




PATHWAYS TO INNOVATION

Transforming Irish non-profits through the
power of digital and emerging technology



A dissertation submitted to the University of Dublin in partial fulfilment of the requirements
for the degree of MSc in Management of information Systems 2019

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Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work, and has not been submitted as an exercise for a degree at this or any other university. I further declare that this research has been carried out in full compliance with the ethical research requirements of the School of Computer Science and Statistics.

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Abstract

Irish non-profits have embarked on an exciting journey towards Digital Transformation which presents significant disruptive and creative innovation possibilities in support of the sector's wider reform and renewal agenda. This research work employed a qualitative interview approach, using Grounded Theory as the analytic methodology, which proved a highly efficacious research design in surfacing a wealth of revealing data from practitioners in the sector examining the barriers and challenges faced by, and opportunities available to, the sector in its technology journey.

Emerging examples of good practice in the effective implementation of technology came to light at Irish non-profit organisations but these had not been documented or disseminated sufficiently within the sector to influence future projects. The key research findings make an empirical contribution to this important subdomain of Information Systems in developing an emergent exploratory theory concerning how the non-profit sector can become more effective and strategic in its journey to fully leverage technology. A survey of the international perspective, especially from the global poverty organisations, revealed important theoretical and practitioner frameworks.

A comprehensive transformation of the sector remains outstanding, frustrated by challenges including limited funding, resource constraints, skills gaps, donor reporting requirements and tendencies to 'reinvent the wheel'. Key findings of this research highlight the need for strategic alignment and the development of new sectoral funding and innovation models.

Some organisations have recognised the need to harness technology strategically, prominently situating their digital roadmap within their overall strategic plan. This alignment was most evident within more farsighted and innovative organisations, with smaller organisations lagging further behind.

The technology industry has ambitious plans to deploy Artificial Intelligence to tackle social problems but this research highlighted discontinuities in its engagement with the non-profit sector. Opportunities exist here for non-profits to develop new collaboration and partnership approaches to proactively reframe this important agenda.

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Glossary of Abbreviations

AI	Artificial Intelligence
CSR	Corporate Social Responsibility
FRS	Financial Reporting Standard
SORP	Statement of Recommended Practice for Charities
IS	Information Systems
GIS	Geographic Information System
ICT	Information and Communications Technology
ICT4D	Information and Communications Technology for Development
NGO	Non-Governmental Organisation
INGO	International Non-Governmental Organisation
OLPC	One Laptop Per Child (project)
EPR	Electronic Patient Record (system)
ERP	Enterprise Resource Planning (system)
TOGAF	The Open Group Architecture Framework
ITIL	Information Technology Infrastructure Library
PRINCE2	Projects In Controlled Environments
SDGs	Sustainable Development Goals (of the United Nations)
ML	Machine Learning
CIO	Chief Information Officer
COO	Chief Operations Officer
MIT	Massachusetts Institute of Technology
ICS	Irish Computer Society
SMEs	Subject Matter Expert(s)
CTO	Chief Technology Officer
CRM	Customer Relationship Management
CAQDAS	Computer Assisted/Aided Qualitative Data Analysis Software

Chapter 1 Introduction

1.1 Context of Study

Irish non-profit organisations have commenced a reform and modernisation journey as the sector seeks to recover from recent scandals which have negatively impacted perceptions of the sector. At the same time, it is working to transform its operations to become more efficient and to leverage the possibilities afforded by digital channels and other emerging technologies such as Artificial Intelligence (AI). This technology-led imperative, which has been described as Digital Transformation (Peppard, 2018), sees organisations leveraging digital capabilities to transform both their internal operational processes and the way that they engage with their customers. This is a journey filled with creative possibilities for the sector but one which remains frustratingly incomplete, notwithstanding some inspiring exemplars and pockets of excellent practice. This dissertation examines various possibilities, challenges, exemplars and risks associated with the journey to digital transformation and locates the current position of the non-profit sector on its journey. Finally, it provides practical recommendations for the sector to help it to navigate the outstanding journey.

1.2 Research Question

The primary research question which examined was as follows:

- How can non-profit organisations leverage the transformational opportunities afforded by digital and emerging technologies for social good?

Secondary questions also investigated included:

- What exemplars and models for digital transformation have emerged from the non-profit sector to date, both in Ireland and in an international context?
- What are the primary drivers for the non-profit sector in seeking to leverage digital and emerging technologies?
- How well aligned is the digital workstream to the organisations' strategic plans?
- What are the implementation barriers and challenges?
- Are there specific sectoral considerations in implementing technology projects within the non-profit sector?
- What supports is the technology industry providing to the non-profit sector to leverage technologies?
- Are the supports provided by the technology industry congruent with the non-profit sector's needs?

1.3 Rationale for Research

The researcher leads the technology function at a large Irish non-profit organisation which is currently seeking to undertake a progressive digital transformation and to develop and implement an ambitious multi-annual strategic vision for the organisation's technology programme in support of its overall strategic plan. Undertaking this research identified fascinating exemplars of good practice, and highlighted some key risks and pitfalls associated with digital transformation.

Beyond the specific application of this knowledge within the researcher's organisation, undertaking this research brought a range of valuable sectoral insights to light and highlighted interesting opportunities for collaboration and innovation work across the wider sector. Further, the interview process initiated a dialogue with technology leaders at other Irish non-profit organisations which it is hoped will develop into a more meaningful and extended engagement to share knowledge and undertake capacity building.

1.4 Relevance of Research

The research will be of direct relevance to technology practitioners within non-profit organisations in Ireland and beyond. The insights provided may also be useful to leadership teams within the non-profit sector as well as funders and donors. Finally, the challenges noted may be of interest to those working within the philanthropy units at the large Technology corporates as they seek to align their Corporate Social Responsibility (CSR) programmes with the needs of the non-profit sector.

1.5 Scope of Research

This research primarily focusses on the Irish non-profit sector although it also draws some valuable insights from international non-profit organisations. Investigation is limited to the technology journey of larger organisations which have sufficient scale to have dedicated in-house technology functions and it does not examine or reflect the experience of smaller non-profit organisations. The scope is also limited to what would be traditionally considered the 'charity' sector including organisations involved in overseas aid, disability services, poverty alleviation, health issues, community development and environmental campaigns. Other types of organisations such as hospitals and educational institutions are excluded from the scope even though technically these bodies hold non-profit status for tax purposes.

1.6 Overview of the Irish Non-Profit Sector

1.6.1 Historical Contexts

The Irish non-profit sector has a venerable tradition in responding to disadvantage both locally and in the international arena. Irish organisations have been highly visible on the humanitarian stage over many years despite limited scale and resources. The foundations

of the sector began with the work of religious-oriented Irish missionaries who have been active across huge swathes of the developing world since the mid-twentieth century. (Hogan, 1990).

However, the sector in Ireland has evolved and diversified into a heterogeneous cohort of charitable and campaigning activities in support of a wide variety of causes. It is estimated that there are now in excess of 29,000 non-profit organisations in Ireland (Benefacts, 2019) employing more than 189,000 people (Charities Regulator, 2018), which represents about 9.3% of total employment in Ireland.

1.6.2 How the sector is funded

The sector has a reported income of €16 billion which is equal to 5.8% of GDP. (The Wheel, 2014). In contrast to charities internationally, the majority of income for the domestic non-profit sector comes from the Irish Exchequer which contributes just over half of the sector's revenue. This is due in large part to the extent to which the Irish State has traditionally delegated and outsourced essential health, education and social provision to non-profit institutions and service providers. However, a recent survey by Amárach Research for the Charities Institute of Ireland (2017) shows that 70% of the Irish public believe that the Irish state relies too heavily on Non-Governmental Organisations (NGOs) to provide essential services. The funding picture is similar in relation to Irish humanitarian aid agencies operating overseas. Irish headquartered International Non-Governmental Organisations (INGOs) received 53% of their income from the Irish government in 2015, compared to 33% in the UK. (O'Connor, 2019).

For all types of NGOs in Ireland, fundraising and donated income represent a much lower proportion (4%) of total income within the Irish non-profit sector when compared to other countries. (Charities Regulator, 2018). The annual contribution of €212 per capita by Irish citizens to charitable organisations is low by comparison to other developed nations. This represents roughly half the amount donated per capita by U.K. citizens, and only 20% of the average contribution in the U.S. (O'Connor, 2019). However, notwithstanding the low average contributions, Irish people remain ranked globally as the ninth most likely to donate to charities and the seventh most likely to volunteer their time to a charity. (CAF, 2018).

1.7 Current Challenges for the Sector

However, the sector faces two distinct but related existential crises, which combine to present an extremely challenging context as it seeks to reform in order to re-establish its relevance to Irish society while transforming its operations to improve efficiency and value for money.

1.7.1 Public Perception of Charities

A recent newspaper headline (see Figure 1 below) covering research into the sector conveys a good sense of the contradictory perspective which often pervades discourse concerning the Irish charity sector.



Figure 1 Newspaper Headline on charity perceptions:

(The Times, 27th Oct 2017)

Firstly, trust in Irish charities is at an historic low and the sector faces a difficult ongoing challenge to recover from recent high-profile governance scandals at Rehab, Console and the Central Remedial Clinic which have severely damaged the public perception of non-profit organisations.

As a result, the number of Irish people who were prepared to state that they had full trust in Irish charities remained stubbornly well below 10% of those surveyed between 2014 and 2017 (Charities Institute of Ireland, 2017). This, in turn, has impacted significantly on charities' fundraising income as demonstrated by research (O'Connor, 2019) which showed that most Irish charities, apart from religious bodies, have experienced a continual decline in their fundraising income.

1.7.2 Funding Mechanisms

At the same time, Benefacts (2019) notes the marginal (and declining) impact of philanthropic grants within the funding base of Irish NGOs with only €119m of overall income for the sector deriving from this source- this is in large part due to the gradual winddown of Chuck Feeney's Atlantic Philanthropies activity in Ireland which terminated grant-making in 2016 (Atlantic Philanthropies, 2017).

Under the Statement of Recommended Practice for Charities (Financial Reporting Council, 2015) all fundraised and donated income should be treated as 'unrestricted funds' within the accounting records of a charity. In practice, this means that in the absence of a specific designation for its use by the donor, the organisation has a significant degree of latitude in choosing how to allocate these funds to discretionary projects.

By contrast, as noted earlier in this section, the government grants which make up the majority of income for charities generally come with restrictive conditions attaching to their use, being allocated on a recurring annual basis as 'restricted funds'. Such a designation means the grantees are legally obliged to use the funds solely for the grant aid purpose for which they are allocated. A further difficulty is that multi-annual budget allocations by the Irish government are relatively uncommon especially for operational rather than capital activities. Instead, government grants are subject to annual reconfirmation by the relevant statutory funding agency. This process is influenced heavily by the overall public fiscal position. Bissett (2015) highlights the vulnerable nature of government funding for the sector during the recent global downturn where the funding cuts made to voluntary groups were at much higher levels than those made to public services especially to the most vulnerable groups including youth services, disabilities and traveller education.

This precarious funding model, together with the inexorable decline in unrestricted income from fundraising combine to create a significant difficulty for the sector in being able to assemble the significant funding required to plan for and financially support long term innovation and renewal projects.

1.7.3 Transformation and Renewal Agenda

The sector also faces a second major challenge as it seeks to modernise and progressively transform its operations in order to leverage the efficiencies afforded by modern technology but work on the modernisation agenda has been significantly hampered to date by the need to respond to immediate governance issues with the sector.

This renewal effort is critically required so that the sector can eliminate inefficient and costly legacy processes through adopting digital channels and record keeping systems. Both of these reform and modernisation agendas are critically interlinked to enable NGOs to demonstrate full transparency, value for money and accountability in the use of public funds.

Compounding the situation, the sector has necessarily been relatively risk-averse due to funding constraints and the potential reputational consequences of a highly visible failed project initiative, especially one which has been paid for using fundraised or public monies. This creates a tendency toward gradual and cautious incrementalism which continues to inhibit the kind of major transformational change agenda which many in the sector believe to be necessary.

1.8 Chapter Roadmap

Chapter 1 establishes the research question in context, noting some key challenges which currently beset the Irish non-profit sector. The primary and secondary research questions

are introduced together with an overview of the rationale, scope and potential audience for the research work.

Chapter 2 introduces the literature review by surveying work within the sector on ICT4D and related theories originating within the Social Science domain. Next, it surveys the likely impacts of Automation and other emerging technologies for the non-profit sector. An extended review is undertaken of the sectoral experience in implementing technology projects to identify examples of good practice. The final section surveys research into alternate pathways to achieve Digital Transformation and contrasts these with the exemplar frameworks developed within the non-profit sector to support its digital journey.

Chapter 3 considers alternative potential approaches to investigating the research question and sets out the reasons for selecting a qualitative interview approach as the primary research strategy used in this study. Some issues in relation to the theoretical research perspective are briefly discussed¹. The specific analytic approach employed to build theory, informed by Grounded Theory, is described and critiqued in detail. Practical research considerations and design choices are discussed including sample selection, ethical requirements, software use as well as the limitations of, and lessons learned from the research.

Chapter 4 begins the discussion and analysis of the variety of rich insights which emerged from the interview data. Examples of good practice in building a pathway to Digital Transformation are explored and issues concerning the need to align technology governance to the wider strategic agenda are analysed in detail. An examination of sectoral technology challenges, implementation approaches, data issues and funding problems is conducted and how the sector's interface with its funders and technology partners can support the resolution of these challenges is considered.

Chapter 5 continues and concludes the discussion of the research findings and weaves these disparate strands into a series of conclusions and recommendations which constitute the primary theoretical outputs emerging from the research together with opportunities for future work in this research area.

1.9 Conclusion

In summary, a convergence of factors (trust issues, funding shortfalls and risk aversion) creates an extremely challenging set of circumstances for the sector in seeking to embark on the necessary renewal and modernisation agenda for the sector. On a more positive note, the technology industry has established an ambitious programme of software donations and substantial discounts to support non-profits which can potentially reduce the

¹ The discussion of research philosophy and theoretical considerations continues in more detail in Appendix One.

budgetary hurdle to be overcome, although as will be discussed in Chapter 2, other operational and implementation challenges remain to be overcome. Allied to this, the sector has a long tradition of being highly innovative and there are emerging “green shoots” and exemplars of good practice in relation to the journey towards digital transformation within the sector.

2 Literature Review

2.1 Introduction

This section begins by surveying the growing body of research which exists around Information and Communication Systems for Development² (ICT4D) while underscoring its limitations. ICT4D is a corpus which unifies elements from Information Systems (IS) theory and the Social Sciences to generate theories concerning the application of technology to improve living standards in the developing world. Various conceptual frameworks which first originated within the Social Sciences domain are presented including Gibson's Theory of Affordances and Sen's Capability Framework as these are key concepts which have increasingly supported the development of specific theory in relation to technology within non-profit organisations.

Next, the primary theoretical foundation for the overall research approach emerges from a broad-ranging critical survey of the key findings from the sector which have been published in the mainstream IS and management literature around the experience to date of the sector's deployment of technology. Here, a key focus is to examine the critical success factors, implementation risks and barriers which have emerged in the analysis of recent technology deployments within non-profit organisations, especially regarding the U.K. and Irish experience.

The discussion of implementation issues is extended through a broad and critical analysis of the state of existing theory, frameworks and models in relation to transformational technology in the non-profit sector. This was undertaken in order to identify knowledge gaps, theoretical shortcomings and opportunities in the literature concerning the research topic. This review highlighted some novel and original research themes which warranted further exploration and these, in turn, served to directly inform and underpin the overall research approach adopted, specifically prompting a number of the interview questions. Some issues concerning the skills necessary to drive digital transformation are briefly examined. The supports offered by the technology sector to NGOs and the congruence of this support with the needs of the NGO sector are evaluated before drawing some final conclusions from the literature review to inform the primary research approach.

2.2 Information Communication Technologies for Development (ICT4D)

Information Communication Technologies for Development (ICT4D) is a term used to describe the field of research concerned with taking the body of formal theory developed in relation to information technologies and applying this to support ongoing development

² Here, **Development** refers to social science derived strategies to develop post-colonial third world countries.

efforts to achieve social transformation in the living standards of populations in third world countries. (Walsham, 2017).

ICT4D can best be conceptualised as an applied knowledge domain and Heeks (2008) notes that three intellectual domains of computer science, IS and development studies, have all contributed to the ICT4D field. However, Heeks points out that achieving an effective synthesis of these three domains remains outstanding and represents 'the key intellectual challenge for ICT4D'.

Avgerou (2008) reviewed the research within the IS literature into ICT4D focussing on the ways in which developing countries have exploited ICTs, with three broad discourses emerging, namely

- ICTs as technology and knowledge transfer;
- ICT as a process of socially embedded action; and
- Transformative intervention.

ICT4D originally emerged in the 1990s in support of the United Nations' Millennium Development Goals (WHO, 2015) which sought to alleviate poverty, improve health and education and foster gender equality at the same time as new global technologies such as the World Wide Web were becoming pervasive.

However, analysis of the first wave of ICT4D shows that it was not successful due to various challenges encountered around technology maturity and scalability issues. A good example of the gap between aspiration and realisation can be found in the 2005 One Laptop Per Child (OLPC) project which aimed to provide children in developing countries with a basic laptop which could be produced for \$100 per unit. (Bender et al, 2012). Unfortunately, the delivered OLPC product had major difficulties in connecting to the Internet and could only run on mains electricity.

As a result of these early missteps, subsequent discourse around ICT4D has frequently subsumed the technology component into the overall conceptualisation of improving living standards generally. In response, other commentators (Madon et al, 2009) advocate for a closer connection between IS, development studies and development informatics, noting these links as a 'fragile thread' to date.

2.3 Capability and Affordances Theories and their application in IS theory

The work of ICT4D theorists has been heavily guided by the influential theories of Amartya Sen's Capability Approach which at its core examines what individuals are able to do. (Sen, 1985). In an ICT4D context, key aspects include an individual's access to ICT, their individual agency³ as well as the wider societal opportunities which are available to them.

³ Sen defines agency as 'the choices as rational agents that individual humans choose to act on'

There are, however, considerable challenges in operationalising Sen's Capability Approach and Gasper (2007) observes that the framework suffers from a 'theoretical under-specification' while Nissenbaum (2000) highlights the need to define a priori a set of baseline capabilities.

To facilitate operationalising the Capability Approach, Gigler (2014) offers an **Alternative Evaluation Framework** (AEF) for assessing ICT4D programs. Echoing Madon (2009), Gigler advocates that the socio-economic and cultural context, emphasising outcomes over technology, should become the central analytical focus for ICT4D research.

From the field of psychology, Gibson's **Affordances Theory** has also found considerable traction in both the ICT4D and the wider IS field. Gibson's theory describes affordances as things that the environment provides to us, for good or ill, conceptualising that the affordances exist and remain available even if they are not being perceived (Gibson, 1950).

2.4 Affordances Theories and their Application within IS Theory.

Various theorists have adapted Gibson's Affordances concepts to IS research to conceptualise a functional affordance in the IS context. For example, an influential view has been to see affordances as 'the possibilities for goal-oriented action afforded to specified user groups by technical objects'. (Marcus and Silver, 2008). Norman (1988) appropriated this concept of affordances to the Human-Computer Interface field as a central theme in his influential book 'The Design of Everyday Things'.

Anderson and Robey (2017) makes a further valuable contribution, based on a case study into implementation of an electronic patient record (EPR) system in introducing the concept of **affordance potency**. This reminds us of the need to create and demonstrate functional affordances which users will perceive as useful user-friendly and will consequently be motivated to use.

Volkoff and Strong (2013) also explore the social process of technology adoption where users seek to achieve **affordance actualisation** which sees technology evolving in response to feedback from users as they interact with it. This process closely resembles Leonardi's (2011) concept of **imbrication**, developed through an extended case study in the automotive industry. In Leonardi's approach, imbrication is a complex dynamic process composed of distinct elements, both technical and social, which act interactively and iteratively to align the technology with user requirements.

Volkoff and Strong (2013) argue that affordances concepts are entirely consistent with the generative mechanisms described in critical realist research ontology, which they view as an ideal philosophical approach to IS research.

2.5 Automation Impacts/ Predictions

No conceptualisation of the likely future impact of technology on the non-profit sector can credibly ignore the potential impact of automation and related emerging technologies such as Machine Learning and Artificial Intelligence (AI). These are now rapidly moving from the domain of futurists to impacting on the operational practices of medium and large enterprises. Looking into the medium term, technology forecasts by Kurzweil (2006), Harari (2016) and O'Connell (2017) posit that in the coming decades we will have achieved a super-intelligent machine whose intelligence capabilities will grow exponentially.

However, while some of the medium-term predictions are uncertain, in the shorter term there can be little doubt that we will see incremental yet transformational changes in the world of work as AI replaces humans in low-level tasks and progressively extends its reach.

Kurzweil (2006) predicts the emergence of what he terms 'The Singularity Event' will occur by 2045. Then, \$1000 worth of computing power will exceed the combined computational and cognitive power of all the humans on earth. Kurzweil also predicts that an AI apparatus capable of achieving human-level intelligence will be available for \$1000 by 2020. (Dream Big Podcast, 2018).

McAfee & Brynjolfsson (2018) predict an imminent automation revolution as the next phase of the Second Machine Age causes dramatic and immediate impacts right across the global economy through three key pillars:

- the emergence of the accessible and highly intelligent **machine-** driven by the mainstreaming and commoditisation of artificial intelligence
- the increasing importance of the (software) **platform** in transforming the delivery of goods and services (Airbnb and Uber are excellent examples of this phenomena- see Libert et al (2014))
- the ubiquity of the **crowd** which will have far-reaching economic impacts which are already dramatically changing how large corporations acquire intellectual property.

Because of these impacts, McAfee & Brynjolfsson (2018) demonstrate how large enterprises such as General Electric are using crowd-sourcing platforms such as Kickstarter and GoFundMe in their product development. Surprisingly, the prize at stake here is not technological capabilities at all, but rather access to the early valuable market intelligence which crowdfunding allows them to source directly from representative consumers.

Frey and Osborne (2013) flag the potential disruption which will be caused by automation, demonstrating that 47% of current jobs in the United States are vulnerable to ultimately being replaced by automation.

Other commentators (Nedelkoska and Quintini, 2018) working on behalf of the OECD echo the likelihood of automation causing major displacement of employment across OECD economies though their predictions are slightly more conservative, suggesting that close to one in two jobs will be “significantly impacted” by automation, and they also predict a considerable degree of variation in the impact between different countries.

These findings are echoed in a recent report by consulting firm McKinsey (2017) who highlight that the level of impact of automation over the next decade is uncertain and depends heavily on the speed of adoption of AI. They suggest that as much as thirty per cent of hours worked globally or alternatively as little as almost zero per cent could be automated by 2030.

The International Labour Organisation (2019) concurs, noting a progressive redistribution (see Figure 2 below) of employment away from agriculture and manufacturing in favour of construction and both market and non-market services over recent decades which are predicted to accelerate.

