

The Impact of Digital Transformation on Higher Education Institutions in Ireland: A Managership Perspective

Michael Hanley

Doctor of Education

Maynooth University

Department of Education

August 2025

Head of Department: Dr Maija Salokangas

Supervisors: Dr Maija Salokangas; Dr Rose Dolan

This thesis has been prepared in accordance with the PhD regulations of Maynooth University and is subject to copyright. For more information see PhD Regulations (December 2022).

Table of Contents

List of Tables.....	vii
Table of Figures	ix
Abstract	xi
List of Acronyms	xii
Dedication.....	xvii
Acknowledgements.....	xviii
<i>Chapter 1 Introduction</i>	<i>1</i>
1.1 Overview.....	1
1.2 Problem Statement	2
1.3 Research Aim, Objectives, and Questions.....	3
1.4 Rationale for the Study	4
1.5 Significance of the Study.....	4
1.6 Contribution to Knowledge	5
1.7 Research Approach	6
1.8 Conceptual Framework	6
1.9 Structure of the Thesis	7
1.10 Conclusion.....	8
<i>Chapter 2 Literature Review.....</i>	<i>11</i>
2.1 Literature Review Strategy	12

2.2 The Literature Review	20
2.3 Themes, Gap Analysis, and Research Questions.....	53
2.4 Conclusion.....	57
<i>Chapter 3 Conceptual Framework.....</i>	<i>58</i>
3.1 Introduction	58
3.2 The Need for a Conceptual Framework.....	58
3.3 Theoretical Foundations	62
3.4 Key Concepts Emerging from the Literature and Theory	68
3.5 Conceptual Framework Development.....	73
3.6 Digital Transformation as a Dynamic Process	85
3.7 Conclusion.....	88
<i>Chapter 4 Research Methodology</i>	<i>89</i>
4.1 Introduction	89
4.2 Research Questions, Aims, and Objectives	89
4.3 Researcher Positionality	89
4.4 Undertaking Ethical Research	93
4.5 Research Paradigm	94
4.6 Mixed Methods Research	99
4.7 Research Context, Scope, and Sample Population.....	101
4.8 Delimitations	108
4.9 Research Design.....	109

4.10 Data Collection and Validity	116
4.11 Conclusion.....	120
<i>Chapter 5 Results and Findings</i>	123
5.1 Introduction	123
5.2 Drivers of Digital Transformation in Irish Higher Education Institutions (Research Question 1)	123
5.3 Operational and Cultural Influences on Digital Transformation in Irish Higher Education Institutions (Research Question 2).....	137
5.4 The Impact of Digital Transformation on Higher Education Institutions in Ireland (Research Question 3)	148
5.5 Conclusion.....	161
<i>Chapter 6 Discussion</i>	162
6.2 Dynamics of Digital Transformation in Irish Higher Education Institutions (Research Question 1)	163
6.3 Dimensions of Digital Transformation in Irish HEIs (Research Question 2).....	173
6.4 Destinations of Digital Transformation in Irish HEIs (Research Question 3)	188
6.5 Conclusion.....	203
<i>Chapter 7 Conclusions</i>	204
7.1 Introduction	204
7.2 Summary of the Research.....	204
7.3 Theoretical Contributions	209
7.4 Methodological Contributions.....	211
7.5 Contribution to Policy.....	213

7.6 Contribution to Practice	215
7.7 Summary	218
7.8 Delimitations and Limitations.....	218
7.9 Future Research Agenda	220
7.10 Closing Thoughts.....	222
Bibliography.....	223
Appendices	295

List of Tables

Table 2.1 Literature Review Criteria (adapted from Gerousi et al. (2022) Source: Author's own work	14
Table 2.2 Subsequent citation search terms Source: Author's own work	17
Table 2.3 Chronological evolution of Digital Transformation Practice Themes (Source: Author's own work)	21
Table 2.4 A Typology of Institutional Change Source: Gerschewski (2016).....	32
Table 2.5 Chronological list of technology adoption models Source: Author's own work	36
Table 2.6 New Public Management doctrines Source: Hood (1995, pp. 95-97).....	50
Table 2.7 Research question domains mapped to research themes identified in the literature review Source: Author's own work	56
Table 3.1 Key theories for understanding digital transformation in HEIs Source: Author's own work	63
Table 3.2 Conceptual Constructs of Value in Higher Education Institutions Source: Adapted from Benington & Moore, 2011; Che Mat & bin Hj Mohd Shah, 2006; Melville et al., 2004; Moore, 1995.....	72
Table 3.3 Conceptual Framework Analysis Method Source: Jabareen (2009)	74
Table 3.4 Summary of Validation Activities for the HEI-DT Conceptual Framework Source: Author's own work	77
Table 3.5 HEI-DT components' ideal types characteristics Source: Author's own work.....	79
Table 3.6 HEI-DT framework components Source: Author's own work.....	81
Table 4.1 HEI-DT conceptual framework reflects critical realism's stratified reality across the Real, Actual, and Empirical domains Source: Author's own work	97

