion, it could be a lot more user friendly.	User defined relates to defining functions of e-government according to citizens' needs.	User defined

Appendix K: Ethics Approval

On 23 Jan 2018, at 9:58 am, aries@anu.edu.au wrote:

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR E-MAIL CONTACT DETAILS.

Dear Mr Gary Sterrenberg,

Protocol: 2017/764

Measuring IS success of e-government: A Multiple Case Study on the Disability Sector in Australia

I am pleased to advise you that your Human Ethics application received approval by the Chair on the 23/01/2018.

Thank you for addressing the Committee comments - the protocol is approved. Please note - this approval is for the initial interviews. For the group interviews you mention that may take place later, an updated Participant Info Sheet and Consent form will be required.

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.
2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.
3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.
4. Please advise the HREC if you receive any complaints about the research work.
5. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

All the best with your research,

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Research Integrity & Compliance
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