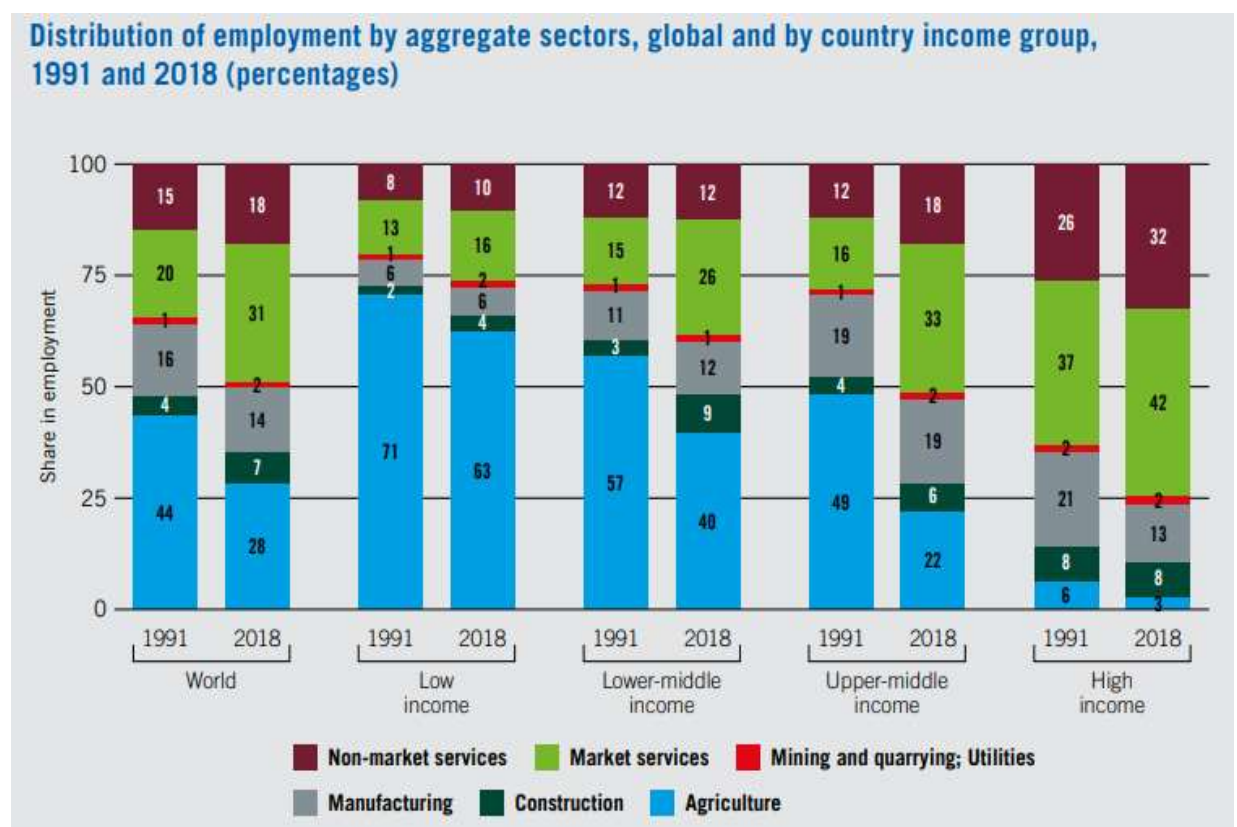


Figure 2 Employment Shares by Sector

(Source 'World Employment and Social Outlook: Trends 2019' issued by the International Labor Organisation)

It is interesting to note that the definition of the non-market sector⁴ in Figure 2 includes various state subsidised activities such as Healthcare, Education and Public services, many of which are currently delivered by non-profit entities in an Irish context.

There are clearly considerable efficiencies from emerging technologies which the NGO sector can leverage to support its modernisation agenda, particularly in automating repetitive tasks which do not add overall value to the sector's work. However, there are also critical ethical concerns which the sector must consider, especially as we see the progressive emergence of autonomous AI agents which are exponentially more powerful than humans. These critical issues are examined in the highly publicised Open Letter on AI (Future of Life Institute, 2015) which highlights issues such as verification, validity, security and control in relation to the future planning, development and control of AI.

Russell and Norvig (2011), writing in the most popular university textbook on AI, advocate that we should focus on the utility of the decisions that AI agents make, arguing that we must pay close attention to ensuring that these are fully aligned with human aspirations.

A further risk concerns moves to automate the creation of software such as Google's AI agent (Ferlitsch, 2019) which can now independently create Machine Learning algorithms without the need for human input. This will tend to further abstract humans from being able to understand and control how the AI algorithms work, which clearly adds weight to the arguments to pre-plan the mandatory inclusion of embedded verification and validation mechanisms.

2.6 The Automation and Digital Journey (so far) in the NGO Sector

Returning to consider the more immediate imperative for the NGO sector to modernise operations and drive process efficiencies, it is useful to establish an agreed definition for digital transformation. A leading IT resource defines digital transformation as 'the process of exploiting technologies and supporting capabilities to create a robust new digital business model' (Gartner, 2018). Conversely, Westerman (2019) at MIT focusses on the people and organisational aspects of the transformation, proposing that 'Technology changes quickly, but organizations change much more slowly' and observing that as technology has matured considerably, the challenges of digital transformation now largely relate to leadership rather than technical issues.

Within the NGO sector, Burt and Taylor (2003) examined the capacity and readiness of voluntary and non-profit organisations to reshape their operations using ICT. Writing in a

⁴ Non-market services cover those services provided to the community as a whole free of charge, or to individual consumers either free of charge or at a fee which is well below 50 per cent of production costs. (OECD, 2019)

UK context, they present two case studies which provide illuminating examples of the experience of major ICT led transformation which can provide valuable context to the specific research question being considered by this dissertation.

Examining the ICT impact within Friends of the Earth, Burt and Taylor studied a Geographic Information System (GIS) data collection technology project focussed on growing internal communication which led to enhanced coordination of activities across different branches. They noted that a centralised approach to data collection, enabled by technology, delivered better national-level intelligence concerning the work of local branches. The new system was designed to collate pollution data profiles about contamination events together with precise location information via the use of GIS technology. This allowed the collected data to be examined and analysed centrally to establish trends which could inform the allocation of resources and campaigns. However, their research shows that the initiative ultimately foundered, highlighting a critical inherent challenge which exists in reconciling the impetus needed to drive a centralised ICT programme in organisations which have significant local activist groups. While there are clearly considerable benefits in implementing organisation-wide technology programmes to inform strategic decision-making for NGOs at a national level, such initiatives often come into conflict with embedded cultural structures which favour looser, voluntarist arrangements valuing greater grassroots independence. At Friends of the Earth, Burt and Taylor found that the activist/voluntarist imperative ultimately won out and this compromised the overall benefits that the GIS project hoped to realise.

The second part of their case study looked at the Samaritans, based in both the UK and Ireland. Here, the rationale for implementing the technology project concerned intelligent telephony routing to maximise call response levels and the utilisation of volunteer resources nationally while endeavouring where possible to connect clients to their closest Samaritans branch. Again, Burt and Taylor found that an inherent conflict existed between delivering the project's overall objectives and locally embedded concerns which prioritised clients being routed to a local contact point. Evans and Clarke (2010) showed a more positive side to the voluntarist nature of non-profit organisations, conducting a case study with volunteers adopting a new greenfield Enterprise Resource Planning (ERP) system in community food banks. Here, volunteer crews responded enthusiastically to the initiative with managers reporting retired volunteers as "fearless" in their willingness to adapt to the new technology.

The opportunities technology affords to reinforce core organisational values are echoed by Brainard and Brinkerhoff (2004) who observed that technology can underpin an agile and scalable response which fosters a sense of community, enabling peer to peer support between branches and stakeholders, noting this as especially valuable in a crisis response situation.

Carnochan et al. (2014) examined the impact of technology systems in NGOs and concluded that many systems were underutilized. They highlighted a lack of internal expertise to fully exploit the features of the technology as a key challenge as well as a siloed and disjointed approach to technology deployment with multiple disconnected systems in play which inhibited the establishment of a set of agency-wide outcomes.

Jaskyte's (2011) investigation into the factors within NGOs which are favourable to successful innovation found that these are not necessarily the same factors which are conducive to technological innovation, highlighting three critical factors:

- The extent to which the organisation's operations were centralised;
- The availability of transformational leadership to support the initiative;
- The executive director's or chief executive officer's length of job tenure in their role- those with longer serving managers were less likely to be innovative compared to organisations with recent turnover in the most senior executive role.

Hackler and Saxton (2007) suggested that to increase the operational adoption and strategic impact of ICT, NGOs must first enhance their capacity in several key technological competencies and organizational practices. Leadership teams in NGOs need to be educated about ICT's full potential in order to fully link the ICT planning and project initiation processes directly to the organisational mission. Finally, they observe that NGOs need considerable assistance with capacity building to manage the strategic use of ICT so that they can navigate the considerable challenges of technological, financial and organizational change.

Igarashi and Okada (2014) note a parallel and related challenge for non-profits in highlighting the increasingly blurred lines between the mission-based charitable activities of non-profits and the kinds of social innovation undertaken by large for-profit organisations through their corporate social responsibility projects. Researching a Japanese project undertaken by Fujitsu which saw a small local NGO, the Dementia Friendship Club, work with a virtual team from Fujitsu using an open collaboration architecture to identify opportunities for social innovation, they cite this as a positive exemplar of the possibilities afforded by leveraging the combined power of a large corporate's technical knowledge with the specific sectoral knowledge held by NGOs.

This theme is also referred to by Lewis (2001) who recorded an observable convergence trend as the sectoral boundaries of government, business and the third (NGO) sector become increasingly more blurred, with important implications for NGO management.

2.7 Theoretical and Practitioner Research Models/ Frameworks

Having considered the practitioner experience within the sector to date, it is instructive to review some pieces of key research which develop explanatory theories around the journey

of NGOs in seeking to implement digital transformation and technology-based process automation.

2.7.1 The New Reality

A major UK-based research study entitled 'The New Reality' was undertaken by Dodd (2015) which examined how digital technology will deliver the next step-change in social impact. She conducted a series of more than 50 interviews with leading technology practitioners⁵ in the non-profit sector. She found that the barriers to digital adoption in the sector are as much centred around cultural, leadership and change issues as the specific delivery of the technology component.

Dodd usefully highlights six key dimensions which demand the urgent attention of the leadership teams of non-profit organisations in order to rapidly get to grips with delivering meaningful digital transformation:

Leadership- Dodd notes this as the most significant challenge for the sector in leveraging technology effectively, citing a lack of leadership, poorly articulated vision for change and the inappropriate delegation of the digital transformation agenda away from senior levels.

Culture- Dodd reminds us that at its heart, delivering digital transformation in any organisation, especially in the non-profit sector, traditionally quite conservative and responsive rather than proactive, requires effective change management processes and a willingness to undertake a culture shift.

Infrastructure. Here, Dodd emphasises that historic underinvestment in ICT means that the infrastructure of many NGOs needs significant updating. She notes the pervasiveness of legacy technology in the sector, observing that many organisations have concerns that their existing ICT teams may lack the appropriate skills to effectively leverage emerging technology and deliver digital transformation.

Innovation. Under this theme, Dodd advocates for the creation of innovation hubs, R&D labs and fostering an entrepreneurial culture of experimentation and risk-taking which values agile and iterative approaches similar to those which would be commonplace within a start-up enterprise.

Funding. Dodd offers some useful strategies for sourcing funding, advocating for non-profits to build partnerships, undertake collaboration and create compelling business cases which can attract funding from government and other funders.

Service Delivery. Finally, Dodd recommends that the focus of non-profits around digital transformation needs to move away from automating digital fundraising and digital

⁵ The author is herself an experienced digital technology practitioner working as Director of Digital Transformation with Parkinson's UK.

marketing in favour of using technology in more ambitious and transformational imperatives which can radically transform the service delivery of the organisation, observing that

“non-profits have been ignoring their peripheral vision - where the real potential of technology to deliver social good is sitting - currently just out of view. This limited viewpoint is restricting the sector's ability to rise to the challenges the New Reality represents” (Dodd, 2015)

2.7.2 Heeks and Molla Value Chain for ICT4D

Heeks and Molla (2009) propose a value chain for ICT4D which is composed of a series of linked ICT4D resources and processes. This value chain, emulating the work of Porter (1985) and others writing in the business management literature conceptualises ICT based on a standard input-process-output model.

The Heeks and Molla (2009) Value Chain is divided into four domains

- **Readiness**- both foundational precursors at a national level and the specific hard and soft inputs that feed into any individual initiative
- **Availability**- implementation should turn inputs into a set of tangible deliverables
- **Uptake**- processes through which access to the technology is turned into actual usage- the potential of the actuality of the scaling up (see also Walsham and Sahay, 2006)
- **Impact**- broken into three sub-elements:
 - **Outputs**- micro-level behavioural changes associated with technology use
 - **Outcomes**- wider costs and benefits associated with ICT
 - **Development Impacts**- the contribution of the ICT to the broader development goals

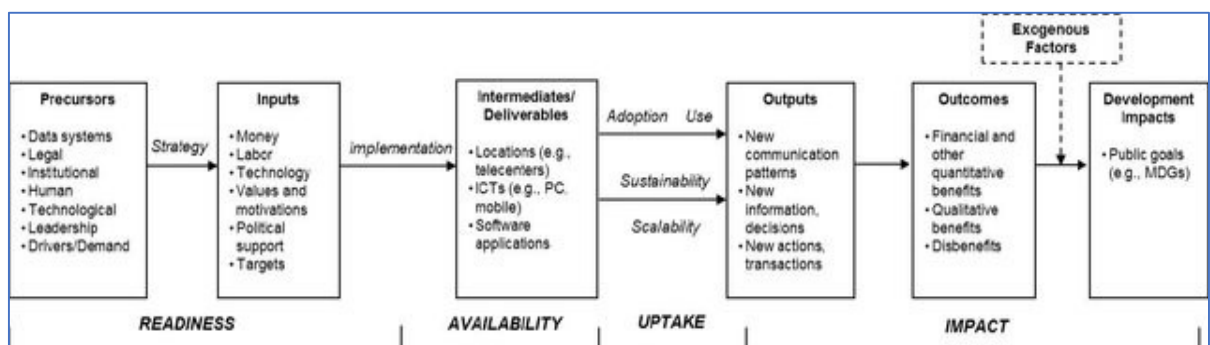


Figure 3 Heeks and Molla (2009) Value Chain for ICT4D

While the Heeks and Molla value chain garnered significant attention in the ICT4D literature, Abbasi, Sarker, and Chiang (2016) suggest that new models are needed. They point out that the volume, velocity, variety, and veracity of Big Data is increasingly disrupting the

traditional ICT4D value chains used to conceptualise data and informatics and they advocate for the research resources to be applied to investigating this new domain of IS research.

2.7.3 NGO Reference Model

The NGO reference model (Snow, Smith et al, 2016) is a practitioner-led attempt to establish a common paradigm which describes and models how NGOs operate via a common understanding of business processes. It seeks to be applicable across the circumstances of individual organisations abstracted from the specifics of the individual sectors in which different NGOs operate.

The NGO Reference Model distinguishes between primary activities (see Figure 4 below) - those that directly contribute to the organisation's mission and enabling activities- which are cross-cutting support activities. (See Figure 5)

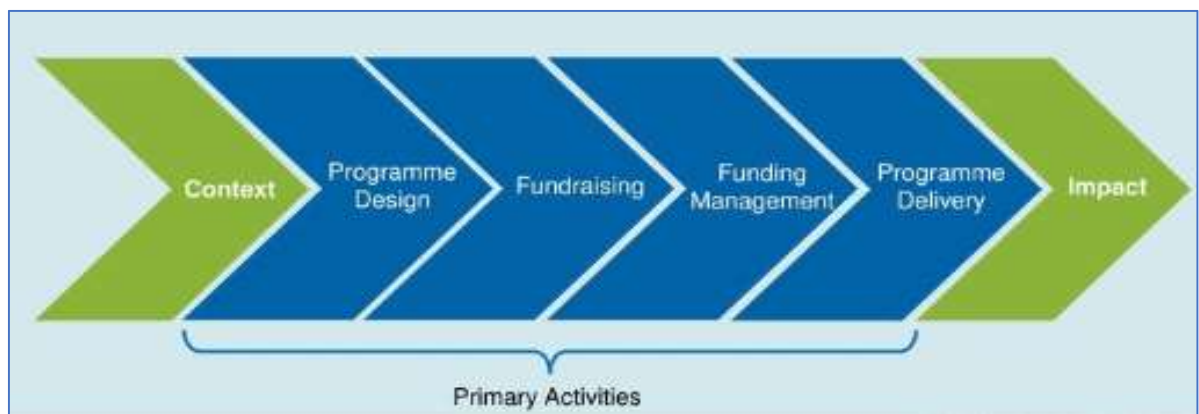


Figure 4 The NGO Reference Model- Primary Activities [Source (Snow, Smith et al, 2016)]

The NGO reference model was discussed in detail at a presentation given by senior ICT practitioners from global NGOs at the 2016 NetHope Conference (Snow, Smith et al, 2016). Its primary ambition was to develop a framework which facilitates new approaches to sectoral solution delivery while building on existing established IT Enterprise Architecture frameworks such as TOGAF (Togaf, 2009), ITIL (Axelos, 2019b) and Prince2 (Axelos, 2019a).



Figure 5 NGO Reference Model (Enabling Activities) [Source (Snow, Smith et al, 2016)]

A key consideration was to create collaboration structures and consortia which would undertake procurement on behalf of multiple organisations. This would require the sector to articulate its technology requirements more effectively to vendors and partners to aid the development of cost-effective solutions which add value across the sector, emulating established practice in other sectors such as banking and utilities. The participant discussion following the NetHope presentation recognised the need to move away from organisations seeking a single application platform to meet all of its information requirements to implementing a suite of ‘best-in-breed’ application solutions and integrating these to a unified and loosely coupled architecture using APIs.

While seeking to leverage best practice from industry, the NGO Framework also explicitly recognises the specific sectoral circumstances for NGOs and seeks to encourage and support collaboration between organisations. As one speaker at the NetHope conference noted, the sector has learnt from bitter experience that there was a critical need to move beyond current siloed modes of thinking which are constrained by the existing structure of individual organisations or indeed the wider sector to develop new cross-functional and cross-sectoral modes of collaboration and partnership.

While emanating from ICT and innovation practitioners within the sector⁶, it positions the delivery of the overall mission and strategy of organisation front and centre as the critical focus of the framework and consigns ICT as merely a support service.

In the NetHope discussion, Michael Duggan (then CIO of Trocaire⁷) challenged organisations to prioritise those investments in support services which demonstrably add value to the wider organisation citing research which found that

⁶ The initial group who developed the NGO Framework include contributors from within the ICT and innovation functions at the following organisations: Save the Children, WaterAid, SOS Children's Villages, VSO, Trocaire and Oxfam International.

⁷ Michael now works as CIO of Oxfam International.

“across all support services only 10% of the activities are fully supporting our mission, while the vast majority of them are only half supporting.” (Snow, Smith et al, 2016)

2.7.4 Principles for Digital Development

Adopting a parallel approach to the NGO Reference model noted in 2.7.3, funder and donor organisations came to together to support the creation of the **Principles for Digital Development** (Digital Principles, 2017). Working from the UNICEF Innovation Principles (UNICEF, 2009) and the UK Design Principles (UK Govt, 2012), the nine principles seek to unify the existing models within the ICT4D sector and to create a practice-based community for those who work in digital development which integrates best practices in the technology implementation.



Figure 6 Principles for Digital Development (Source: Digital Principles (2017))

A particularly admirable feature of the principles is that they are intentionally designed to evolve in a participatory fashion as new knowledge and issues emerge in the sector. A supporting discussion document highlights a clear imperative to address issues in relation to technology pilots which do not mature into scalable programmes, citing considerable levels of duplication and siloed solution development within the sector. (Digital Principles, 2017). This is a clear manifestation of growing levels of concern among donors about the failure rates of major technology projects within the sector.

In response, the Principles note the need for a collaborative approach which builds sustainable and robust platforms which can be reused across the sector. Pietro Galli, Head of ICT at the Norwegian Refugee Council, observed that the sector is only beginning its

journey to use technology effectively, pointing out that collaboration and agreed data models can help the sector achieve its objectives more quickly (Ismail, 2019)

2.7.5 *Emerging Technologies*

Two recent **AI for Good** global summits also sought to operationalise the United Nations Sustainable Development Goals (SDGs) through the application of AI and other emerging technologies. While the first conference in 2017 focussed on theoretical issues, the 2018 conference (AI for Good Conference Agenda, 2018) took a resolutely practitioner approach in seeking to develop open-sourced and reusable models in support of the SDGs which could be taken up and further developed by the AI and Machine Learning (ML) communities. The 2018 NetHope conference (NetHope AI Working Group, 2018) highlights some key challenges to be overcome before AI has a significant impact within the sector, as follows:

- Insufficient knowledge across the sector about the current capabilities (and limitations) of AI and ML, leading to difficulties in evaluating when AI and ML are appropriate solutions to operational challenges faced by the sector.
- A lack of internal technical expertise and resources to develop AI/ML solutions- frequently these are skills that the NGOs do not possess, and it faces significant barriers in seeking to develop internal capabilities or in accessing outside specialist expertise.
- As AI and ML are relatively immature technologies, technologists have not yet developed reliable and repeatable processes for developing, scaling, and sustaining AI/ML applications. Of particular concern considering the vulnerable groups supported by the non-profit sector is the lack of established robust verification processes to validate that AI-enabled solutions are ethical and safe. (NetHope AI Working Group, 2018)

To address this challenge, the NetHope AI working group proposed concentrating on three workstreams:

- **Education**- building capacity within the sector through workshops and webinars;
- **Programmes**- fostering and facilitating collaborative work between NGOs focussed on key sectoral challenges;
- Development of agreed **Toolkits and Standards** focussed on scaling the most promising programmes and methodologies.

2.8 **How Organisational Alignment can support Digital Transformation**

Another key factor relates to the extent to which organisational structures and strategic alignment between functional ICT teams and the leadership team within NGOs can either serve as a major enabler or an inhibitor of the organisation's attempts to undertake a major digital transformation.

Axelson (2018) provides a menu of various organisational measures which can be applied to non-profit organisations. These include the establishment of an ICT governance steering group to align IT governance with overall corporate governance activities. Stenfeldt (2018) highlights securing board-level buy-in for digital initiatives as a key obstacle for technology leaders to overcome, citing the need to educate leadership teams about the emerging capabilities of new technologies. Axelson (2018) also recommends allocating a seat for the CIO (Chief Information Officer) role on the executive/ leadership committee to ensure IT alignment with the overall strategy. Noting that this may not be feasible for less mature organisations, Axelson proposes as an alternative that the CIO should report to the Chief Executive Officer or Chief Operating Officer (COO) role while holding an ex-officio liaison role on the executive committee.

Axelson also recommends a cross-functional IT steering committee- which should not be chaired by IT- to provide a forum for senior management to evaluate and prioritise IT investment. Additionally, individual strategic projects should have their own steering committees to ensure coordination between business and IT staff in the management of key project risks and benefits delivery. (Axelson, 2018)

2.9 Skills needed for Digital Transformation

Section 2.7.5 above highlights skills gaps and capacity building as critical challenges the NGO sector needs to address. The NetHope Digital Skills Group (2018) provides practical and useful guidance to address the identified shortcomings via a tool which can assist organizations in assessing and planning their skills requirements while benchmarking their performance against the sector. This assessment process can provide an organisation with specific insights on its relative strengths and weaknesses across the six categories noted in Figure 7 below.

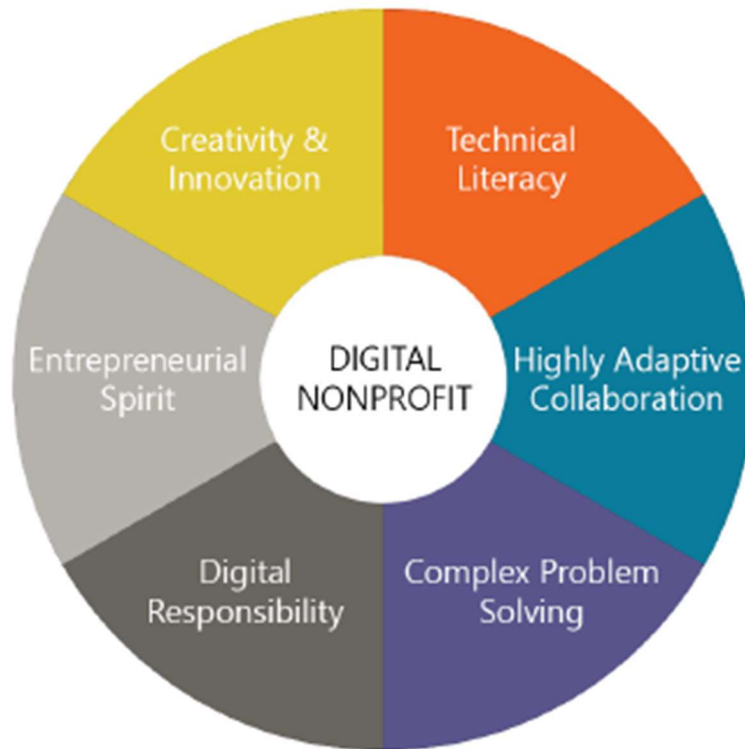


Figure 7 Digital Skills Group

(Source: NetHope's Digital Group Skills Group, 2018)

The NetHope Skills Group highlights **Technical Literacy** as the foundational skill which is a prerequisite for effective work on the digital agenda. **Highly Adaptive Collaboration** can be an enabler of what the group terms “efficacious participation” in digital teams, with effective collaboration skills helping to overcome geographical, cultural, social, and language barriers. Given the significant global challenges which non-profits are seeking to meet with limited resources, many of which would meet the definition of wicked problems (Churchman, 1967)⁸, organisations need to be able to deploy agile and responsive tools which can help with **Complex Problem Solving**. These solutions are often needed to be rapidly prototyped in volatile and ambiguous contexts while constantly seeking and acting on new data and sharing information broadly. Working digitally also brings new **Digital Responsibility** challenges to the sector in protecting sensitive information and technology and data risks.

The sector needs to develop new innovative approaches and what the Group terms **Entrepreneurial Spirit** which they define as :

“Having a try-for-big or fail-fast attitude and feeling accountable to the outcome...Looking at old problems/processes with new eyes and challenging the

⁸ “Wicked problems” are especially challenging, inter-related and evolving problems with significant complexities which have proven resistant to repeated attempts to solve them.

old ways of doing things by taking risks to take bold, uncharted paths is another way of demonstrating this skill.” (NetHope Digital Skills Group, 2018)

The final skill highlighted is that of **Creativity & Innovation** through constantly and iteratively trying new approaches and drawing connections as part of the ongoing creative (and disruptive!) process.

2.10 Technology Companies support for the Non-Profit Sector.

The increasing prevalence of private sector cloud providers associated with the extensive technology donations made by large technology companies such as Microsoft, Google and Salesforce through their CSR programmes has increasingly acted as a strategic enabler of technology-led transformation within the NGO sector.

As a result, many development organisations have been focussed on delivering efficiencies in their back-office processes and are using automation and innovation opportunities to support their mission through digital technology projects. Frequently, this has involved migrating to standard (and frequently cloud hosted) platforms such as email, document storage and customer relationship management systems, using standard tools and deployment methodologies which are very similar to those which would be commonplace in the private sector.

In this regard, excepting the specific sectoral challenges around resourcing and funding, technology practices are converging and there is now much less that is technologically unique or different about the NGO’s journey to leverage mainstream digital technologies, a theme which will be examined in greater detail in S2.12 below. While considering the support from the technology sector, the earlier discussion (see section 2.7.5 above) on the use of AI to support global humanitarian efforts highlights the massive opportunities which are emerging as concrete possibilities to use these new tools in support of NGO programmes. It is useful here to briefly touch on a high-level overview of the supports offered by the technology industry through their Corporate and Social Responsibility and Philanthropy programmes. Significant funds are at stake here, with Microsoft CEO’s Satya Nadella announcing a commitment to donate \$1bn to charitable causes at the 2016 Davos conference (Microsoft, 2016) while Salesforce’s website notes donations to date of \$220m (Salesforce, 2019).

However, it is positive to report that ongoing engagement between the NGO and technology sectors through organisations such as NetHope has begun to crystallise a shared understanding of the barriers and challenges faced by the sector in leveraging digital technology, and especially emerging capabilities such as AI and Machine Learning. In this regard, the technology sector is progressively changing its approach to engage in partnership structures which match their technical knowledge with the sector’s capabilities

around programme delivery. Some recent funding initiatives from the major technology companies are particularly instructive here:

- Microsoft (2018) launched their AI for Humanitarian Action initiative, in September 2018 which includes offers of financial grants, partnerships, and technology investments as well as technical expertise. Key themes in the programme focus on disaster recovery, children's needs, displaced persons, accessibility and human rights.
- Google (2018) issued a call to organisations (the call was not limited to NGOs) to make proposals around the use of AI to help address societal challenges with a consulting allocation of \$25 million for partnerships as well as software credit and other access to Google products.
- At IBM (2018) their Science for Social Good initiative places IBM engineers working in partnership with academia and subject matter experts (SMEs) at NGOs to tackle a range of societal challenges. Over the past three years, IBM has carried out 25 initiatives (chosen out of 200+ put forward by various NGOs) where more than 120 IBM scientists have applied their expertise in AI, cloud computing and deep science, etc. to collaboratively solve challenging problems put forth by these NGOs.

2.11 Pathways to Digital Transformation

Collins (2018) notes that there is no single path to digital transformation which will be optimal for all NGO organisations. The end goal is to achieve a radical change in the business operations model used to engage with customers and stakeholders. Collins points out that there are a number of alternative pathways to this destination, either by initially focussing on the internal operating model and associated capabilities or alternatively focussing first on improving customer experience. As shown in Figure 8 below, both elements will ultimately need to be addressed to transition the organisation to a new fully digital operating model but Paths 1 and 2 see the organisation focuses only on one of the elements initially. Conversely, Path 3, which Collins notes as the most potentially challenging, sees the organisation focus on small incremental changes to both the operating model and the customer experience dimensions in sequence until both elements have been completely

transformed.

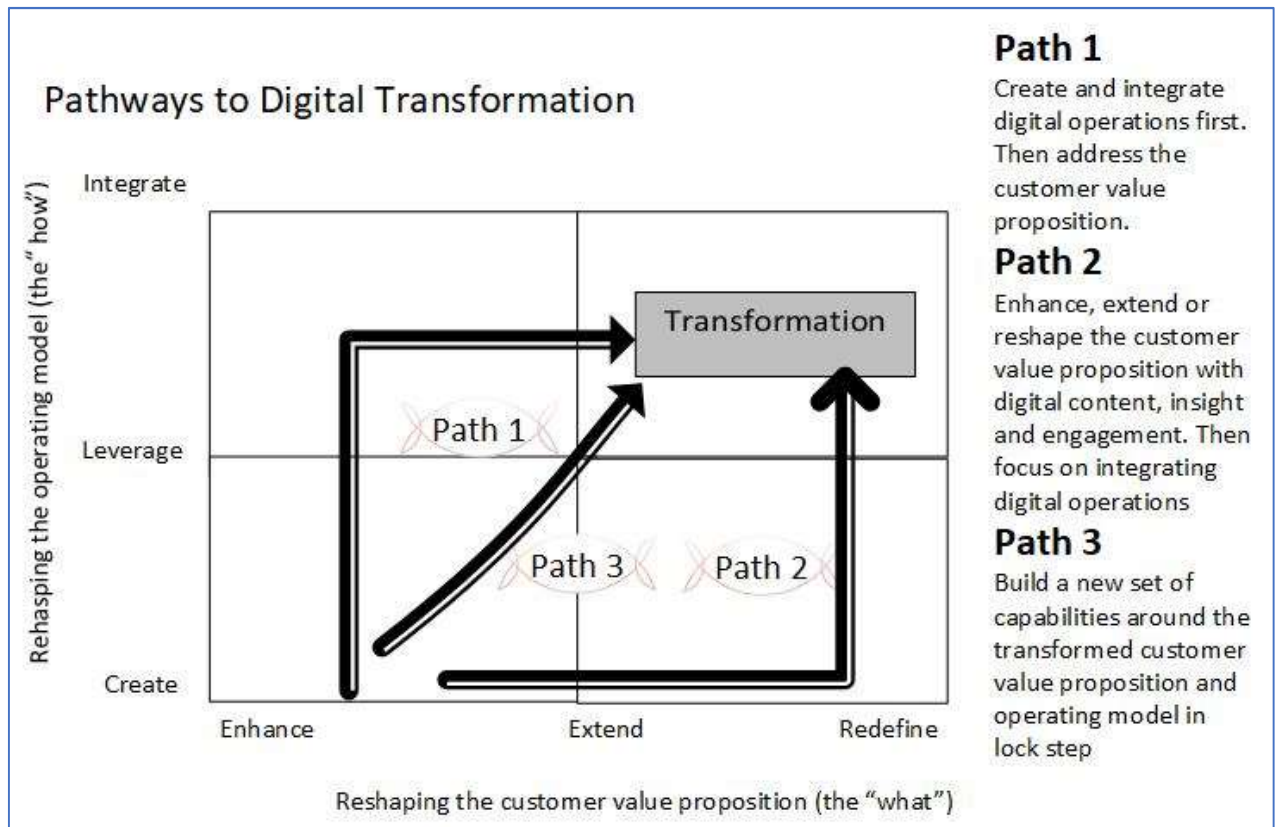


Figure 8 Pathways to Digital Transformation (adapted from Collins (2018))

There are clear echoes in Collin's conceptualisation of the pathways to Digital Transformation shown in Figure 8 above to be found in the work of Weill and Woerner (2018) at MIT Sloan who term organisations who have undergone a digital transformation as "Future Ready". (See Figure 9 below)

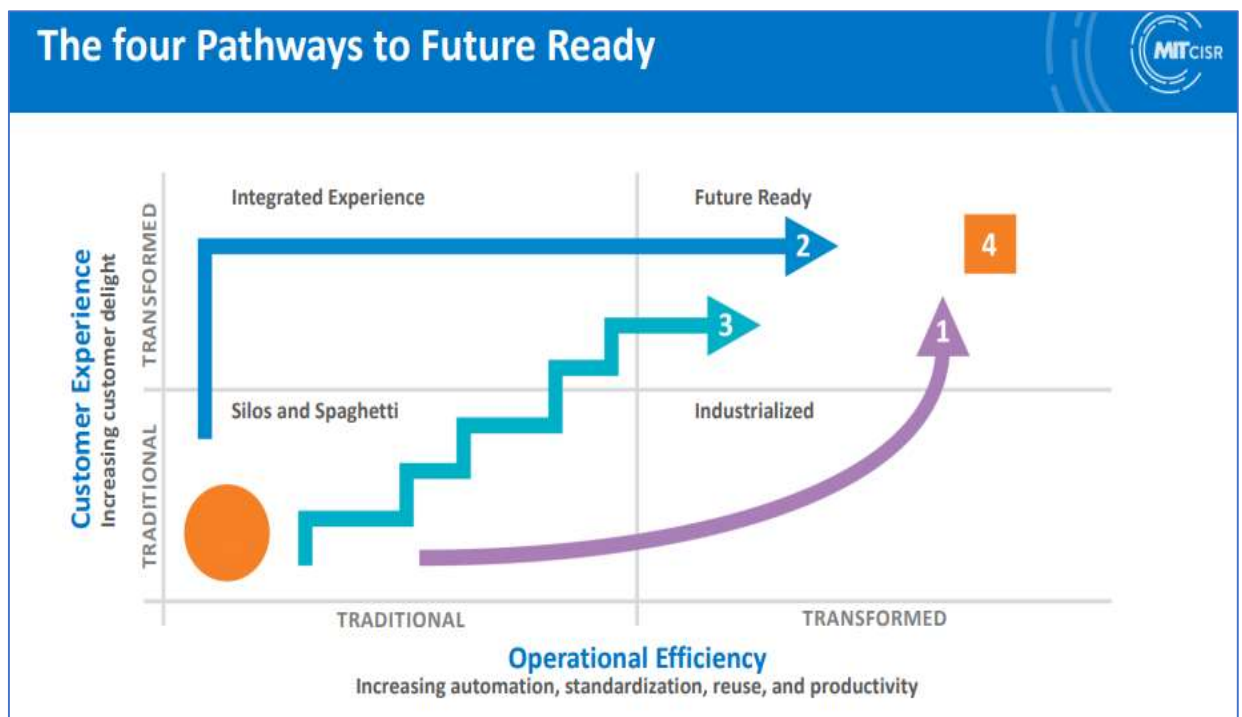


Figure 9 Four Pathways to Future Ready. Source (Weill and Woerner, 2019)

They view such companies as ambidextrous: on the one hand, they significantly improve their customers' experience relative to competitors and on the other hand, they relentlessly reduce cost, drive efficiency and iteratively simplify their operations. When significant improvements are achieved to each of these dimensions of a company's operations, it can have a dramatic impact on overall financial performance.

A key point of difference, however, compared to the 3 pathways noted by Collins in Figure 8 is the additional fourth pathway which Weill and Woerner highlight- Path 4 in Figure 9 above sees the entity eschewing all of the existing organisational structures in favour of establishing an entirely new organisation through which the new all-digital business model will be operated.

While this radical solution may not be feasible for many organisations, especially within the non-profit sector, it is nevertheless an approach which is often discussed in the business and management literature and which emerges again in the interviews conducted in Chapter 4. Christiansen (1997) termed this challenge the 'Innovator's Dilemma', noting that the cultural and organisational hurdles to be overcome by a large and established company in successfully executing a radical transformation are extremely challenging. Christiansen notes this challenge often proves to be impossible and recommends that in many circumstances establishing an entirely new organisation may be lower risk and a more effective approach.

Irrespective of the path travelled to arrive at a digital transformation, "future ready" companies are in a minority even among large enterprises- in the Weill and Woerner (2018)

survey, only 23% of the 1000 large businesses they surveyed were assessed to have sufficient existing digital capabilities to be termed “future-ready”, but the benefits are considerable- these firms had a net profit margin which was 16 percentage points better than their industry average.

Speaking at a recent ICS (Irish Computer Society) seminar in Dublin, Peppard (2018) discussed the MIT CISR research results⁹ in more detail and observed that organisations who wished to become “future ready” needed to design and control the following four types of ‘explosions’ on the road to becoming future ready:

- Digital transformation involves a disruptive change to the status quo concerning key organisational **decision rights** such as project initiations and cessations.
- It also requires successfully transitioning to **new ways of working**. Here, Peppard referenced agile teams and new entity structures including joint ventures and partnerships.
- Echoing Brynjolfsson and McAfee (2018), Peppard advises that companies wishing to become Future Ready must learn from platform-based companies such as Amazon, Uber and Airbnb- this involves changing to a **platform mindset** with a strategic focus on creating modular and reusable platforms.
- Finally, companies must embrace the need for what Peppard terms ‘**organisational surgery**’ as migration to new digital models usually necessitates functional restructuring as typical structures in traditional firms are not designed for the digital era.

2.12 The Impending Post-ICT4D Era

Despite the considerable work to conceptualise ICT4D, contemporary commentators (Vota, 2019) observe that we may rapidly be approaching a post-ICT4D era when the development community evolves away from a specific focus on international agencies who deploy expatriot technology experts to support transformational development projects.

These developments in ICT4D may also have profound implications for those seeking to theorise technology deployment within the non-profit sector within Ireland as it suggests that the organisational and/or sectoral context for IS projects is becoming less important.

As the third sector invests in and develops its technical competence, consequently the experience of how ICT4D has developed suggests that managing technology-based projects for non-profits will increasingly require a more standardised and less specialist approach.

⁹ Joe Peppard works as part of the same research team at MIT Sloan as Weill and Woerner,

2.13 Conclusions

In common with the wider economy, many processes and core operations within the non-profit sector are increasingly being impacted by the digital transformation as well as the advent of automation and other emerging technologies. However, the analysis of the interviews which will be conducted in Chapter 3 with managers across a range of non-profit organisations presents an aggregate snapshot which shows that within many non-profit organisations, despite good intentions, the journey to fully leverage the efficiencies which automation can offer remain substantially incomplete due in large part to resourcing challenges and skills shortages. Indeed, a notional “report card” which might be created for the sector presents an asymmetrical picture across the organisations with some highly innovative exemplars balanced by significant challenges in areas such as finance, leadership, resourcing and technology. Returning to the survey undertaken by the NetHope Skills Group, the salient findings from their research are worth reproducing here and make for stark reading:

1. Only 31% of organizations self-assess themselves as knowing the risks, biases, and limitations of the data and tools they use.
2. Less than half of organizations feel empowered to adapt or adopt new approaches, limiting the sector’s ability to respond effectively.
3. Only a third of non-profits accept interim failures on the path to success. (NetHope Digital Skills Group, 2018)

Somewhat surprisingly, the challenges to deliver digital transformation and automation related efficiencies often appear greatest in some larger and more traditional non-profit organisations. By comparison, some smaller activist-led evolutionary organisations may instinctively favour a more disruptive and agile approach (for example around their somewhat organic and unstructured approach to crowd-sourcing data or communicating via social media) which is more likely to result in a more flexible approach to deploying emerging technology.

Another factor is that public sector organisations enjoy the organisational protections and ready access to current and capital financial resources afforded by their close ties to the State. Larger corporates can accumulate large cash reserves from retained profits and have access to equity markets to raise funds, enjoying the protections afforded either explicitly through industry-backed indemnity schemes or implicitly simply through their status as ‘too big to fail’. Most non-profit organisations, even those in receipt of considerable public funds nevertheless operate as independent entities without state-backed guarantees and extremely limited cash reserves to invest in innovation activities.

3 Research Methodology

3.1 Introduction.

This chapter summarises the research question, sets out some alternate possibilities in relation to the research methodology and outlines the reasons for selecting a qualitative interview approach using Grounded Theory as the chosen research methodology. In so doing, it briefly examines various metatheoretical questions including the most suitable ontology, epistemology and theoretical perspective to support the research endeavour, situating these within the overall research context. Next, the chapter sets out a chronology and progressive action plan of how the research methodology was developed and applied.

Through the research process, Grounded Theory emerged as a wholly appropriate research lens to apply within this field of research, which concerned a practitioner-centric view of the challenges and opportunities in leveraging the technological opportunities within the non-profit sector. In concluding, the chapter retrospectively re-examines the appropriateness of the methodology and records some lessons learned during the choice and application of the overall research approach including some limitations of the chosen methodology.

3.2 Subject Matter

As noted in Chapter 1, this research has been undertaken to examine both the transformational potential available to the non-profit sector and the implementation barriers faced by the sector in seeking to leverage emerging technology. The overarching objective of the research was to understand the drivers and underlying causal actions which non-profit organisations need control and harness in order to fully deliver on their ambition to leverage the capabilities and opportunities afforded by technology.

3.3 Ontology

Ontology deals with our conception of reality, concerned with the nature and structure of the human world. Considering ontological questions can help to determine how research can most reliably acquire and develop knowledge about the human world. (Myers, 2011).

<--- Realism: one reality exists----->----->-----Relativism: multiple realities exists->				
Naïve realism	Structural realism	Critical Realism	Bounded relativism	Relativism
Reality can be understood using the appropriate methods	Reality is described by scientific theory, but its underlying nature remains uncertain	Reality is captured by broad critical examination	Mental constructions of reality are equal in space and time within boundaries (e.g. cultural, moral, cognitive)	Realities exist as multiple intangible constructions; no reality beyond subjects

Table 1 Ontology as a Continuum (adapted from Moon & Blackwell (2014))

Table 1 above (adapted from Moon and Blackman, 2014) provides a useful (if simplified) view of the major ontological approaches, demonstrating that ontologies can be positioned on a continuum which stretches at one extreme from **naïve realism**, positing that there is a single reality which can be measured and described objectively, to **relativism** at the other which posits that there is no single reality, but rather many multiple realities, each based in individual human, subjective experiences. A critical realist conceptualisation of science takes a balanced view positing that social structures and ideas exist in the world, largely independently of human beings and that as researchers it is therefore feasible to gain reliable knowledge of them. (Mingers, 2004).

For this research study, which concerns barriers to organisations in a specific sectoral context, a balanced view of reality in keeping with the middle-range perspective of critical realism is appropriate. While recognising the likelihood of localised variances between organisations, the literature review demonstrated the feasibility of critically examining the phenomenon at a sectoral level, while noting the impact of local organisational factors.

Bhaskar's critical realist view, in which he describes the world as real and stratified (Collier, 1994)¹⁰ was determined to be a suitable ontological perspective to adopt because it facilitates the examination of the underlying causes and drivers impacting digital transformation across the non-profit sector. From a theoretical perspective, Bhaskar (1975) terms these underlying causes 'generative mechanisms' within the critical realist terminology, defining them as follows:

“the concept of the generative mechanisms of nature provides the real basis of causal laws. For a generative mechanism is nothing other than a way of acting of a thing. It endures, and under appropriate circumstances is exercised, as long as the properties that account for it persist.”

¹⁰ Roy Bhaskar's critical realism views the world as being stratified into the **real** layer- social structures, objects and conceptual entities such as language goals; the **actual** layer which has generative mechanisms causing events/outcomes which may or may not be observed and the **empirical** layer- a subset of the actual layer representing those phenomena which are actually observed. (Volkoff and Strong, 2013)

3.4 Epistemology/Theoretical Perspective

It was also important to consider the epistemological dimension in choosing the most appropriate investigative research approach. A brief summary of the major epistemological approaches is shown in Table 2 below.

Objectivism	Constructionism	Subjectivism
Meaning exists within an object: an objective reality exists in an object independent of the subject	Meaning is created from the interplay between the subject and object: subject constructs the reality of the object	Meaning exists within the subject: subject imposes meaning on an object

Table 2 Overview of main epistemological stances

(Source: adapted from Moon and Blackwell (2014))

For this research, both the objectivist and constructionist perspectives potentially offered useful epistemological perspectives on the subject topic in question. An important dimension to epistemology is the proximity of the researcher to the subject area. A totally impartial and detached view was unlikely in this research context because the pre-existing contextual knowledge and experience of the sector (see S1.4) would inevitably influence the research approach. It is important to acknowledge this risk and to employ strategies to manage any potential bias while acknowledging the considerable value that pre-existing knowledge of a subject domain can add in terms of theoretical sensitivity. This context can potentially assist with the identification of novel or emerging ideas from the data which might not have been picked up by another researcher. As Avgerou (2005) notes

“In addition to the formal cognitive investigation tools, critical research involves the researcher’s tacit knowledge, emotionally charged preconceptions, political convictions and moral values, and empathy with particular categories of empirical research subjects.”

This viewpoint is consistent with Latour’s (1993) view of research as being influenced by “value-laden preconceptions, and emotionally loaded political and moral stances.”

Bearing this in mind, the epistemological stance for this research can best be conceptualised as a broadly constructivist approach where the researcher seeks to be objective as far as possible but recognises that the research will potentially be influenced, informed and coloured by pre-existing knowledge and experience.

3.5 Alternate Research Approaches Considered.

Following the completion of the literature review (see Chapter Two), a number of different research approaches were reviewed and assessed in preparation for commencing the primary research. The most commonly used research design approaches have been classified by Cresswell (2014) into the following classifications

- **Quantitative** research designs such as experiments and surveys;
- **Qualitative** research designs such as Narrative Research, Phenomenology, Grounded Theory, Ethnographies and Case studies;
- **Mixed Methods** research designs which combine elements of both quantitative and qualitative approaches such as Convergent, Explanatory Sequential, and Exploratory Sequential, Transformative, Embedded, or Multiphase designs.

Quantitative methods were briefly reviewed, and experimental design was immediately discounted because the research questions being explored were not suitable for experimental research design. It seemed initially that there was potentially some value in seeking to conduct a wider scale survey of technology attitudes among a representative sample of all Irish non-profit organisations. A limitation of employing a survey approach as the primary design, however, was that the initial literature review had identified the broad phenomenon of interest- the ambitious yet incomplete journey of the non-profit sector in leveraging the power of technology- but the precise causal dimensions underlying the phenomenon remained unclear at the time of commencing the primary research.

Consequently, creating an effective survey design which could examine and unearth these unknown dimensions seemed challenging and risk-laden. Further, the nature of a quantitative survey design removed the opportunity for the research to follow an iterative and explorative approach which followed up interesting research data as the underlying dimensions of the research phenomenon revealed themselves.

Further, the research focus considered the technology experiences and journeys within larger charities which were large enough to have established a discrete internal technology function. Initial secondary research (see S3.8) revealed that the quantum of such organisations was sufficiently small in an Irish context to facilitate selecting a representative sample which would achieve coverage of the major organisations via a more in-depth qualitative interview approach.

Cresswell (2014) and Galliers (1992) outline how mixed methods approaches valuably allow researchers to combine elements of both quantitative and qualitative approaches. There could potentially have been considerable research value in following a Mixed Methods approach which used a secondary survey conducted among a wider audience

within the non-profit sector to verify the validity of the primary qualitative data from the detailed interviews but extending the research to include this research activity was not feasible within the time constraints to complete the research.

Finally, considering the specific streams within qualitative research designs, a variety of qualitative designs were investigated and assessed. Narrative Research (studying the lives of individuals), Phenomenology (investigating the lived experiences of individuals) and Ethnographies (observing the shared behaviours and actions of a specific cultural group) were all reviewed (Cresswell, 2014; Guba, 1994; Galliers, 1992). These were discounted as they were found to be more applicable to the investigation of the experiences of individuals whereas the research phenomenon under investigation related primarily to the study of organisations.

A case study approach, however, was adjudged to have potential value to add to the overall research design by potentially delving deeper into a specific project context in a single organisation. It had initially been hoped to include a case study about the implementation of a technology project, and a short case study was originally envisaged in the original Research Proposal (see Appendix Six). An organisation had been identified to partake in the case study but operational issues within the organisation meant that the project planned for the case study did not take place in sufficient time to include in this research project.

3.6 Choice of Methodology

Ultimately a qualitative interview-based approach informed by Grounded Theory was selected as the most appropriate primary research design to employ as it best facilitated an exploratory approach to researching a phenomenon which was not well documented. Appendix One sets out some additional research data gathered in relation to Bhaskar's Critical Realist approach, the Grounded Theory methodology and commentary on their applicability to research in the Information Systems domain.

The original exponents of Grounded Theory were Glaser and Strauss (1967) and its emergence reflects a contemporaneous context of a theoretical and methodological change in the late 1960s¹¹. A number of commentators (Oliver, 2011; Birks and Mills, 2015, Charmaz, 2006) suggest that the structures of Grounded Theory, as originally developed

¹¹ As such Grounded Theory can be contextualised within other social science writings of the period including Garfinkel's *Studies in Ethnology* (1967) and Kuhn's *The Structure of Scientific Revolutions* (1962) as well as being linked to the dramatic cultural changes and the counter-cultural movements of the time.

by Glaser and Strauss (1967) can provide a practical methodology through which the critical realist ontology can be applied while focussing on the pragmatic development of usable and theory which is empirically grounded. Developing the original ideas of Glaser and Strauss, Charmaz (2006) critiques some epistemological shortcomings in their original approach and proposes a constructivist approach which combines Grounded Theory with the Relativist and Pragmatic approach of Peirce to arrive an adapted approach she terms 'Constructivist Grounded Theory'.

Urquhart (2001) provides a useful experiential account of applying Charmaz's modified grounded theory research approach in an Information Systems research context. In her view, it greatly improved the research quality and the usefulness of the theory it informed. She commends it as a methodology for IS research noting its suitability especially where an exploratory and descriptive research methodology is envisaged and where the phenomena under investigation had hitherto received limited coverage in the literature. It was clear that these circumstances dovetailed neatly with some of the research challenges noted for this research in Section 3.2 above. Another encouraging factor was the wealth of helpful guidance provided within the Grounded Theory literature to assist with the coding and analysing data. (Birks and Mills, 2015; Charmaz, 2006).

The possible selection of Grounded Theory as a methodology was reviewed with the supervising academic team in TCD who concurred that it was an appropriate framework to use for the research topic considering the emergent and exploratory nature of the research approach which was proposed. Other indicative themes discussed concerned the limited extant available literature pertaining to the research phenomenon under investigation and previous experience and existing context concerning the research subject.

A semi-structured approach to the interview was chosen as this balanced the need for consistency in the interview questions asked with the flexibility to explore and investigate interesting new data which emerged during the interview discussions. Sample indicative questions (see Appendix Two for the full interview question plan) are shown in Table 3 below.

What's your view in relation to how non-profit organisations can modernise and move to a digital-first approach while remaining true to its core mission and values?
What do you see as the ethical and cultural challenges for an organisation like yours in implementing digital transformation?
Do you expect that emerging technologies like Artificial Intelligence will have a big impact on your organisation and the wider sector over the next 3-5 years?
How would you benchmark your own organisation right now versus other non-profit organisations in relation to the way it is currently exploiting or planning to undertake digital transformation opportunities?

Table 3 Sample Indicative Interview Questions

3.7 Ethics

Before the interview process could commence, ethical approval was required from the Ethics committee which oversees research activity within the TCD School of Computer Science and Statistics. A detailed research proposal (see Appendix Six) was prepared to outline the methodology, objectives and rationale for the research. The research proposal together with a participant consent form (Appendix Four) and a participant information sheet (Appendix Five) were prepared and submitted to the research supervisor for review.

Table 4 below summarises some of the key ethical considerations and mitigation strategies which were considered in relation to the planning of the semi-structured interviews.

Ethics/ Risk Area	Risk Mitigation Approach
The risk that an interviewee's privacy would be compromised through their participation in the research	It will be critical to ensure that any references to individual persons or organisations will be anonymised and the researcher will also explicitly consider whether the contextual information in the final research document could inadvertently result in the identification of any individual or organisation even though the provenance of the data had been anonymised. Where necessary, further steps to protect confidentiality will be taken and the interview subjects will be given an opportunity to comment on sections based on their interview as a draft. All interview data will be securely stored until the research is concluded whereupon all of the research materials and associated data will be permanently deleted.
The risk that an interview participant would disclose facts or other data which includes sensitive data about an individual or that might prove commercially sensitive to their organisation.	Should an interview participant begin to discuss any item pertinent to the work of their organisation with specific individuals, the researcher will guide the interview back to the general topic of automation impacts, advising the interview participant that the focus of the research is around the process of delivering automation projects and not the organisation's work with specific individuals. Any such content related to specific individuals or organisations operations will be redacted from the interview transcripts and excluded from the final research document. Any direct quotations from interview transcripts will be verified with the individual concerned prior to use

Table 4 Examples of Ethical Issues Addressed in the Research proposal

Following the review of the draft proposal and resulting suggestions from the research supervisor, a revised version of the research proposal was submitted to the Ethics committee on 26th November 2018. A response from the Ethics committee was received on 11th January 2019 advising that a minor change to the consent form was required to update the consent form to explicitly state that individuals were taking part in the research in a personal capacity or alternatively to seek organisational approval. The consent form was

duly updated to take the former approach and resubmitted to the Ethics committee on 16th January 2019. Approval to proceed with the research was confirmed by the Ethics committee on 17th January 2019.

3.8 Interviewee Sample Selection

The selection criteria for the initial interview group sought to identify ICT professionals working in the Information Technology or related domains at medium or large non-profit organisations to take part in a multi-case qualitative study. In selecting Irish non-profit organisations to approach to seek participation, the Public Register of Charities (Charities Regulator, 2019) was used to extract a list of the 9,700 organisations which currently hold non-profit status in the Republic of Ireland. This register, which is available online, lists the aims and objectives, reporting dates and annual returned income/expenditure values for all registered charities.

Due to the variable year-end dates of different charities, 2017 was chosen as the most recent year for which all large charities would have submitted an annual return to the regulator and a list of the largest charities was analysed in detail. Excluding organisations such as the Health Service Executive, hospitals, education providers and religious bodies from the list, all of which fell outside the research scope, a residual list of the largest 30 Irish non-profits which had a combined annual turnover of €1.5bn was selected as being representative of the medium and larger Irish non-profit organisations falling within the research scope (see Appendix Seven).

Within the time constraints to conclude this research and the proposed methodology, it was neither feasible nor productive to seek to engage with all of the 30 organisations on the list so a representative sample of the larger organisations with a collective annual turnover of €650m was selected with a specific objective to include a broad mix of organisations. This sample included organisations engaged in different charitable spheres including overseas development charities, organisations engaged in alleviating poverty and those who supported and advocated for people with disabilities or other specific health conditions.

Once ethical approval had been granted, potential interviewees were approached through a combination of existing sectoral connections, personal introductions made by work colleagues and direct contact using LinkedIn.

Six interviewees working in Irish non-profit organisations in the roles of Head of ICT, IT Manager, and CIO were contacted initially. However, after the first three interviews had been completed within this initial group of senior IT professionals, preliminary analysis into the emergent themes from those interviews repeatedly showed the importance of the interface between the technology function and the wider organisation, particularly the engagement with the organisation's strategic leadership team.

Further review of the initial sample group also highlighted that the list of Irish bodies which had been selected did not include any organisations engaged in environmental or conservation causes and significantly under-represented organisations who primarily engaged in campaigning or advocacy activities. Finally, a further reason for broadening the focus was the frequency with which the initial interview participants highlighted international exemplars from larger non-profit organisations, especially those headquartered in the U.K.

Consequently, consistent with Glaser and Strauss's (1967) exhortation to researchers pursuing a Grounded Theory methodology to "follow the data", it was determined that it would be valuable to interview some additional individuals working in other roles outside the technology function who could illuminate and provide a business perspective on the issue of strategic alignment between the IT function and the leadership team. For these additional interviews, individuals working in larger development agencies or campaign-based organisations headquartered outside Ireland were purposefully selected.

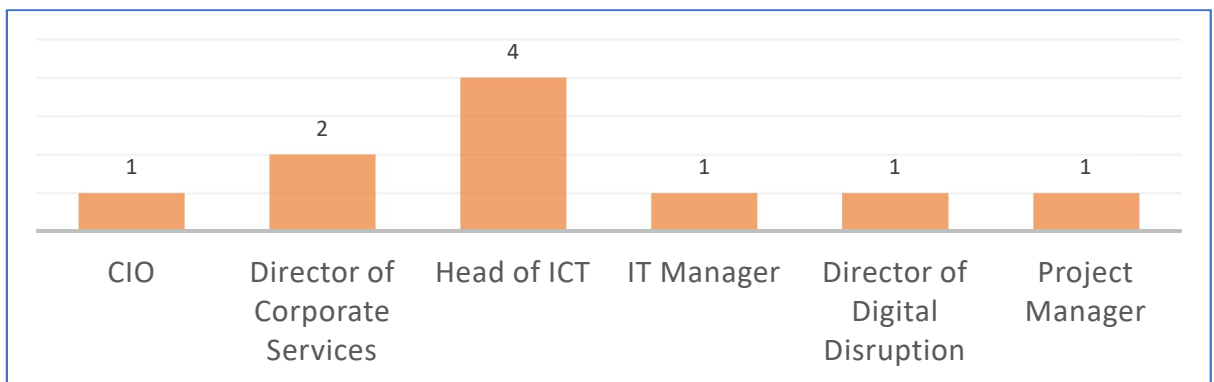


Figure 10 Profile of Interviewees by role at their organisation

Four other interviewees were identified and approached via LinkedIn using purposeful sampling either because their organisations were highlighted as using technology in innovative ways or they worked for organisations which are primarily involved in digital based campaigning or advocacy. Two of these worked as Director of Corporate Services and acted as the line director into whom the Head of the Technology function reported within the leadership teams for their respective organisations. The other two roles had a technology aspect to their role but worked outside of the Technology function of their organisation.

To convey the range of organisation sizes contacted for this research, the smallest of the ten agencies, an Irish based disability charity, had a turnover of €20million and employed 400 staff while the largest, a global international aid agency headquartered in the UK had a turnover of £336m and employed 5,200 staff globally.

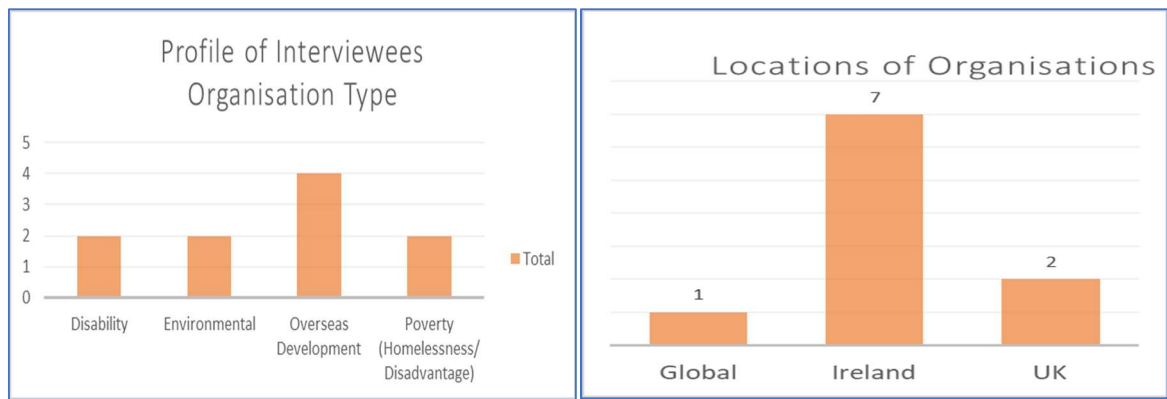


Figure 11 Interviewees by Type of Organisation and location

Each interviewee generously made themselves available for a semi-structured discussion lasting between 45 and 60 mins during which they shared a fascinatingly broad range of insights about the journeys of their organisations in implementing technology.

For locally based participants in Dublin, the interviews took place in informal settings such as coffee shops while the interviews with participants based overseas took place over Skype. All participants consented to have the interviews recorded which facilitated the creation of verbatim transcripts afterwards.

3.9 Data Analysis

The interview transcripts were initially analysed using Dedoose, a cloud-hosted Computer Assisted/Aided Qualitative Data Analysis Software (CAQDAS) tool. Using Dedoose, each interview transcript was coded into major and minor codes which were iteratively refined throughout the interview process. As major themes emerged from the interviews, these insights were recursively documented using reflective personal memos over a period of approximately two months between the first and last interview. The interviews followed the general interview plan noted in Appendix 2 which had been approved by the TCD Ethics committee, though where appropriate opportunities to discuss other relevant themes pertinent to the research question emerged during the interviews, these were explored also. Using the flexible approach mandated by Grounded Theory practitioners in the literature, the evolving research interests identified in the early interviews partly informed and influenced the interview approach and the later thematic focus adopted and shifted in response to the data in some of the earlier interviews.

Conversely, on a small number of occasions later interviews resurfaced insights and sectoral knowledge which, consistent with Charmaz's (2006) concept of data saturation, had already been covered comprehensively in earlier interviews. Where this happened, a pragmatic interview approach was undertaken as this presented a valuable opportunity to use the time more productively in the exploration of new emerging thematic areas, particularly where gaps had been identified in the data collected to date.

Here the focus on iteratively refining codes and writing personal memos set out in the Grounded Theory methodology (and informed particularly by the work of Charmaz (2006)) was found to be particularly illuminating. A very useful feature of Dedoose was the ability to create specific datasets of interview quotes around groups of codes which facilitated a flexible and holistic approach to the analysis of the interview data. (see Figure 12 below, some text data has been obscured to ensure participant anonymity.)

Dataset
Descriptores
Media
Users
Codes

Here you can review the current filters applied, save the current filter set as a dataset set, or load a previously saved dataset.

Current Data Set

Descriptores: 4/4

Resources: 10/10

Users: 1/1

Codes: 1/162

Excerpts: 3/513

Clear Current Set

Save Current Set

Current Set Excerpts

Resource
Transcript5thFeb.docx
Added
03/31/2019
Username
johnjogrady
Codes
3

The IT system has been a focus for bringing different groups together. I did training in the West and the i... pointed out that the process of implementing IT brought out the local differences. So we took on a membership support person as a new role, people found that they needed basic training on the quality aspects of ... but that hadn't c...

Resource
Transcript5thFeb.docx
Added
03/25/2019
Username
johnjogrady
Codes
3

This meant you needed really clear and simple documentation. The one thing was that everyone in the organisation was on board with a shared objective.

Resource
11th Feb 2019.docx
Added
03/24/2019
Username
johnjogrady
Codes
3

It's also a user training issue for senior management to help them refine it, and we're probably falling down. Where I feel part of our projects tend to slip is around documentation or using training, when you finish one project, you have another one on top of you. It's hard to be great. WE know what a lot of the problems are, but we're struggling to address them

Saved Data Sets

Title	Description	Created By	Created On
Implementation challenges		johnjogrady	04/07/2019
Documentation		johnjogrady	04/07/2019

Figure 12 Use of Dedoose's Data Sets to collate groups of individual codes & matching interview excerpts

Overall a total of 162 analytic codes were created (see Appendix 8) which were then applied to a total of 513 interview excerpts gathered across the ten completed interviews. In addition to the core interview transcripts, a range of other publicly available documents and resources were examined. (See S3.11 below).

3.10 Coding interview data

The CMO configuration framework¹² developed by Pawson and Tilly (1997) provided a valuable set of dimensions (Context, Mechanisms and Outcome) which formed the basis for the coding structure used in establishing categories for the analysis of the core interviews. Coding interview data is a critical iterative activity within the Grounded Theory

¹² See also Appendix 1

methodology (Birk and Mills, 2015). The key steps in the process are depicted in Figure 13 below.

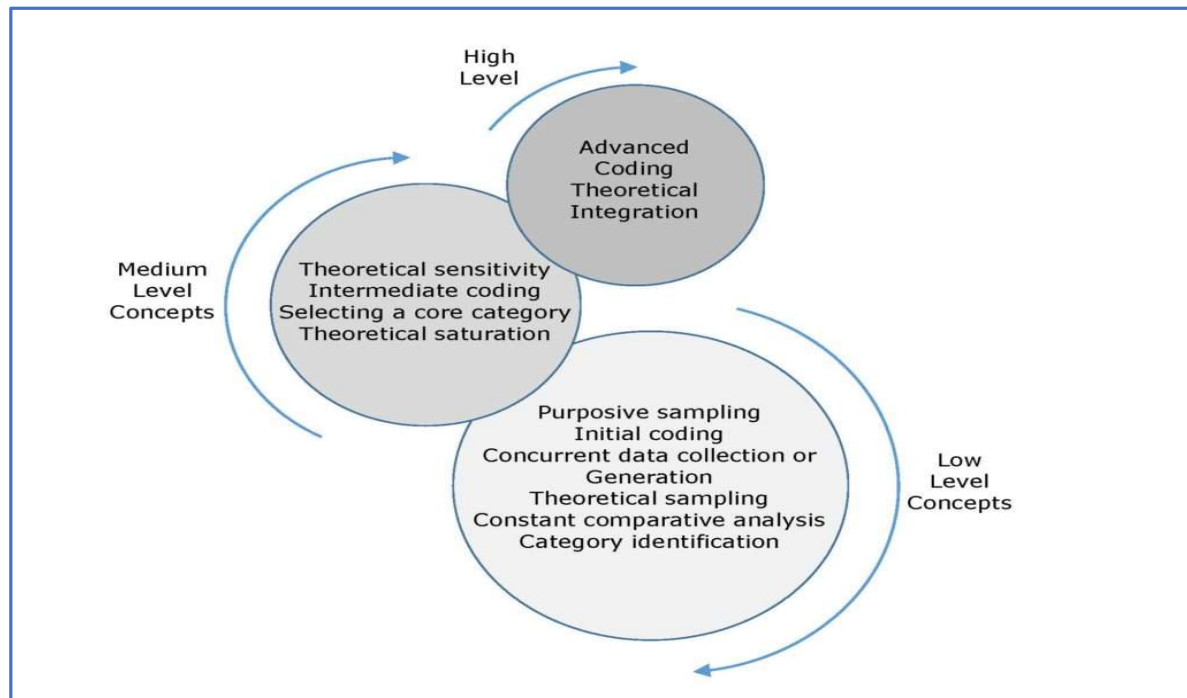


Figure 13 Essential Grounded Theory Methods (Source: Birk and Mills (2015))

The grounded theory approach to collecting and coding interview data stipulates that data analysis should move through a series of steps (Flick, 2018) where the researcher should use purposeful sampling to identify the most relevant data to be collected to support the building of theory in the chosen research area.

Having gathered data, work next proceeds with initial coding which Birk and Mills (2015) note as a particularly reflexive activity (one they noted as especially challenging for novice researchers) where the researcher needs to constantly revisit the analytic approach to the collected data to ensure that the approach best supports the theory building approach.

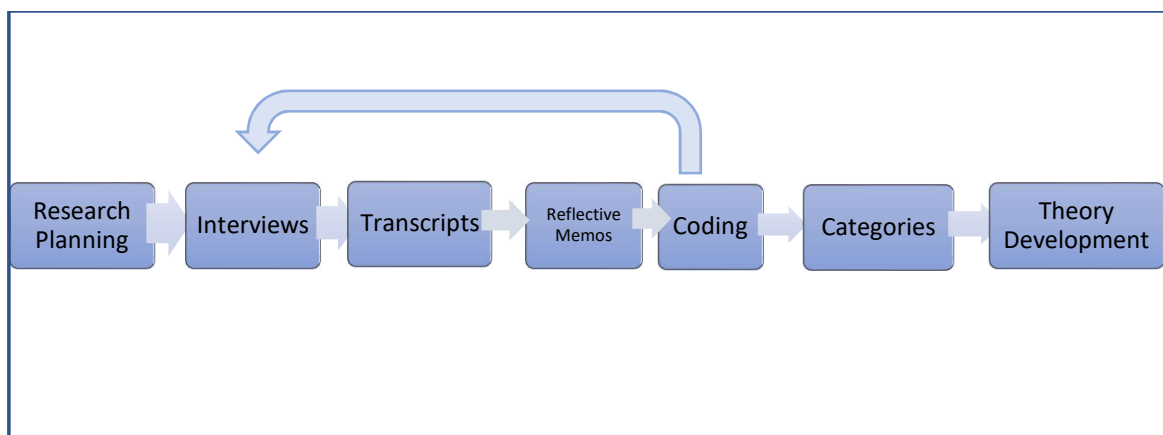


Figure 14 Overview of the Grounded Theory Research Process of Data Collection and Analysis

Throughout the research the major Grounded Theory writers (Strauss and Corbin, 1998; Charmaz, 2006) note the importance of memo-writing in the process where the researcher reflects via written memo their evolving impressions of the data they have gathered and analysed with a particular focus on identifying implicit or unstated meanings which can feed directly into the development of theory. As Charmaz (2006) points out, certain codes reveal meaning and actions in the data and the reflective process of memo-writing is thus a critical precursor to theory development.

After initial coding and the identification of categories, intermediate¹³ coding seeks to begin to link and integrate categories (Birk and Mills, 2015) in order to develop medium-level categories. At this step, coding is more directive, selective and conceptual. (Charmaz, 2006). Here Glaser (2008) distinguishes between two different types of codes:

- **In vivo codes**- which derive directly from collected data
- **Analytic codes**- created using the researcher's words and which explain theoretically what is happening in the data.

Finally, advanced coding links directly to the process of theoretical integration where theoretical codes highlight the key relationships between the categories leading ultimately through a recursive process to the creation of empirically grounded theory. (Charmaz, 2006). She views the sequential coding steps as being integral to the emergent process of theory development where coding the data provides the bones of the narrative while theoretical integration facilitates our later assembly of the codes into a working theoretical skeleton.

This iterative process is the essence of the abductive Grounded Theory approach, as Charmaz (2006) points out:

“You consider all possible theoretical explanations for the data, forming hypotheses for each possible explanation, checking them empirically by examining the data the pursuing the most plausible explanation”.

3.11 Secondary Data Sources

In addition to the interview transcripts, analysis of the interview data made extensive use of the organisation's websites, annual reports and published strategic plans as well as news media articles concerning the technology activities and wider operations of each of the organisations at which the interview participants worked. This provided valuable context and additional background information about the organisations which supported the assessment of the interview data. As an example of this, a secondary data analysis exercise in relation to the organisation's strategic plans is outlined in Section 4.3 below. This exercise

¹³ some writers such as Charmaz (2006) term this stage focussed coding.

was extremely insightful in cross-referencing the extent to which the impetus from (and enthusiasm of) the interviewee participants to see their organisations develop and implement ambitious technology plans was mirrored in the strategic plan documents. Another example of this was the excellent community resources of the NetHope organisation discussed at various points in Chapter 2. This body had produced extensive practitioner models concerning the documented challenges internationally in relation to digital transformation which informed and helped to shape the interview design by examining these issues with the Irish organisations.

3.12 Lessons Learned

One learning outcome which emerged from the research undertaking was the scale and effort required to execute a complex qualitative research undertaking. It was also a salutary lesson in the importance of developing and following a structured research design plan while being open to a flexible approach which responds to and exploits additional interesting data when it emerges.

Looking back, the sage advice of Charmaz (2006) to avoid data saturation¹⁴ in qualitative research was another valuable insight assimilated during the research process, albeit much too late in the process for this learning to fully inform and more effectively streamline the research approach. In undertaking future research, a more flexible and purposeful interview sampling approach focussed on quality rather than quantity would be more optimal. Such an approach recognises when the point of data saturation has been reached and avoids further interviews with participants who are likely to reveal similar data. Related to this, the Grounded Theory methodology places a critical emphasis on a practice of constantly analysing completed interview data and extracting insightful value from it via iterative coding and personal memo writing to sharpen the investigative approach to be employed in future interviews. The value of employing a disciplined and consistent approach to coding and memo writing revealed itself as the research work progressed but the benefits of this methodological practice were not realised as successfully during the early interview work for this research.

A final lesson learned through the research process was that overall research endeavour emphatically confirmed the suitability of the Grounded Theory methodology as an exploratory lens through which to conduct empirical qualitative research of this nature.

¹⁴ Kathy Charmaz notes Data Saturation as a phenomenon where similar data presents from repeated interview subjects. This is a useful signal to the researcher that sufficient investigation of that data dimension has taken place and a prompt to move on to examine alternate research horizons

3.13 Research Limitations

This research was necessarily undertaken under the time constraint to be fully executed within a single academic year. As noted in Section 3.3. further validity and rigour could have been added by extending the research approach to combine the qualitative interview data with an additional quantitative survey of all non-profit organisations in the sector. This could have been especially effective as a follow-on confirmation exercise once the dimensions of the research phenomenon had been initially explored using the qualitative Grounded Theory interview approach.

More generally, a further shortcoming of the research findings is that they are limited to the views of the participants who were interviewed and they represent their individual views rather than the considered position of the organisations concerned. The interview approach adopted will inevitably have been coloured by the interviewer's pre-existing knowledge and experience concerning the research question. Nevertheless, the findings proved remarkably consistent with the research from the international context which emerged in the literature review. This underscored the considerable and original value of the interview data gathered, representing a sincere and accurate articulation of a range of practitioner experiences within non-profit organisations concerning recent technology implementations, albeit firmly situated at a single point in time and primarily within the specific context of the Irish non-profit sector.

4 Findings and Analysis

4.1 Introduction

This chapter presents a high-level summary of the primary research findings from the analysis of the interview data and the use of secondary data sources. Following the granting of ethical approval in January 2019, ten interviews took place over two months in February and March 2019. As outlined in Chapter 3, the interview process used a semi-structured interview approach based on the interview plans in Appendix 3 to explore first-hand perspectives and experiences on digital transformation at ten non-profit organisations in Ireland and the U.K. Quotations throughout this chapter reference back to the anonymised identifiers for individual interview participants shown below in Table 5 and were all cleared for inclusion by the individuals concerned prior to the conclusion of the research.

Participant Identifier	Organisation Sector	Organisation Location	Interview Date	Interview Location
Interviewee A	International Development	Ireland	4 th Feb 2019	Dublin
Interviewee B	Disability Services	Ireland	7 th Feb 2019	Dublin
Interviewee C	International Development	Global	25 th Feb 2019	Skype
Interviewee D	International Development	Ireland	11 th Feb 2019	Dublin
Interviewee E	Poverty/ Homelessness	Ireland	5 th Feb 2019	Dublin
Interviewee F	Poverty/ Homelessness	Ireland	1 st Mar 2019	Dublin
Interviewee G	Environmental	UK	18 th Mar 2019	Skype
Interviewee H	Environmental	UK	29 th Mar 2019	Skype
Interviewee I	Disability Services	Ireland	8 th Mar 2019	Dublin
Interviewee J	International Development	Ireland	25 th Feb 2019	Skype

Table 5 List of Interview Participants and Dates

4.2 Pathways to Transformation

The interviews revealed a clear consensus that technology can and must radically transform how non-profit organisations deliver services, manage operations and engage with stakeholders. Interviewees saw a strategic imperative for the sector to modernise, with developing their technology capability linked as a pivotal aspect to the wider reform agenda for charities. As the research interviews progressed, various operational challenges and resource constraints in executing digital transformation as well as a variety of fascinating solutions came to light.

Organisations were at different stages in planning their technology journey. Some had well-developed and detailed technology plans linked to the strategy, others noted that the development of their technology strategy had commenced but remained incomplete. Finally, others referenced a previous expired strategy which had not been updated for various reasons- staff turnover, budgets and or a lack of management commitment. This state of being “between strategies” was noted at several organisations. The resulting lacuna

incubated a cautiously incremental technology strategy which served as a holding position while the technology team waited for a mandate for more radical transformation to emerge from the leadership.

Two organisations had a vacant CIO role at the time of the interview, with one noting that it would not recruit again until it had more clearly articulated its technology requirements and strategy. More generally, radical ICT enabled transformation was often framed as a critical future ambition albeit one which was currently on hold.

Meanwhile, there was a clear consensus among interview participants that resource constraints and operational challenges meant the sector would have to follow and belatedly emulate the private sector's technology journey, especially in leveraging emerging technologies such as AI. Conversely, they observed that the relatively underdeveloped technology infrastructure within the sector could also potentially enable it to "leap-frog" larger enterprises in deploying the latest technologies without having to undertake a complex migration journey from legacy applications.

For a variety of reasons, there were challenges in executing major technology-enabled process change, the difficulties increasing in proportion to the size of the organisational impact. One interviewee referenced Christensen's finding (1997) that radical transformation of an existing organisation is "nigh on impossible" and suggested creating new structures to act as the vehicle through which innovation was delivered. This concept was particularly useful for organisations with a distributed affiliate structure where a new entity could support innovation across the group as well as facilitating creating new cost-effective shared services models.

Each interview participant was asked to benchmark their own organisation against the wider sector in their journey to digital transformation. Organisations which had taken a cautious and incremental approach to their technology strategy were quick to accentuate relatively modest achievements, tending to rank themselves as "ahead of their peers" within the sector. However, counterintuitively, organisations which exhibited the strongest internal digital and technology capabilities were also more likely to understate their own technology journey, tending to a more critical view in evaluating their progress to date while highlighting gaps, resource constraints and outstanding areas of work. This indicated that the further an organisation had travelled in exploring the transformational capabilities of emerging technologies, the more likely it was to have reached an enlightened understanding of the full (and, as yet, unrealised) potential of these technologies.

4.3 Leadership and Strategic Alignment Perspectives

Interviewees also noted that the organisation's historical experience with technology investments also directly impacted on the willingness of the Board or Leadership team to

commit substantial resources to technology teams. Failed previous projects tended to cast a long shadow over the organisation's technology future ambitions while successful exemplars, especially where the expected project benefits had been substantially realised by the wider organisation, served to embolden organisations to undertake more transformative and ambitious undertakings.

Where a strong organisational impetus to modernise and fully embrace technology had definitively emerged, this frequently coincided with a change of senior management. When a visionary sponsor with an interest in technology emerged within the leadership group or indeed was elevated to that group, this could drive a change agenda where they leveraged their authority to revitalise the organisational context and establish a radical technology programme. This was most likely to emerge when there was a convergence of an energetic leadership team with a strategic vision which set a mandate for widespread technology-enabled digital transformation and which was matched by an innovative and creative technology team focussed on supporting the wider business objectives of the organisation.

Cross-referencing the interview data with the strategic plan documents for the ten organisations was revealing. Notwithstanding all interview participants noting their organisation's commitment to invest in technology capabilities, this received scant mention in many of their published strategic plans. Two made no reference to technology; four noted a general (one line) commitment to making investments in technology without specifics; two more noted some specific initiatives- one noted customer relationship management and finance systems as while another highlighted collaboration tools as an area of focus. Finally, two of the organisations included a comprehensive list of their technology project priorities in their strategic plan. A valuable further exercise to extend this analysis which was beyond the scope of the research undertaken would be to drill down (with appropriate clearance) into internal unpublished strategy implementation documents which operationalise and extend the published strategy documents and examine the extent to which the ICT delivery plans were aligned with and supported the organisation's strategic objectives.

Where organisations had effective mechanisms in place to facilitate alignment between the technology function's work programme and the overall organisational strategy implementation, this could be a significant predictor of the maturity of their technology capability, especially where the organisation's structure also supported this by facilitating direct linkages between the technology leadership and other functional managers.

At the six smaller organisations, however, the technology function did not have representation at the organisation's senior leadership team with the senior ICT manager reporting into either to a Director of Corporate Services or Director of Finance role within

the leadership team. By contrast, the four largest organisations had a CIO (or in one case a Chief Technology Officer (CTO¹⁵) role who was part of the senior leadership group.

Concerning the desirability of having a technology focussed role sitting at the leadership table, most interviewees saw this as increasingly critical, particularly in view of the growing importance of technology capabilities to the execution of the organisation's strategy. One participant who had been promoted from a Head of ICT role to a newly created CIO role within the leadership team noted the two key benefits of this:

- It facilitated the technology function to be more external and business focussed in its orientation.
- It afforded the CIO extended opportunities to engage in ongoing dialogue with peers around the leadership table about the capacity of technology to support and add value to strategic initiatives across the wider organisations.

Interview participants felt it was critical for organisations to recognise and develop ICT as a strategic capability and the elevation of a technology role to become a member of the senior leadership team was perceived by interviewees as an important symbolic and practical manifestation of this organisational commitment. For the technology function to act strategically, however, the extended technology team needed to possess strong business acumen combined with excellent networking skills and a resolutely outward-looking focus. Where these were present, such capabilities helped position the ICT function to identify and persuasively demonstrate to the wider organisation where emerging technology opportunities could be best applied to support business processes.

In this regard, the most enterprising and progressive technology leaders across the organisations emphasised that one of their most valuable contributions to the organisation was to act as what one interviewee termed 'horizon gazers'. This activity was perceived as a strategic remit held within the technology team on behalf of the wider organisation to maintain a constant weather eye on the ever-changing technology landscape to identify and highlight emerging technology opportunities or related partnerships which the organisation could exploit.

4.4 Funding Issues

Inevitably, a significant challenge concerned the availability of the funds required to invest in technology. Donor grant programmes are rarely structured in a way which encourages or supports long term transformational strategic projects. One participant cited research (Queenan, 2013) which found that while expenditure on technology in the non-profit sector

¹⁵ Within this organisation (an Irish overseas aid organisation) the ICT function was led by a Head of ICT who reported to the CTO. The CTO's responsibilities also covered the operational business processes and logistics functions which seemed to be a progressive and imaginative approach in unifying these streams of work.

lags far behind the private sector, the sector has a significantly higher spend on its finance functions than the private sector. The onerous compliance requirements of some funders, allied to historic underinvestment in technology, meant that many of the residual legacy approaches to gathering financial and operational activity data which persist remain cumbersome and labour-intensive.

A related barrier is a constant requirement to demonstrate the prudent use of donated funds and grant income which can make it difficult to finance major technology initiatives, especially around strategic projects necessitating costly professional services. At a superficial level, expenditure in back-office technology costs may be perceived by supporters or funders as a less virtuous or desirable application of the funds contributed as compared to these funds being allocated to direct service provision. As Interviewee C noted:

“Our sector is driven so heavily by the demands of our donors. When you buy an iPhone or a Ford car you don't tell Ford that you want to know exactly how much they funded in overheads in making that car. Our sector has a unique challenge of having to actually do that.”

Donors and regulatory authorities also need to consider alternate ways of demonstrating transparency and probity, with a need to devise new funding models which recognise and support the sector's strategic imperative to progressively modernise and update operational processes. Interviewee C suggests an urgent dialogue with donors should commence around this:

“There has to be a conversation with the donors and within the sector about how we can fund technology in order to leverage it and how we can build organizations that have sufficient resources and skill sets to be able to maximize the impact from technology.”

4.5 Data Issues

4.5.1 Compliance and Reporting Challenges

The need to comply with funder requirements could also directly block or inadvertently inhibit the organisation's desire to upgrade its technology processes. Several organisations provided examples of funder compliance requirements to simultaneously update two information systems- the internal and the funder-mandated systems- with the same data. Avoiding this duplication of data collection is a technical challenge that modern loosely coupled enterprise systems with their API capabilities should be able to meet, but the funder's agreement would be required to make such a change.

Another example cited concerned an international aid organisation which had piloted a fully digital beneficiary payments system using blockchain. The pilot demonstrated the feasibility of the digital solution but the donor's requirement for them to provide physical evidence of

payments meant that they had to continue collecting inked fingerprints from beneficiaries on a paper page.

4.5.2 Data Analytics

An imperative to improve Business Intelligence capabilities linked directly to a range of strategic investments to improve and streamline data collection processes. Improved data could be utilised to assess the effectiveness of each programme area, helping to drive decisions concerning internal funding allocations. It was notable that both of the Irish poverty organisations had instituted an organisation-wide activity tracking system linked to their Customer Relationship Management (CRM) system. Prior to this, neither organisation had an effective or reliable way of measuring the number of interventions with their service users. Introducing the CRM system demonstrated that the actual number of interventions was considerably higher than had been previously estimated.

Chapter 1 discussed the negative public discourse and low levels of trust in relation to the non-profit sector. In response, the sector must develop its capacity to be fully transparent in accounting for its use of fundraised and grant income and to demonstrate the value for money that it provides. Interview participants referenced technology as a key enabler of being able to construct a clear narrative to show the impact of its activities.

4.5.3 A Picture Graph is Worth a Thousand Words

The interviewees saw considerable value, too, in improving reporting and analytic capabilities. Turning interesting data into a compelling graphic could be particularly valuable in bringing data to life to tell the organisation's story and to demonstrate impact in new and engaging ways. Having detailed and reliable data around local circumstances -for example, reliable assessments of the current quantum of stakeholder need- could also be a highly effective tool to support advocacy efforts, both to influence public policy decisions and to lobby for additional grant allocations.

4.5.4 Data Solutions- Keeping It Local

Several interviewees highlighted the importance of having operational teams close to the front line of service delivery contribute to the design of the reporting systems. This approach enabled the organisation to fully close the data collection loop so that newly deployed internal data collection systems created insight which was meaningful and useful to local teams. Local use of the data close to the collection point served to empower decision-making and created a virtuous circle of data accountability and ownership which had a positive impact on data quality and fostered buy-in around sustaining the overhead of data collection. Conversely, collecting data whose primary perceived purpose was to comply with a remote "Head Office" requirement was usually a much less welcome resource drain on the community-based teams.

4.6 Partnerships and Capacity Building

4.6.1 Access to Professional Services

There was palpable excitement among the interviewees about the opportunities presented by the technology sector's donations of technology to non-profits. The donations meant that the licensing cost of new technology had been removed as a financial barrier. However, the internal teams often still faced challenges in getting funding for the consulting and professional services needed to assist with the implementation of the donated technology.

4.6.2 Do it Yourself (While Keeping the Lights On)

Technology leaders voiced frustrations about a lack of adequate resources to become familiar with, implement and subsequently support new technology, particularly because teams were already under pressure dealing with legacy technology and responding to operational and support challenges. Limited budgets and small teams necessitated team members acting as technology generalists with a paucity of specialist technology roles. Testing, research and familiarisation for a new technology implementation often happened outside of hours in the employee's personal time, with an enthusiastic and admirable 'Do It Yourself' implementation approach. However, interviewees noted their anxiety concerning their capability to make optimal, fully informed decisions about systems architecture and design. Several discussed their concerns that this created associated risk of delays or compromises to projects.

4.6.3 How the Tech Sector is Helping

Each of the large technology companies have significant corporate social responsibility and philanthropy activities which provide support and donate their software to non-profit organisations. The Irish charities were all availing of the non-profit Microsoft Cloud programme which makes Office 365, SharePoint and other related tools available to charities free or at a substantial discount, with partnerships with Google and Salesforce also noted as significant support relationships, particularly among the larger global organisations. However, most of the engagement with technology companies to date had focussed on migrating operational capabilities to improved cloud platforms such as cloud email or servers.

Several organisations had sought to build partnerships with the technology companies to explore emerging technologies such as AI, viewing this as an exciting opportunity to fuse the sectoral knowledge of non-profit organisations with the proprietary product knowledge of the technology sector. However, these initiatives had largely failed to deliver on the expected potential, a particularly disappointing outcome given the high-profile public commitments of companies such as Microsoft, Google and Salesforce to engage with the sector (see Section 2.8.5) to use their technologies to solve the most challenging societal problems of our time.

4.6.4 Collaboration and Knowledge Sharing Opportunities

A striking finding was that except for the international aid agencies, there was limited collaboration between the Irish non-profit organisations even though many of them are using identical technology platforms. The interviews often surfaced commonalities between the technology plans among the Irish organisations with obvious opportunities for collaboration and information sharing. There were examples, too, where the sector's collective engagement with the technology companies could have been more effective- one participant referenced 'Ask the Expert' sessions which were hosted by senior technical Microsoft architects which were extremely useful but noted that the uptake by other organisations was very limited.

The need for sectoral research on the reasons for the prevalence of failed and compromised technology projects was highlighted so that the underlying causes can be identified and addressed. However, there were difficulties cited in initiating an open and transparent conversation within the sector as there often an unwillingness to acknowledge and address the scale of the issue.

4.7 Implementation Challenges

It was frequently observed that the sector had longer lead times for technology project delivery than the private sector. This was an informed view given that most of the technology professionals interviewed had worked in the private sector earlier in their careers. This longer lead time was in part attributed to the more decentralised and consensus-based nature of decision making as well as to the absence of specialist business analysis skills within some of the smaller organisations.

Setting realistic and achievable project objectives with the available resources was also vital. One participant noted the desirability of avoiding major Waterfall type projects with extended multi-annual project delivery timelines as a long delivery horizon would inevitably become log-jammed and compromised by scope creep. Instead, she sought and gained management agreement to amend the long-term plan initially proposed by the organisation and instead undertook an aggressive shorter-term rollout which involved some reduction in the initial scope of the project delivery. As a result, this project was delivered successfully within a single year and provided a secure foundation for the implementation of additional modules which were tackled after the initial rollout.

Section 4.6.2 noted a challenge in delivering new technology projects while continuing to provide operational IT services such as service desk user support and maintenance of existing technology platforms, including a significant estate of legacy applications and infrastructure. Organisations which had successfully overcome this challenge stressed the value of disaggregating the technology function into discrete functional sub-units focussed

on operations and project delivery and ensuring project budgets made realistic provision for professional services.

4.8 Unique Approaches to Innovation and Prototyping

A unique characteristic within the non-profit sector is the prevalence of volunteers and the central cultural and political importance to many organisations of their cohorts of local activist and grassroots groups. Many activist and volunteer stakeholders are retired from the workforce and may have less familiarity with technology. Engagement with volunteers requires a more inclusive, participative and nuanced approach to implementing technology projects with a strong emphasis on clear and respectful communication.

Multiple interview participants stressed the importance of early meaningful engagement with relevant stakeholders to establish a clear and shared sense of purpose about the expected deliverables for the project. The existence of a supportive business champion outside the technology function was frequently cited as a critical enabler of project success. This was especially valuable where they had the local knowledge and organisational standing to clearly articulate project benefits in terms that were comprehensible and meaningful to local teams while having the vision to maintain an unrelenting focus on driving on the overall delivery of the project objectives.

At a large poverty focussed organisation with an extremely vibrant community of local grassroots activists who operate in every community in Ireland, it was explicitly stated at the outset of a large-scale financial systems project that the new systems would not be made mandatory for volunteers who could instead opt-in when they felt comfortable and ready to do so. To support the adoption, a network of comprehensive local training and administrative supports¹⁶ were put in place across the organisation and the project has now exceeded its initial target of 75% engagement by local volunteers. A particularly impressive outcome of this project was the personal benefits gained by older volunteers as their participation in the project increased their confidence to engage with technology in other parts of their life as retired persons.

An ongoing challenge emerged in relation to the process of agreeing and documenting business processes. A common phenomenon observed was that the deployment of a technology-based solution across the organisation often inspired a broader initiative to standardise processes which had previously been ad-hoc and subject to local variation. Exemplars from the larger organisations demonstrated the value of specialist business analyst roles to agree on a unified approach with all stakeholders, supported by a project

¹⁶ This included the provision of data dongles and the innovative use of transition year secondary students to deliver one to one application training to volunteers.

sponsor outside the technology function who was accountable for the delivery of the overall project benefits.

Allied to this, the operations of many of non-profit organisations remain highly decentralised, with a strong emphasis on a local service delivery approach which presents considerable difficulties for technology teams in conducting effective communications with and delivering training to field-based staff.

All interview participants recognised the necessity of piloting new solutions which afforded project teams the capability to demonstrate an early prototype, testing the feasibility and scalability of the proposed solution to assess the performance in some of the challenging field-based scenarios encountered. Such an approach also enabled the implementation teams to constantly get feedback from (and provide reassurance to) end users.

Many of the organisations were facing a demanding and growing backlog of technical delivery requirements to meet with limited resources, so a flexible and adaptable approach to project implementation which sought early feedback from end users was vital. Thankfully, good exemplars of this user-centric approach were easy to locate right across the sector. Interviewee F explained why it was so important at their organisation:

“We’re good at getting out to talk to people early on in projects. In fact, we’ve found it’s essential to the process- you have to engage early and explain what you’re doing and get their buy-in that way. The pilot lets us test the product, see it operating in practice to make sure it works, that helps avoid the resistance that you inevitably encounter”

There are undoubtedly considerable echoes of the Agile Manifesto (Beck et al, 2001) in the disposition and mindset described here¹⁷. Several organisations outlined an approach to project implementation which resembled a ‘light touch’ version of Agile, borrowing some elements in their iterative use of user feedback to shape the development of software products without being formally bound to all of the Agile practices and tools.

Such a flexible approach appeared to work well for many of the organisations in allowing and fostering an open-minded and user-focussed stance where initial requirements could be gathered, a viable prototype developed quickly, and early feedback gathered from stakeholders.

¹⁷ Agile is a software development methodology which advocates short and continuous delivery cycles, favouring this over more traditional approaches such as Waterfall which have a longer lead time and a greater focus on creating comprehensive documentation.

4.9 Planning and Governance Issues

However, some of the larger organisations noted that such an unstructured approach to project initiation and management could be a recipe for developing chaos, increasing project and governance risk if left unchecked. As their IT delivery capabilities progressively matured and became better resourced, they found it necessary to formalise their IT planning process to maximise business alignment and reduce project risk.

Several organisations had implemented highly effective ICT Governance or Change Boards where representatives of the business and technology leadership teams came together to prioritise projects and ensure technology plans aligned with the overall organisational strategy. This need became particularly acute as the demand for technology delivery coming from business teams increased beyond the available resources for project delivery within the technology team and needed to be appropriately prioritised.

4.10 Federated/ Affiliate Organisations

Another interesting phenomenon was that some of the organisations existed as federations of individual affiliate local or national bodies. Within some of these, each affiliate body had its own individual technology team as well as autonomous local management structures. Interview participants who worked in organisations configured in this federated or affiliate structure spoke positively about the benefits of a harmonised agreed technology approach across the extended organisation and the wisdom of avoiding a localised approach typified by the emergence of “shadow IT” resulting from a localised disconnected technology approach within individual branches.

Positive accounts were provided by interviewees which showed how the exploitation of an agreed technology approach across disparate local organisations or affiliates could improve internal coordination. Examples of this including the use of common file shares, video conferencing and a federated email domain. One interviewee explained that the migration to a common technology platform across the federated organisation had in itself become an enabler of greater integration between the different branches extending well beyond the technology domain.

Interviewees at two federated organisations also highlighted their positive experience of using an IT governance committee across the different entities to agree on a common technology approach. However, one identified that the main shortcoming of the governance approach to date had been that the dialogue had been primarily between technology representatives at the different affiliates, noting the potential value of broadening this discussion to include business representatives.

4.11 Mainstreaming Innovation and Digital Disruption

An interesting and unforeseen data point emerging from the interviews related to the challenges in mainstreaming even relatively successful pilot technology projects into the wider operations of the organisation. This phenomenon manifested in the examples referenced earlier of the pilot blockchain beneficiary payment solution and the attempts to build partnerships with the technology sector to leverage sectoral applications of AI. It was notable these were some of the most radical and farsighted applications of emerging technology within the sector, yet these pilots had been expressly planned and structured to take place away from the core operations, with the primary technology and business teams only participating to a limited degree.

One organisation had appointed a Director of Digital Disruption in a leadership role outside the technology team. It was encouraging here to observe an explicit mandate for the role to undertake innovative and “disruptive” experiments and to drive a culture of disruptive innovation across the wider organisation. The job specification for the role remained available to view online. It expanded in some detail on the disruption brief, with the first essential criterion for the role listed as:

“Significant experience of establishing new products, enterprises, start-ups or skunkworks”¹⁸

The reasons for a somewhat siloed approach to technology innovation differed across the sector. A primary explanation was the understandable need to avoid negative or disruptive impact on key operational activities as well as to take advantage of partnership or funding opportunities and to foster and publicly demonstrate a culture of innovation. However, even where the pilot projects were overwhelmingly successful, a clear plan to leverage and operationalise this new capability on a wider operational scale was often missing and the mainstreaming approach had often not been explicitly addressed during the pilots. There also appeared to be a limited focus on post-project review and on documenting the lessons learned from projects, though this gap had been latterly identified and was being addressed at some of the more progressive organisations.

4.12 Drivers (and Limitations) of Digital Transformation

Surprisingly, fundraising did not emerge as a strong driver of investment in technology, though some organisations did note the opportunities presented for digital channels to support much more effective engagement with stakeholders. Interviewee G noted that as social media becomes ever more embedded in the fabric of human discourse, their organisation is attempting to move beyond engagement with their stakeholders through

¹⁸ Collins English Dictionary defines skunkworks as ‘a group of engineers, scientists, etc. engaged in research and development, usually secretly or in isolation’ (Collins English Dictionary, 2019)

social and digital channels alone. Instead, their communication strategy centres around using social and digital channels as pathways to make an initial connection with an individual, but they seek where possible to migrate a potential supporter to get involved in other face-to-face activities or campaigns as they view these as much more meaningful (and “sticky”) connections:

“For us, online is almost too easy. It's a great way to get people in the door and then you have to be incredibly clever about how you then engage with them from that point on. We see digital petitions are kind of an 'in' to the opportunity rather than necessarily a change in itself.”

5 Conclusions and Future Work

5.1 Introduction

This chapter summarises some of the most revealing and valuable empirical data together with key findings which emanated from the research results and proceeds to make some recommendations for the sector based on the research findings. Various insights emerge from the cross-pollination of the themes contained within the interviews, the best practice exemplars from the literature review and the secondary data sources about the organisations that the interview participants worked for. It is worth noting that the interview data contained a wealth of rich insights and ideas and it has only been possible to provide a high-level overview of this data within this chapter and in Chapter 4.

5.2 Innovation Culture

The non-profit sector has a deservedly strong reputation for its long track record in developing and piloting agile approaches to solve societal problems which had hitherto eluded both the private and public sectors. Examples include the Independent Living movement for people with disabilities which emerged out of the counter-culture movements of the 1960s in the U.S. (Bancroft Library, 2019) and the recycling experiments in the U.K. led by Friends of the Earth (Friends of the Earth, 2016) which used pilots to demonstrate the feasibility of a national approach to recycling. In its technology endeavours, too, the sector has demonstrated an enterprising and innovative approach to developing technology solutions to business problems. Examples of this include the use of blockchain to provide a secure means for cash transfers (Concern, 2018), the development of a toolkit using mobile technology to measure and support disaster resilience (Goal, 2014) and empowering citizen science using mobile apps to count bee populations (Friends of the Earth, 2018). A particularly exemplary project has seen Oxfam develop a strategic partnership with Microsoft which produced a framework data science tool to protect the privacy of beneficiaries of humanitarian programmes. This tool is now being open sourced to the sector. (Oxfam, 2018)

5.3 Key Findings

5.3.1 Need for IT Governance Processes to align with Strategy

Critically, an unambiguous correlation emerged from the interview data between the amount of progress that an organisation had made to date in its journey towards digital transformation and the extent to which it had implemented effective processes to align the work and output of the technology function with the overall strategy of the organisation. Within those organisations where this practice was well established it was viewed as a key enabler in fostering a creative and outward-looking capability within the technology team. One technology manager noted that implementing an effective IT Governance process in her organisation ensured that the ICT team could execute against a predictable delivery

plan and keep its primary focus on the delivery of the most valuable projects which had the biggest strategic impact. This approach aligns well with the recommendations of exemplar frameworks in the literature which synthesised best practice such as the NGO Reference Model¹⁹ (Snow, Smith et al, 2016). The New Reality report (Dodd, 2015) also echoes the importance of focussing on alignment and calls out the risks of a siloed approach to digital:

“Increasingly this separation from the central mission reinforces a perception that digital is just another department with its own goals, rather than an enabler for all. Instead, we need central organisational strategies that weave technology throughout everything”. (Dodd, 2015)

5.3.2 Need for ICT to be represented at the Board level

It was notable, too, that there was a disparity between the technology maturity and ambitions of smaller and larger organisations. International and larger Irish NGO organisations were much more likely to appoint a CIO role to lead the technology function, granting this role membership of the executive team. As yet, this structure is far from a universal practice but interview participants already working as CIOs within a non-profit spoke positively of the additional opportunities this structure afforded them to support and influence the wider strategic agenda. This is consistent with the best practice approach advocated by Axelson (2018) who noted that where this is not possible, the organisation’s senior technology role should act in an ‘ex officio’ role to the leadership team. Non-profits are clearly lagging behind other sectors in this regard, however, because U.K. research (Clarke, 2018) indicates that 53% of global CIOs now report to the CEO and 83% were members of the executive leadership team.

5.3.3 Resource and Structural Requirements to Support Change

Another clear insight emerging from the primary research was the heroic (and at times extraordinary) effort of technology teams across the sector to go the extra mile in supporting the digital transformation journeys of their organisations. This work necessarily had to be balanced with the need to support legacy infrastructure and the delivery of operational support.

While admirable, as the technology capability of an organisation developed, farsighted organisations found that it was necessary to move beyond a well-intentioned but chaotic delivery mode (which one interview participant termed the ‘pulling on the superhero cape’ phase) to a more sustainable, strategic and scalable approach to project delivery. The desirability of this evolution is also echoed in the New Reality report:

¹⁹ In fact, maximising focus on these enabling (support) activities which added the most value to the wider organisation’s primary activities was a key recommendation within the NGO Reference Model.

“A tried and tested process for delivering transformation already exists - it’s just not being used. Start small: pick one problem and put enough effort into transforming that one area through a lean, iterative approach.” (Dodd, 2015)

As the quote suggests, there is no need for the sector to develop new models here. Iterative modes of delivery are well-embedded across the technology sector via established practices such as DevOps and Agile. While there was some evidence of sectoral practice being loosely informed by an awareness of these methodologies, these processes were not significantly formalised to date. This highlights a useful opportunity to derive new sector-specific approaches which are grounded in these industry practices.

5.3.4 Capacity Building.

Capacity building as an urgent prerogative within the sector surfaced frequently in the interviews. There are plentiful models within the sectoral frameworks for digital transformation which can be used within the Irish context. The Center for the Digital Non-profit (NetHope, 2017) which derived the Digital Skills Framework referenced in S2.10 is a particularly fine example of this sectoral collaborative approach to synthesising and disseminating best practice, albeit specifically situated in the context of large global humanitarian agencies²⁰. Its key areas of focus are noted in Figure 15 below

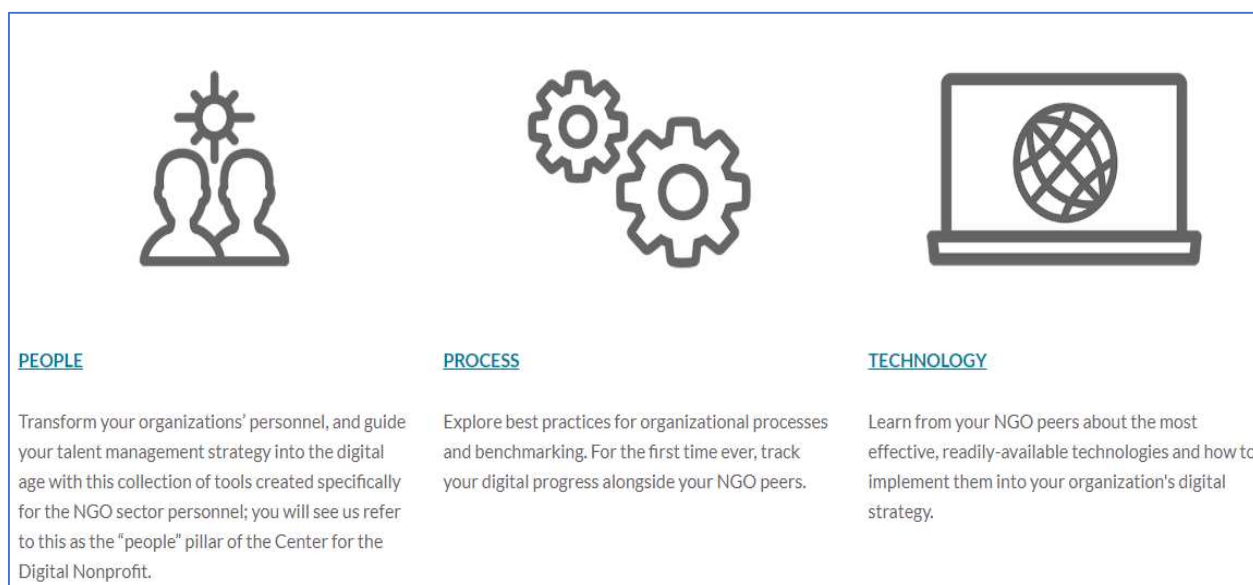


Figure 15 Center for the Digital Non-Profit- Key Areas of Focus (NetHope, 2017)

The notion of developing a sectoral group, equivalent to NetHope, to support local technology collaboration between Irish charities merits further exploration. The Irish non-profit sector has several well- established sectoral groups²¹ but technology has not featured

²⁰ In an Irish context, Concern, Trocaire and Goal are active contributors to NetHope and the 2016 NetHope conference was hosted in Dublin.

²¹ These include the National Federation of Voluntary Bodies, The Wheel, Disability Federation of Ireland and The Not for Profit Business Association

within the scope of the collaboration work undertaken to date. Some key objectives for such a technology focussed group could include

- Organising “meet-ups” for technology teams within the Irish non-profit groups to share knowledge, and demonstrate good practice including the collaborative development of shared open-source tools. This could help avoid a tendency noted often in the research for constantly ‘reinventing the wheel’- developing new solutions from scratch where existing reusable components were already available.
- Identifying opportunities to reduce cost through developing shared services approaches where organisations have a cooperative approach to delivery. This could potentially develop consortia-based approaches to procurement for technology goods and services as well as exploring sectoral approaches for organisations to collectively provision and share service desk, cloud and other technology services.
- Developing more effective partnership models to use in working with the technology industry. This can help identify collaboration opportunities around the application of emerging technologies and digital tools to support the work of the non-profit sector in responding to social issues. In articulating a wider perspective on behalf of the overall non-profit sector rather than the individual organisations, a steering group could engage in a more meaningful and equal engagement with the technology corporates to call out blockages and discontinuities noted within the current CSR programmes of the technology companies.
- Sponsoring and supporting sectoral research into the underlying reasons for the high incidence of failed technology and digital projects within the sector.

The informal contacts made with technology teams across the Irish non-profits sector which facilitated the interviews revealed significant support for forming an Irish technology steering group and an initial consultation meeting of the group is already in the process of being scheduled.

A possible beneficial long-term outcome of this process which this group could explore further is as follows: the small size of the Irish economy, the presence of the global technology industry here and the international outlook of the Irish non-profit sector creates an ideal context for Ireland to potentially develop as a centre of excellence which can serve as an international exemplar in the leveraging of emerging technologies for social good.

5.3.5 Federated approach/ Community Outreach

This research noted various disparate opportunities which could be creatively combined in different ways to maximise impact:

- The sector has a valuable and well-embedded competency in sparking and sustaining the engagement of its volunteer cohort. Several organisations provided examples of excellent initiatives which have put this resource to highly effective use in their operations at a local level.
- In parallel, large corporates (including technology companies) increasingly have schemes in place for employees to volunteers to spend paid “social responsibility” days undertaking work to support social causes.²² Without diminishing the value of a team of experienced technology professionals spending their social responsibility days working on a photo-friendly community development project, perhaps it might be even more impactful for the sector to create structures where technologists in the private sector could apply their technical knowledge in support of the charity’s own technology journey. This could be particularly effective if those structures could support a longer and more meaningful engagement.
- The technology industry has made highly publicised commitments pledging its expertise and resources behind using AI and other emerging technology for social good. However, this research has highlighted some discontinuities and blockages which have inhibited this initiative from having the desired transformational impact thus far. At an international level, although there were excellent examples of alignment between humanitarian NGOs and the technology sector operating through the NetHope organisation, several interviewees voiced frustration about the difficulties faced in seeking to build partnerships with the technology sector to experiment with and deploy emerging technologies such as AI.
- Meanwhile, the Open-Source movement (Open Source Initiative, 2019) within software development has evolved a mature and growing practice of collaborative code development which brings together technical expertise from across the world to solve technical problems via modular solutions. This approach is founded on the principle of a collective and collaborative effort producing a quality of output surpassing what any one developer or team could achieve working alone.

While it would be premature to propose any definitive solutions, there is clearly food for thought here and it is not hard to visualise some combinative opportunities. These might help to evolve and develop new partnerships which could prove highly effective and genuinely transformational for the non-profit sector while supporting the technology sector to deliver on its CSR programmes in a more meaningful and impactful way.

Indeed, rather than remaining passive on the issue, perhaps an opportunity exists here for the sector to proactively develop its own cooperation, partnership and innovation modalities and then to seek and promote external engagement with these. Such an approach could

²² Examples of these social responsibility programmes can be found at [Salesforce](#) and [Deloitte](#).

see the non-profit sector explicitly highlighting cooperative opportunities where it has identified real-world social problems together with articulating its view of how technology opportunities could help to solve these. In essence, an approach which emphasises the sector's excellence in problem definition rather than solution development.

5.3.6 User-centric approach, pilots, partnerships.

There were excellent reference cases provided during the interviews of an emergent and innovative approach across the sector to the project management of pilots. These had been developed in response to challenging project implementation circumstances faced within the sector including constrained resources and dispersed user groups which used iterative prototyping to surface and confirm business the requirements.

At the same time, these processes were relatively unstructured (S4.8 termed these practices 'Agile Light') and the interviews showed that for every successful implementation, there were also examples of chaotic and potentially risky implementation practices which lacked scalability. This demonstrates the need to research and documenting models of good implementation practice within the sector.

Addressing another current shortcoming highlighted by the research, there is an urgent need for the sector to improve its project initiation processes so that it develops more clearly articulated plans of how successful pilots can transition into operations.

5.3.7 Project plans to include widespread deployment and post-project review

A challenge which was cited frequently in the interview data was that the project delivery backlogs for NGO technology teams continued to grow while the resources remained static. An immediate impact was that the teams frequently commenced new projects in an unstructured way and then failed to effectively debrief after the projects were closed. Doing this more consistently and thoughtfully can help to ensure that insights and process shortcomings which are documented in the lessons learned of completed projects get formally logged to inform future practice and are then acted upon. Otherwise, both individual organisations and the wider sector will continue to repeat the same mistakes. This review process can also help to support and inform research around the development of models of best practice.

A related issue concerns the need to institute an honest and open dialogue about the sector's high rate of project failure. More than one interview participant noted that this was a 'taboo' topic among teams and organisations which has not received the attention it deserves.

5.3.8 *Innovation Hubs*

A further finding noted is the need for the sector to invest in innovation and to recognise that the business and social value from innovation projects should not be measured solely in terms of the successful mainstreaming of these innovation pilots.

The New Reality report (Dodd, 2015) puts this in context well, noting the need to develop and invest in innovation processes, citing three proven models of practice which have been repeatedly demonstrated to work well within the sector:

1. Establishing an internal Research and Development programme.
2. Developing innovation partnerships
3. Creating your own start-up

As the beginning of this chapter highlighted, developing innovative solutions to address societal problems is deeply ingrained in the sector's DNA and while this research has identified piecemeal examples of excellent innovative practices in technology implementation, more farsighted organisations have begun to recognise the need to engage in disruptive innovation practices in order to identify new ways of doing things. The pathways to Digital Transformation models identified in S2.12 clearly show us that iterative innovation to improving key capabilities around Customer Experience and Operational Processes represent a proven route to achieving Digital Transformation which delivers significant long-term business value.

Given this, a concerning aspect of the research findings of the Digital Skills Group at NetHope (2016) was the reluctance of non-profit organisations to tolerate failed innovation projects. This attitude, while understandable given the provenance of most of the sector's funding, represents a short-sighted approach and a fundamental misapprehension of how the innovation processes work.

A related issue for the sector to consider is developing the incubation of new innovation-focussed start-up structures within organisations, especially within those organisations which have federated or affiliate structures as well as using this approach for intra-organisation collaborations. These can be explored to mitigate some of the challenges documented by Christianson (1997) in transforming large and complex organisations from within.

A final consideration here (which returns neatly back to the work of Jaskyte (2011) referenced in S2.6) is to revisit her interesting insight which emphasises that those organisational capabilities which support innovation activities (especially disruptive innovation) are not the same capabilities, and may actually come into conflict with, the kinds of capabilities needed to support the implementation of an orderly, governance focussed technology agenda.

The sector needs to find ways of supporting the creation of new innovation hubs and structures which foster disruptive experimentation, separate to, but with access to, appropriate levels of technical support from the technology function. These innovations need to be able to grow within a safe space, one which recognises that the experimentation journey is equally as valuable as the destination, but organisations need to also have a clearer view of how to progressively mainstream outputs and learning out of those innovation hubs so that this can add real value to the wider organisation. This is not a challenge which is unique to the non-profit sector.

Table 6 Recommendations

5.4 Recommendations	
5.4.1 <i>Negotiate with funders to align compliance and funding models with the Digital Transformation agenda</i>	The sector needs to undertake a dialogue with donor/funder organisations to develop and extend new models of funding (including social finance) to enable it to fund its technology ambitions and to work to clear the legacy aspects of funder reporting and compliance requirements which can inhibit digital transformation
5.4.2 <i>Articulate that good governance and effective systems cost money</i>	The sector needs to engage in public discourse to seek to progressively challenge and change the prevalent perception within the general public that the “best” charities are those with the lowest overheads.
5.4.3 <i>Actively develop new approaches and capabilities to innovation and digital disruption models</i>	Considering the excellent innovation examples noted in service delivery and operations, there is a need to develop an R&D capability which supports these and then links them to novel and experimental technology approaches. However, the sector must also adjust to understand that “failing fast” is a healthy and normal part of the innovation process.
5.4.4 <i>Build innovative structures to foster partnership and collaboration between organisations in the sector</i>	Investigate possibilities for collaborative development of new open-source tools which can support the work of multiple organisations in the sector as well as considering consortia-based procurement and shared services models.
5.4.5 <i>Engagement with the Technology Sector to develop new and effective partnerships which exploit mutually beneficial innovation opportunities.</i>	No other sector can replicate the first-hand knowledge of Ireland’s social problems and the deep understanding of the needs of stakeholders which the non-profit sector possesses. Rather than seeking to reinvent the technology wheel, the sector should articulate its requirements as problem statements and then work with the technology sector to develop partnership approaches to jointly create appropriate solutions.

5.5 Future Work

Potential areas of future work which fell outside the scope of this resource could include

- Further analysis of the rich interview data gleaned in the primary research and extending the discussion (having obtained appropriate consents) which is necessarily curtailed here due to time and space constraints.
- It would be very worthwhile to delve deeper into the apparent disconnect identified between the technology sector's CSR programmes and the non-profit sector's technology and modernisation agenda. This issue came up on a number of occasions during the interviews, but a full understanding of the underlying causes of this disconnect remained fragmentary and incomplete at the end of the research.
- This research work was focussed exclusively on larger non-profit organisations. A broader engagement with the wider sector which included smaller non-profits could generate further insights and methodologies which are more generally applicable across the sector.
- There is an acute need to investigate drivers of project failure within the sector. An extended case study methodology could be used to reveal underlying causal mechanisms while documenting project implementation shortcomings.

5.6 Concluding Remarks

In conclusion, a final point worth repeating is the obvious but often overlooked fact that the imperative to fully deliver on the digital agenda is a strategic journey which needs to be led at the executive management level. Digital transformation is not primarily a technology issue at all although clearly, the successful execution of a digital strategy requires support from the organisation's technologists.

The original findings noted in this empirical research from the sector have demonstrated that digital transformation is a journey which is currently happening at two different speeds within the sector. Many traditional organisations within the sector have not yet made this perceptual adjustment to understand who should own and drive the digital and technology agenda within their organisation. As a result, they continue to view technology primarily as an operational utility. Their current posture towards technology creates an existential risk that they will be left behind as the impacts of emerging technologies such as AI rapidly transform all sectors in the coming decade. A further complicating risk to the traditional organisations is that they will lack the requisite internal capabilities to participate in, and contribute to, the new kinds of innovation partnerships which are rapidly evolving through a convergence of the private sector with the traditional non-profit sector to form new kinds of social capital and social enterprise.

Meanwhile, it will be fascinating to observe how quickly and dramatically benefits accrue to the more progressive and farsighted organisations who have already recognised the value of stimulating innovations and digital disruption, away from but with the support of the technology function.

In support of this disruption, these organisations are also developing a strategic collaborative capability around the digital agenda to ensure they are well positioned to leverage and capitalise on emerging opportunities. Finally, the most future-ready organisations of all are doing all of these things simultaneously while undertaking a dramatic mind-shift in transitioning their culture to a start-up mentality.

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APPENDIX ONE A REFLECTIVE MEMO ON METHODOLOGY

Concerning Critical Realist theory, the Grounded Theory Methodology and their applicability to Information Systems research.

As an addendum to the core research chapters, this appendix considers the theoretical and philosophical imperatives for this research and more generally examines the opportunities and synergies afforded by the use of Critical Realist Theory and Grounded Theory as a theoretical framework for research into Information Systems.

As a new scientific discipline emerging from the natural sciences in the 1960s, much of the early Information Systems research has been traditionally underpinned by a positivist philosophy which employs an observational and deductive approach in seeking to identify logical truths. (Mingers, 2004). However, the positivist viewpoint has been extensively critiqued in the second half of the twentieth century as scientists from a variety of disciplines- by psychologists (Piaget, 1969) and philosophers (Popper, 1969; Kuhn, 1962)- who rejected the positivist orientation and instead demonstrated that we must also consider the linguistic and situational aspects of perception and observation (Kuhn, 1962) and understand how these influence our research approach. Meanwhile, Popper (1969) led the post-positivist movement in robustly rejecting the possibility of inductive verification in favour of the deductive approach of falsification.

In order to ensure that a given piece of research is correctly grounded in the literature, it is instructive to consider the concept of “theory” in an IS context.

Gregor (2006) has usefully provided a widely cited overview of the range of research approaches which have been undertaken to date into IS systems. Based on her comprehensive survey of core IS publications, she asserts that the key research IS topics can be aggregated into four main areas: defining the domain of interest, epistemological questions, socio-political questions and- foundationally- what precisely we mean when we consider the nature of theory in an IS context, a discussion which will be covered in more detail in Chapter 3.

Precisely because IS researchers approach their research from a variety of perspectives and with differing objectives, there has been considerable debate in relation to what areas the IS research discipline should concentrate on as its core focus. Indeed, some commentators (Benbasat and Zmud, 2003) have pointed to an identity crisis within the IS discipline owing to the proliferation of research approaches and the considerable overlap with related disciplines. Orlikowski and Iacono (2001) note that technology artefacts are never just mere ‘objects’, instead, they are always implicated in action and effect- in fact, technology’s very form and substance reflect the values and imperatives of its human designers. As such, technology artefacts are always embedded in a time, place and context.

In response, Orlikowski and Iacono challenge IS practitioners to undertake new research in order to develop appropriate paradigms, theories and concepts which can help to synthesise best practice in IS implementation as it evolves over time. This research seeks in a modest way to take up Orlikowski and Iacono's challenge to undertake interpretive research to examine implementation challenges and solutions to support the journey to make effective use of emerging technology within the non-profit sector.

Alternate research streams within Information Systems have been underpinned by interpretivist philosophies (which favour research approaches deriving from the social sciences, arguing that because of the situational and social contexts, the natural science cannot provide us with reliable interpretations of reality). Pragmatists noted the paramount need for science to focus on the creation of practical useful knowledge and in recent decades there has been a realisation that no single research paradigm can provide all of the required tools and methodology. (Mingers, 2004).

The pragmatist approach originated in the work of Peirce (1878) who had originally suggested a reoriented definition of the concept of science in terms of its actual practical effects. Building on Peirce, twentieth-century writers such as Dewey (1938) and Rorty (1989) have highlighted the pragmatic need for diversity of paradigms and research methods which fully recognises the social and psychological nature of scientific work.

Bhaskar as cited in Archer et al (1982) specifically rejects both empiricism and positivism arguing instead that science should be about the objects, entities and structures which ultimately cause generative mechanisms. Echoing this, Pawson and Tilly (1997) position critical realism as a scientific model which avoids and transcends the traditional epistemological poles of positivism and relativism.

As well as the primary research objectives noted in the methodology chapter, a secondary objective of the research was to examine whether the use of a critical realist ontology combined with a grounded theory methodology could provide an effective strategy to build an explanation of social processes and practices around technology deployment.

Bhaskar's critical realist approach describes how researchers must seek to identify the generative mechanisms that shape social processes and practices. Having done this, one must then seek to explain how such generative causal powers are contingent upon local emergent causal powers. Extending Bhaskar's notion of generative mechanisms, Pawson and Tilly (1997) position critical realist approaches to explanation and theory development as exploiting the continuities between the respective approaches taken by both natural and social sciences to analysing causation, as follows:

"The basic task of social inquiry is to explain interesting, puzzling, socially significant regularities (R). Explanation takes the form of positing some underlying mechanism

(M) which generates the regularity and this consists of propositions about how the interplay between structure and agency has constituted the regularity. Within realist investigation, there is also investigation about how the workings of such mechanisms are contingent and conditional, and thus only fired in particular local, historical or institutional contexts” (Pawson and Tilly, 1997)

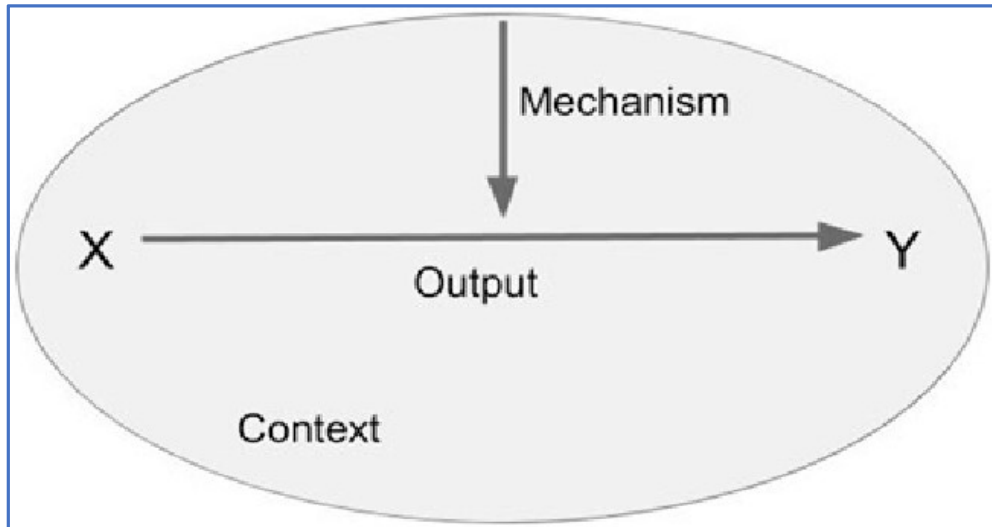


Figure 16: CMO Configuration Framework developed by Pawson & Tilly (1997)

Mingers (2004) concurs, noting that critical realism incorporates elements of positivist, interpretivist and critical perspectives, recognising the valuable potential of their respective paradigms while acknowledging the shortcomings of each.

Thus, critical realism can be an important and valid lens through which to examine Information Systems. Firstly, it allows us to adopt a pragmatic realist stance while being conscious of the shortcomings of naive realism. Additionally, in Minger’s view, critical realism aligns well with the reality of IS which is primarily an applied discipline which draws heavily on the methodologies developed in the domains of both natural and social science.

The opportunity to unite both scientific domains in an overall holistic approach which critical realism affords is extremely useful. As Pawson and Tilly (1997) observe, natural science tends to mostly follow a generative approach to causality, where events are generated by causes which are linked and therefore interdependent, whereas social science approaches tend to follow a successionist approach where a cause is viewed as event that simply than happens before an event.

Other commentators (Henfridsson and Bygstad, 2013) highlight how realism can address existing deficiencies in our understanding of how mechanisms contingently influence the evolution of digital infrastructure. They attribute the shortcomings in our comprehension of the generative mechanisms function in Information Systems to significant amounts of

Information Systems research working within either positivist or interpretivist philosophical approaches which, they argue, are inattentive to the underlying structures.

Mingers (2004) notes that the appropriate use of a critical realist approach can support and add rigour to various Information Systems research methodologies in getting beneath the surface to understand and explain why things are as they are through the use of a variety of knowledge domains such as material, conceptual, social and psychological. This flexibility can add value to the research both via quantitative paradigms based in the positivist tradition such statistical analysis, as well as through the more qualitative methodologies such as soft systems research which adopt an interpretivist approach.

Davison and Martinson (2015) note it is common for IS research approaches to be constrained to single methodology which can serve to “impoverish the improvements it can stimulate or its effect on social or organisational reality” (Davison and Martinson, 2015). Further, they argue, using a single methodology potentially creates a paucity of scholarly rigour, particularly as novice researchers may be actively discouraged with some of the more complex qualitative approaches in the interpretive tradition. Henfridsson (2015) concurs stressing the value of merging “theory-heavy” approaches with compelling narratives and story-telling.

Avgerou (2008) notes that research into Information Systems has predominantly had an uncritical preoccupation with the pursuit of corporate effectiveness to the detriment of other social issues and she advocates using the Critical Realist perspective as a suitable critical epistemology to potentially allows us to broaden the focus.

Other commentators (Roberts, 2014) point out that while critical realism affords a pragmatic approach which blends positivist and interpretivist methodologies, the quality of qualitative theory derived from critical realism can be problematic as the ontological approach can lead to a level of abstraction which does not lend itself well to practical research into real-life scenarios.

Considering Grounded Theory, Charmaz (2006) summarises it as having four key features:

Minimal preconception about the issue under study	Simultaneous data collection and analysis
Using various interpretations for data	Aiming at constructing middle range theories as the outcome of the research

Charmaz (2006) reminds us that researchers are themselves part of the world under study which in turn impacts the collected data. Consequently, researchers actively construct Grounded Theory through their engagement with people, perspectives and practices. This

concept is based on a relativist epistemology and positions methods as comparative and inductive while recognising the need for reflexivity and taking the researchers and participant's standpoints into account. (Flick, 2018). As Oliver (2011) points out, a strength of Grounded Theory is in providing the practical methodology to support critical realism's epistemological approach while also linking the research more firmly to practice.

A controversial topic in Grounded Theory concerns the sequencing of the research approach. Glaser and Strauss (1967) recommend deferral of the literature review until late in the research lest an empirical approach is tainted by exposure to the existing knowledge.

Later writers (Charmaz, 2006; Dunne, 2011) take a more pragmatic approach in view of the risk of developing wholly empirically derived theories which lack connexion to existing knowledge. Instead, they echo Thronberg (2012) who advocates what he terms 'informed grounded theory' in undertaking a literature review prior to commencing empirical research while retaining an open and reflexive attitude to the emerging empirical data. This is the strategy employed for this research where the literature review preceded and informed the design of the empirical stage of the research.

Considering the interview approach, Flick (2018) also commends the value of Grounded Theory for the development of an exploratory, practitioner-based theory, recommending researchers consider the following objectives in planning their intensive interviews:

- Purposeful selection of research participants who have first-hand experience that fits the research topic.
- In-depth exploration of the research participant's knowledge and experience of the research topic.
- Reliance on open-ended questions with the objective of obtaining detailed responses
- Emphasis on understanding the research participant's perspective, meaning and experience.
- The practice of following up on an unanticipated area of inquiry, hints, and implicit views and accounts of actions using epistemological guidelines in conducting exploratory research. (Flick, 2018)

APPENDIX TWO RESEARCH ETHICS APPLICATION

School of Computer Science & Statistics

Research Ethics Application

Part A

Project Title: How can non-profit organisations leverage the opportunities afforded by emerging technologies for social good?

Name of Lead Researcher (student in case of project work): John O'Grady

Name of Supervisor: Ms. Paula Roberts.....

Course Name and Code (if applicable): MSc in Management of Information Systems,
School of Computer Science & Statistics

Estimated start date of survey/research: 1st Jan 2019

I confirm that I will (where relevant):

- Familiarize myself with the Data Protection Act and the College Good Research Practice guidelines http://www.tcd.ie/info_compliance/dp/legislation.php;
- Tell participants that any recordings, e.g. audio/video/photographs, will not be identifiable unless prior written permission has been given. I will obtain permission for specific reuse (in papers, talks, etc.)
- Provide participants with an information sheet (or web-page for web-based experiments) that describes the main procedures (a copy of the information sheet must be included with this application)
- Obtain informed consent for participation (a copy of the informed consent form must be included with this application)
- Should the research be observational, ask participants for their consent to be observed
- Tell participants that their participation is voluntary
- Tell participants that they may withdraw at any time and for any reason without penalty
- Give participants the option of omitting questions they do not wish to answer if a questionnaire is used
- Tell participants that their data will be treated with full confidentiality and that, if published, it will not be identified as theirs
- On request, debrief participants at the end of their participation (i.e. give them a brief explanation of the study)
- Verify that participants are 18 years or older and competent to supply consent.
- Declare any potential conflict of interest to participants.
- Inform participants that in the extremely unlikely event that illicit activity is reported to me during the study I will be obliged to report it to appropriate authorities.
- Act in accordance with the information provided (i.e. if I tell participants I will not do something, then I will not do it).

Signed: John O'Grady Date 26/11/2018.....

Lead Researcher/student in case of project work

Part B

Please answer the following questions.		Yes/No
Has this research application or any application of a similar nature connected to this research project been refused ethical approval by another review committee of the College (or at the institutions of any collaborators)?		No
Will your project involve photographing participants or electronic audio or video recordings?		Yes
Will your project deliberately involve misleading participants in any way?		No
Does this study contain commercially sensitive material?		No
Is there a risk of participants experiencing either physical or psychological distress or discomfort? If yes, give details on a separate sheet and state what you will tell them to do if they should experience any such problems (e.g. who they can contact for help).		No
Does your study involve any of the following?	Children (under 18)	No
	People with intellectual or	No
	Patients	No

**School of Computer Science and
Statistics Research Ethical
Application Form**

Details of the Research Project Proposal must be submitted as a separate document to include the following information:

1. Title of project
2. Purpose of the project including the academic rationale
3. Brief description of methods and measurements to be used
4. Participants - recruitment methods, number, age, gender, exclusion/inclusion criteria, including statistical justification for numbers of participants
5. Debriefing arrangements
6. A clear concise statement of the ethical considerations raised by the project and how you intend to deal with them
7. Cite any relevant legislation relevant to the project with the method of compliance e.g. Data Protection Act etc.

Part C

I confirm that the materials I have submitted provided a complete and accurate account of the research I propose to conduct in this context, including my assessment of the ethical ramifications.

Signed:
.....26/11/2018.....

Date:

Lead Researcher/student in case of project work

There is an obligation on the lead researcher to bring to the attention of the SCSS Research Ethics Committee any issues with ethical implications not clearly covered above.

Part D

If external or other TCD Ethics Committee approval has been received, please complete below.

External/TCD ethical approval has been received and no further ethical approval is required from the School's Research Ethical Committee. I have attached a copy of the external ethical approval for the School's Research Unit.

Signed: N/A..... Date:
N/A.....

Lead Researcher/student in case of project work

Part E

If the research is proposed by an undergraduate or postgraduate student, please have the below section completed.

I confirm, as an academic supervisor of this proposed research that the documents at hand are complete (i.e. each item on the submission checklist is accounted for) and are in a form that is suitable for review by the SCSS Research Ethics Committee

Signed: Date: 22/11/18 Paula Roberts, Supervisor

Completed application forms together with supporting documentation should be submitted electronically to the online ethics system - https://webhost.tchpc.tcd.ie/research_ethics/ When your application has been reviewed and approved by the Ethics committee, hard copies with original signatures should be submitted to the School of Computer Science & Statistics, Room 104, Lloyd Building, Trinity College, Dublin 2.

APPENDIX THREE SAMPLE INTERVIEW QUESTIONS

- Can you give me a brief overview of your organisation and your current and any previous roles within the organisation?
- Do you have a formal digital transformation strategy in place?
- Does the overall organisation strategic plan reference IT?
- What's your view on how non-profits can undergo a digital transformation and automate your processes using technology while remaining true to its core mission and values?
- What do you see as the ethical and cultural challenges for an organisation like yours in implementing automation? What precautions/safeguards might be needed here?
- What kinds of IT or digital projects has your organisation implemented which have used automation to date?
- How have these projects gone, and what has the uptake/response been like?
- What difficulties and/or challenges have you encountered?
- Where does the mandate to modernise come from, is that driven by management in a top-down way, or by the ICT team in demonstrating what technology can do, or is it a bit of both?
- Do you think implementing automation and delivering digital transformation in non-profit organisations is different to the private sector?
- Is your organisation ready for more technology deployment right now and do you have the skills and resources available?
- What are your plans in relation to automation and digital transformation for the next 3-5 years?
- What about the wider non-profit sector? What impacts do you think automation will have on the sector over the next 3-5 years?
- You hear various predictions about the future of automation- 'robots taking all our jobs etc' What impact do you think this will have in the longer term for your organisation in the longer term- say 10-20 years?
- And the wider sector, what impacts do you think automation will have on the sector in the next 10-20 years?
- How would you benchmark your own organisation right now versus other non-profit organisations in relation to automation and other digital/ technological opportunities?
- Do you partner with or receive technology or financial support/ donations from any of the large technology companies through their corporate social responsibility, software donations or similar programmes?
- If so, what's your experience of this been like? How could they do more to help?
- Any other observations which you feel are relevant to the subject of automation in your organisation?



M.Sc. Management of Information Systems

APPENDIX FOUR INFORMATION SHEET INTERVIEW PARTICIPANTS

Research Title:

How can non-profit organisations leverage the opportunities afforded by emerging technologies for social good?

Researcher: John O'Grady

Contact Details: Email: ojohn@tcd.ie

You are invited to participate in this research project which is being carried out by John O'Grady as part of a dissertation for the **MSc in Management of Information Systems**. This MSc course is a **taught masters** course delivered by the **School of Computer Science & Statistics** at Trinity College Dublin.

Background:

This research aims to assess the **opportunities and barriers** faced by non-profit organisations in transforming their operations to make use of the automation efficiencies afforded by emerging technologies such as Artificial Intelligence and Machine Learning.

Interview Arrangements:

The interview structure consists of a number (approximately 15) semi-structured interview questions around the theme of automation in the not profit sector. Each interview will take approximately 30-40 minutes and will be conducted in person or over Skype as convenient to the participant.

Meeting Recordings/Transcripts/ Notes

Where meetings take place in person, the researcher will seek permission from participants to record the audio of the meeting. Where meetings take place over Skype, the researcher will seek permission from participants to record the Audio and Video stream of the meeting via Skype's inbuilt meeting recording functionality. If this permission is granted, the researcher will store the meeting recordings securely on the researcher's personal laptop while work on the dissertation remains ongoing. This device is encrypted, password protected and will always be kept at the researcher's home. The researcher will create written transcripts of the recordings and will process the recordings using software to conduct qualitative data analysis to thematically analyse the recordings. All recordings and transcripts will be permanently deleted on or before 1st November 2019.

Voluntary Nature of Research Participation/ Consent for Recordings.

Participation in this research is **entirely voluntary** and interviewees may withdraw from their participation in the research **at any time and for any reason**. Additionally, participants have the right to withdraw their consent for the making or storage of interview recordings and/or transcripts either during or after their participation in the interview and the researcher will destroy these immediately upon request. Finally, participants are entirely at liberty to decline to answer individual questions or questions in a given subject area, while otherwise continuing their participation.

Recordings/ Transcripts of Interviews/

The researcher undertakes to make available copies of all recordings and transcripts from an individual interview meeting to the participant in question upon request. The researcher undertakes to immediately permanently destroy recordings and transcripts of a meeting should a participant notify their wish to withdraw from the research process prior to its completion. All recordings, transcripts and notes will be permanently deleted on or before 1st November 2019.

Debriefing/ Review of draft dissertation/ copies of the final dissertation

The researcher will provide a draft copy of the sections of the dissertation which relate to an individual participant's interview to the participant by email for review and comment prior to the dissertation being finalised. Also, the researcher will upon request provide a copy of the final dissertation research document by email. Finally, the researcher is happy to have a follow-up meeting to discuss his research findings with interview participants if required.

Participant and Organisational Anonymity

Contextual information about either the interview participant or their organisation will only be provided in a generalised fashion. No participant or their organisation will be directly identified in the published research in a way through which they could be personally identifiable. For example, an individual participant might be identified as an 'Participant A: works in a management IT role in a mid-sized national organisation' and subsequently referred to as 'Participant A' throughout the published research document.

Verification/Confirmation of Direct Quotations

Where the researcher plans to use any direct quotations from the interview transcripts, these will be identified to the participant along with a general overview of the context in which the quotation is being used. Participants will be afforded an opportunity to verify and correct any direct quotations or alternatively to stipulate that the quotation(s) in question should be amended or not be used at all.

Third Parties/ Sensitive Information

It is the responsibility of participants to ensure they obtain any required internal clearances from their organisation before the interview takes place. Participants should exercise particular care in not disclosing any potentially sensitive information, commercial or otherwise, and should not refer to any third parties in their responses to the interview. The researcher may where necessary take

further steps to anonymise or generalise interview responses to ensure the privacy of third parties and of any potentially sensitive information.

Illicit Activities

Any information disclosed to the researcher or which otherwise comes to light directly through the research in relation to illicit activities will be disclosed immediately to the appropriate statutory authorities.

Conflicts of Interest

Participants should be aware that the researcher currently works as Head of ICT for the Irish Wheelchair Association, a large not for profit organisation operating in the Republic of Ireland. The researcher is currently working on and involved in the tendering and procurement for a range of automated-related information technology projects as part of a digital transformation programme which is underway within the Irish Wheelchair Association.

Data Security

The data gathered through this interview process will be stored on the researcher's personally owned Apple MacBook Pro laptop. This laptop is encrypted, password protected and kept at the researcher's home at all times. Access to the data will be restricted to the researcher who will be solely responsible for the subsequent analysis which will be fully conducted in accordance with the Data Protection Acts 1988 to 2018 incorporating Regulation (EU) 2016/679 of the European Parliament (commonly known as the General Data Protection Regulation)



APPENDIX FIVE: PARTICIPANT INFORMED CONSENT FORM

BACKGROUND OF RESEARCH: This research will seek to interview a number of Information Technology leaders and professionals within the Irish and U.K. non-profit sector in order to understand the existing penetration of automation-related technology within the sector as well as seeking their views on challenges and barriers encountered in implementing automation and potential solutions to these issues.

PROCEDURES OF THIS STUDY: The structure of the research will take the form of a semi-structured interview lasting approximately 30-45 minutes which will explore the themes the existing penetration of automation-related technology within the non-profit sector. Subject to participant's consent, the interviews will be recorded and transcribed for analysis. Any direct quotations from the interviews which the researcher proposes to use in the published dissertation will be notified to the participant concerned for review prior to publication. No participant or their organisation will be directly identified in the published research in a way through which they could be personally identifiable. For example, an individual participant might be identified as 'Participant A: works in a management IT role in a mid-sized national organisation' and subsequently referred to as 'Participant A' throughout the published research document.

PUBLICATION: This research forms the primary research element of a dissertation into automation in the non-profit sector which is being prepared for submission to Trinity College Dublin as part of the taught MSc Masters in Management of Information Systems. Participants are advised that the results of this research might also be published in relevant academic journals or conferences. By signing this consent form, participants are agreeing that the results of the research may be used within the published dissertation which the researcher is currently working on and may be published in relevant academic journals or conferences provided that the identity of participants is not revealed.

DECLARATION:

- I am 18 years or older and am competent to provide consent.
- I have read or had read to me, a document providing information about this research and this consent form. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction and understand the description of the research that is being provided to me.
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.
- I have been advised that no information that is of a sensitive nature (commercially or otherwise) should be disclosed during the interview and no third parties should be referenced.
- I understand that if I make illicit activities known, these will be reported to appropriate authorities.
- I understand that I may stop electronic recordings at any time and that I may at any time, even subsequent to my participation have such recordings destroyed (except in situations such as above) otherwise recordings will be permanently destroyed no later than 1st November 2019.
- I understand that subject to the constraints above, no recordings will be replayed in any public forum or made available to any audience other than the current researchers/research team.
- I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.
- I understand that I may refuse to answer any question and that I may withdraw at any time without penalty.
- I understand that my participation is fully anonymous and that no personal details about me will be recorded.
- I have received a copy of this agreement.

Participant's Name	
Participant's Signature	
Date	

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

RESEARCHERS CONTACT DETAILS: John O'Grady Email: ojohn@tcd.ie

Researcher's Signature		Date
------------------------	--	------

APPENDIX SIX: RESEARCH PROPOSAL

Student:

John O'Grady

Student ID:

Programme:

MSc in Management of Information Systems

Supervisor:

Ms Paula Roberts

School:

School of Computer Science and Statistics, TCD

Title of project:

How can non-profit organisations leverage the automation opportunities afforded by emerging technologies for social good?

Purpose of project

This research is being undertaken to establish whether Artificial Intelligence, Machine Learning and other related automation technologies are sufficiently mature for exploitation in the not for profit sector. It will seek to employ an applied approach in critically examining the cultural fit in reconciling the use of ICT technologies (particularly those related to automation) with the person-centred approach commonly adopted by most not for profit organisations.

The researcher is undertaking this research to identify and synthesize exemplars of good practice in implementing automation related projects in non-profit organisations. This is a topic which is highly relevant to current professional challenges faced by the researcher in his role as Head of ICT at Irish Wheelchair Association, a large Irish non-profit organisation which employs 2,600 staff to provide a range of innovative person-centred services to persons with physical disabilities.

At present, the researcher is working with senior colleagues across Irish Wheelchair Association to develop a long-term ICT strategy focussed on an ambitious and organisation-wide digital transformation.

Brief description of methods and measurements to be used

The three main research approaches to be employed in this dissertation research are envisaged as follows:

- Literature review examining
 - exemplars of good practice in relation to deployment of automation technologies, particularly in the non-profit sector
 - Theories of information systems relevant to the deployment of automation including relevant sociological theories such as Sen's Capabilities Approach.
 - Lessons and insights which can be learned from ICT4D [ICT for Development], a related research area which can provide useful theories and models in using Information and Communication technologies to improve the living standards of people living in the developing world.
 - Specific opportunities, forecasts and exemplars for Artificial Intelligence automation from the wider business domain.
- Interviews with information technology leaders and professionals working at other non-profit organisations in Ireland and the U.K.
- An applied case study approach focussed on some automation prototyping projects which are underway at the Irish Wheelchair Association

Participants

In general terms, the researcher will seek to explore interviewees' views in relation to the current state of penetration of Artificial Intelligence and Automation as well as their perception of cultural and ethical considerations around the use of these technologies.

Category A interviews

The first category of participants will be leaders or mid-level professionals working in the Information Technology or related domains at medium or large non-profit organisations. The researcher works as Head of the ICT function at this employer, Irish Wheelchair Association has built up an informal network through cooperative projects, industry events and LinkedIn with various other managers who lead the IT functions at other medium and large non-profit organisations in Ireland and the U.K. Subject to ethical approval from the TCD Research Ethics committee the researcher hopes to be able to complete semi-structured interviews with approximately 6 participants from this network who meet the above criteria.

Category B interviews

The second category will be members of the project team at Irish Wheelchair Association who are involved in scoping and delivery of the particular automation prototyping projects which are the subject of the dissertation case study. Subject to ethical approval from the Irish Wheelchair Association and the TCD Research Ethics committee, it is envisaged that the researcher would conduct approximately 4 to 6 semi-structured interviews with various members of the project team who will be drawn from the IT, Human Resources, finance and service delivery teams at IWA. These interviews will focus primarily on the experience of taking part in the automation project, the participant's perspective on automation technology's future potential at Irish Wheelchair Association.

Debriefing arrangements

Participants will be provided with a detailed information sheet prior to taking part in the interview process, will be encouraged to ask questions and receive clarifications about the research process and will be requested to sign an informed consent form prior to the interview

commencing. Participants will be advised that copies of the interview transcript and the final draft dissertation will be made available to them in soft copy upon request. Any direct quotations from their interview which the researcher proposes to use in the dissertation document to be published will be notified to the participant by email prior to the dissertation being finalised and the participant will be given an appropriate opportunity to comment, make amendments or specify that the quotation should not be used by the researcher in the dissertation document. Finally, all participants will be notified that a copy of the finalised dissertation document will be made available to them in soft copy upon request and the researcher will make himself available to discuss his research findings with interview participants if required. All recordings and transcripts will be permanently deleted on or before 1st November 2019.

Ethical Considerations

The researcher considers the following to be the main ethical considerations for the proposed research and will undertake the mitigation actions noted to minimise any ethical concerns or potential risks to participants in the risk

Ethics/ Risk Area	Mitigation Approach
Risk that an interviewee's privacy would be compromised through their participation in the research	The researcher is well versed in current data protection legislation and has recently attended a one-day intensive GDPR course run by LaTouche Training. The researcher will exercise particular caution around the identification of any individual's personal data in the published research document. All references to any individual or organisation in the published dissertation will be framed in such a way as to prevent identification of the individual or organisations e.g. Participant C/ Organisation A etc. The researcher will also explicitly consider whether the contextual information disclosed by or about individuals in the published dissertation could inadvertently result in the identification of any individual and where necessary will take further steps to anonymise or redact information to mitigate this risk. At the conclusion of the research, all personal data will be permanently deleted on or before 1 st November 2019.
Risk that an interview participant would disclose information that is sensitive to their organisation, whether commercially or otherwise.	The researcher will highlight in the information sheet and in the consent form for participants that no sensitive information should be revealed during the interview. Should an interviewee provide any information during the interview which the researcher feels might potentially be of a sensitive nature, he will remind the participant of the need to avoid disclosing any sensitive information. Such information will then be redacted from the interview transcripts. Finally, where the researcher is proposing to

	<p>use any direct quotations from an interview the proposed quotation/ section will be sent to the relevant interview participant for review prior to its inclusion in the final dissertation document. At this point, the researcher will provide the participant with an explicit opportunity to clarify, amend or redact the information to prevent disclosure of any potentially sensitive information.</p>
<p>Risk that an interview participant would disclose personal information in relation to an individual impacted by the services their organisation delivers.</p>	<p>Should an interview participant begin to discuss any item pertinent to the work of their organisation with specific individuals, the researcher will guide the interview back to the general topic of automation impacts, advising the interview participant that the focus of the research is around the process of delivering automation projects and not the organisation's work with specific individuals. Any such content related to individuals will be redacted from the interview transcripts.</p>
<p>Risk that an interview participant would disclose information about a third party.</p>	<p>The researcher will highlight in the information sheet for participants and in the consent form that references to any third party should not be revealed during the interview. Should an interviewee inadvertently provide information about a third party during the interview, the interviewer will remind the participant of the need to avoid disclosing any sensitive information. Such information will be redacted from the interview transcripts.</p>
<p>Risk of data loss concerning personally identifiable information about interview subjects while the research is ongoing</p>	<p>All notes, data, recording, transcripts and analysis materials concerning the research will be stored on the researcher's personal laptop. This device is encrypted, password protected and is not accessible by any other individual. This device is always kept securely at the researcher's home. Once the research work has been fully completed, all notes, materials, recordings, transcripts and other collateral concerning the research will be permanently deleted no later than 1st November 2019 in a way that will not be recoverable.</p>

Relevant legislation

The researcher considers that the following legislation to be relevant to the proposed research and will adopt the noted approach in order to mitigate any data protection risk to individuals impacted by the research.

Relevant Legislation	Method of compliance
Data Protection Acts 1998 and 2003	The researcher has familiarised himself with the key provisions of currently applicable EU data protection legislation and will take appropriate steps to protect the privacy of individuals impacted by this research. This includes secure storage of all materials and notes concerning the research project on an encrypted and password protected laptop which will be securely stored at the researcher's home. Following completion of the research, all data will be securely and permanently deleted no later than 1 st November 2019.
EU General Data Protection Regulation	

Indicative Semi-structured Questions

CATEGORY A INTERVIEWS:

Interview participants working at other non-profit organisations

Participant profile:

Leaders or mid-level professionals working in the Information Technology or related domains at medium or large non-profit organisations.

Selection Approach:

Selected by invitation from the researcher's existing network of contacts working in similar roles at other non-profit organisations

Indicative Questions:

The following is an indicative list of the kinds of semi-structured interview questions which the researcher envisages putting to interview participants who work at other non-profit organisations.

- Can you give me a general overview of your organisation and your current and any previous roles within the organisation?
- Does your organisation have a digital transformation plan or a similar programme in place? If not, do you have an overall strategic plan for your organisation and what part does IT/automation currently play in that plan?
- What's your view in relation to how organisations like your own can modernise and move to a digital-first approach to its operations with elements of automation while remaining true to its core mission and values?
- What do you see as the ethical and cultural challenges for an organisation like yours in implementing automation? What precautions/safeguards might be needed here?
- What kinds of IT or digital projects has your organisation implemented which have used automation to date?
- How have these automation related projects gone? What has the uptake/ reaction to it been like?
- What challenges or difficulties have you encountered?
- Do you think implementing automation in non-profit organisations is different to the private sector?
- Is your organisation ready for automation right now and do you have the skills and resources available?
- What are your plans in relation to automation for the next 3-5 years?
- Do you expect that automation will have a big impact on your organisation in that timeframe?
- What about the wider non-profit sector? What impacts do you think automation will have on the sector over the next 3-5 years?
- What about the longer-term perspective? What impacts do you think automation will have on the sector in the next 10-20 years?
- How would you benchmark your own organisation right now versus other non-profit organisations in relation to the way it is currently exploiting or planning to undertake automation opportunities?
- Do you partner with or receive technology or financial support/ donations from any of the large technology companies through their corporate social responsibility, software donations or similar programmes?
- If so, what's your experience of this been like? How could they do more to help?
- Any other observations which you feel are relevant to the subject of automation in your organisation?

- Is there any potentially sensitive or proprietary information which we've discussed in relation to your organisation which I need to be careful not to disclose from our discussion today?

CATEGORY B INTERVIEWS:

Interview participants from the project team working at Irish Wheelchair Association.

Participant profile:

Members of the project team at Irish Wheelchair Association who are involved in scoping and delivery of the automation prototyping projects.

Selection Approach:

Selected by invitation from members of the Irish Wheelchair Association project team working on automation projects.

Indicative Questions:

The following is an indicative list of the kinds of semi-structured interview questions which the researcher envisages putting to interview participants who work at the Irish Wheelchair Association.

- Can you give an overview of your own role in the automation project?
- From your perspective, how has the project gone?
- Before the project got started, what were your own feelings about automation?
- What were your expectations about how the project would run and what impact it would have?
- What has actually happened as the project developed?
- What has the user adoption/uptake been like?
- Looking back, what could the project team have done differently to help the project or improve its impact?
- What's your view in relation to organisations like Irish Wheelchair Association can modernise and move to a digital-first approach to its operations with elements of automation while remaining true to its core mission and values around person-centredness?
- What do you see as the ethical and cultural challenges for an organisation like the Irish Wheelchair Association in implementing automation? What precautions/safeguards might be needed here?
- Do you feel that Irish Wheelchair Association is ready for automation right now? Do think that it will have a big impact on the Irish Wheelchair Association in the next 3-5 years?
- What about the longer-term perspective? What impacts do you think automation will have on the Irish Wheelchair Association in the next 10-20 years?
- How would you benchmark Irish Wheelchair Association right now against other non-profit organisations in relation to the way it is currently exploiting or planning to undertake automation opportunities?
- Does Irish Wheelchair Association partner with or receive technology or financial support/ donations from any of the large technology companies through their corporate social responsibility, software donations or similar programmes?
- What about the wider non-profit sector- how will automation impact in the medium to long-term on how non-profit organisations deliver services?
- Do you think implementing automation in an organisation like Irish Wheelchair Association is different to the private sector?
- Has the experience of working on an automation focussed project changed your attitude to automation?

- Any other observations which you feel are relevant to the subject of automation at Irish Wheelchair Association?
- Is there any sensitive or proprietary information which we've discussed in relation to Irish Wheelchair Association which I need to be careful not to disclose from our discussion today?

**APPENDIX SEVEN: LIST OF LARGEST 30 IRISH CHARITIES
(SOURCE: SELECTED FROM THE PUBLIC REGISTER OF
CHARITIES IRISH CHARITIES REGULATOR, 2019)**

Charity Name	2017 income €m
Concern Worldwide	191.6
St. John of God Community Services CLG	158.1
GOAL	106.2
St Michael's House Group	96.7
St. Vincent de Paul - Council of Ireland	82.2
Cope Foundation	64.5
Trocaire	62.5
Irish Wheelchair Association	56.4
Muiriosa Foundation	56.4
RehabCare	55.2
Enable Ireland Disability Services	53.9
Stewarts Care Ltd	53.5
Cluid Housing Association	43.1
Western Care Association	34.7
Sunbeam House Services	29.8
Focus Ireland	28.6
Ability West	26.9
Irish Cancer Society.	26.9
Crosscare- The Catholic Social Service Conference.	25.6
Barnardos - Republic of Ireland Limited	24.8
Peter McVerry Trust Limited	24.5
Foroige The National Youth Development Organisation	23.4
Tuath Housing Association Limited	23.1
Gorta	22.7
KARE- Promoting Inclusion for People with Intellectual Disabilities	22.1
Central Remedial Clinic	20.4
Oxfam Republic of Ireland	19.7
Dublin Simon Community	19.1
NCBI (National Council for The Blind) Group	17.1
Ghala Limited	17.1

Misean Cara	15.5
Co-operative Housing Ireland Society Limited	15.3

APPENDIX EIGHT DEDOOSE ANALYTIC CODES USED		
Cultural/Ethical/Reputational Issues		Organisation Culture
		Change Fatigue
		Conflict of Interest- Partnerships vs Core Values
		Cultural differences between different countries
		Grassroots driving strategic direction
		Head office "Top-Down Approach"
		Resistance to change
		Risk Averse Stance
		training in volunteer-led organisations
	Risk Issues	
		Increased cybersecurity risk
		Integrating digital rights in programming
		Use of ICT to manage risk
Data		
	Business input to reports design	
	Business/Operations focus on data quality	
	Capturing Activity Data	
	Data informing advocacy and campaigns	
	Demonstrating impact	
	Programme Evaluation	
	Remote access to data	
Donors/Funders		
	Funder reporting/compliance requirements	
	Mandate to invest in Technology	
		Donor Mandate/Funding to invest in tech
	requirement to align with funder MIS	
Drivers of Automation/Transformation		
	Automating Procurement	
	Demonstrating Transparency	
	Digitisation of documents	
	Empowering local innovation	
	Finding Operational efficiencies	
	Fraud Reduction	
	Fundraising	
	Good Communication about benefits	
	Improved Logistics	
	Mobile First Approach	
	Reducing Costs	
	Refresh of website linked to Digital Transformation	
Emerging Technology Exemplars		

	Blockchain	
	Chatbots	
	IOT	
	Use of GIS/GPS	
Financial		
	Challenge in showing realised benefits	
	Cost of Professional Services	
	High Cost of Strategic Projects	
	Limited budgets	
	Limited funding to Innovation/Pilot	
	Negative Perception of spend on ICT	
	Risk of losing funding due to legacy process	
Fundraising& Campaigning		
	Improve Fundraising	
	Improving campaign effectiveness	
	tech supporting grassroots	
	tech unifying affiliate orgs	
Implementation Issues		
	Business Process issues	
		Business Analyst roles
		Business Ownership of Project Benefits
		Business process mapping
		Business/Process champion
		Scope definition
	Project Delivery Challenges	
		connectivity challenges
		Dispersed user group
		Feasibility/ Scalability
		Local IT not under HQ control
		Managing complexity
		Need for documentation/training
		Poor Change Management
		Regulation & Compliance
		Scale of Operations/Budgets
		Short term planning cycles
		Slow time to delivery
		supporting new tech internally
	Success Factors	
		Ability to be agile
		Effective UAT
		Embracing different perspectives/resistance
		fast-tracking change
		Governing local Innovation
		Increased professionalism

		Inviting innovation ideas
		Seeing impact of work
		setting realistic objectives
		Tech formalising ad hoc processes
		Testing/Delivery cycles
		Use of small-scale pilots
		Visibility of successful projects
Leadership/ Management Issues		
	Business input to ICT planning	
	change of SMT	
	Communicating Shared Vision	
	Digital Transformation	
	Good Change Management Governance	
	ICT governance group	
	IT Alignment to Strategy	
	IT seen as utility	
	Lack of Strategic Vision for ICT	
	Management Recognising the Strategic Importance of ICT	
	Management support to transformation projects	
	Permission to be disruptive	
	Poor planning/prioritisation	
	Previously failed projects	
	Short Term ICT planning	
	Strategic Investment in ICT	
	Visionary Leadership	
Opportunities (Sectoral)		
	Acting locally, thinking and coordinating globally	
	Better internal communications	
	Citizen science driving engagement	
	codifying and sharing good practice	
	Combining human and machine intelligence	
	Community-led solutions/Open Source	
	Disintermediation	
	Exemplars from the wider sector	
	Mainstreaming digital	
	making the tech invisible	
	Meaningful knowledge-based partnerships	
	New business/partnership models	
	New kinds of Organisations	
	outsourcing, shared services, collective procurement	
	Sectoral Groups	
Organisation Structure		
	Disjointed/ Siloed Innovation	
	ICT Governance without the business	
	ICT4D not aligned to ICT team	

	Job Displacement	
Privacy/Data Protection		
	Ensuring data use is safe for data subjects	
	GDPR/ DP compliance	
	Not considering AI risks	
Resourcing		
	Capacity building	
	Lack of Key Personnel	
	Limited ICT resources	
	ICT planning linked to ICT team structure	
	Recruitment /Retention of ICT staff	
	Skills Gaps	
	Stability of IT team	
Stakeholders		
	Active vs Passive Engagement	
	Link to customers/social media	
	Mistaking social media interaction for meaningful engagement	
	Self-service tools	
	Stakeholder Engagement	
Technology Issues		
	Defining use case for AI	
	Horizon Gazing	
	Lack of Value for ICT operations	
	Missing systems- HR/ERP	
	Separation of ICT ops and projects	
	Shadow IT	
Technology Partners		
	Donation of Software as enabler	
	Lack of engagement by NGOs with partners collaboration initiatives	
	Tech/ NGO misalignment	
	Technology Partnerships	
	Working through local partners and resellers	