Table 4.2 Distribution of Students in Irish HEIs Source: HEA, 2023a	101
Table 4.3 Typical Irish HEI Leadership Hierarchy Source: O'Connor, 2023.....	102
Table 4.4 Simplified example of a RACI Matrix for Participant Selection and Prioritisation. Source: Author's own work.....	104
Table 4.5 Inclusion and exclusion criteria for candidate respondents in Irish HEIs Source: Adapted from Ball et al., 2011	104
Table 4.6 Summary of Participant Selection via RACI Framework Source: Author's own work	106
Table 4.7 Phase 1 Survey Respondent Demographics (n=22) Source: Author's own work .	106
Table 4.8 Phase 2 Interview Participant Demographics (n=14) Author's own work.....	108
Table 4.9 Questionnaire structure distributed by topic Source: Author's own work	110
Table 4.10 Adapted IVI IT-CMF Capability Maturity Curve mapped to Importance Source Innovation Value Institute (2023).....	113
Table 4.11 Pilot Reviewers' Expertise Profile. Reviewers participated in both survey and interview validation processes Source: Author's own work.....	114
Table 4.12 Semi-structured interview guide Source: Adapted from IVI's Digital Readiness Assessment (2019) interview guide	115

Table of Figures

Figure 2.1 PRISMA Workflow for literature search Source: Author's own work.....	18
Figure 2.2 Connected Papers bibliometric mapping software showing the citation network for Vial's (2019) landmark paper. Source: Author's own work.....	19
Figure 2.3 Comparing Traditional Public Administration and New Public Management Source: Adapted from Dunleavy & Hood, 1994	41
Figure 3.1 Action-on-arrow diagram connecting theories underpinning the HEI-DT conceptual framework Sources: DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Pfeffer & Salancik, 1978; Teece, 2007; Weick & Quinn, 1999. Adapted by the Author.....	64
Figure 3.2 Conceptual Framework Agile Development Process Source: Author's own work	75
Figure 3.3 'Higher Education Institution Digital Transformation Conceptual Framework': a capability-based conceptual model for HEI digital transformation Source: Author's own work	84
Figure 4.1 An iceberg metaphor for three domains of reality represented in critical realism. Source: Brunson et al. (2023)	95
Figure 4.2 High-level view of the conceptual framework for this study Source: Author's own work	96
Figure 4.3 Research design for this study Source: Author's own work, adapted from Ivankova et al., 2006.....	110
Figure 4.4 Example of IT-CMF capability question, excerpted from the Strategic Planning (SP) question set Source: Innovation Value Institute, 2023	112
Figure 4.5 Validity calculation for the survey data Source: Author's own work.....	117
Figure 4.6 Phases of the Template Analysis process. Source: Author's own work, adapted from Brooks et al., 2015; King, 2012	119

Figure 6.1 Component-level view of the HEI-DT conceptual framework Source: Author's own work	162
Figure 6.2 Higher Education Institution Digital Transformation Conceptual Framework: Zone of Current State Source: Author's own work	164
Figure 6.3 Higher Education Institution Digital Transformation Conceptual Framework: Zone of Proximal Digital Transformation (with input ZCS components highlighted) Source: Author's own work	174
Figure 6.4 Higher Education Institution Digital Transformation Conceptual Framework: Zone of Distal Digital Transformation Source: Author's own work	188
Figure A.1 Mapping research questions to research themes. Source: Author's own work ...	297

Abstract

This study investigates the drivers, organisational readiness, and outcomes of digital transformation in publicly funded Higher Education Institutions (HEIs) in Ireland. It explores how Irish HEIs navigate digital transformation. While digital transformation is critical for organisational efficiency, and public value realisation, existing research often neglects its strategic, operational, and cultural dimensions, particularly from the standpoint of HEI managers responsible for the pragmatic translation of governance into practice amid competing global and local priorities.

To address these gaps, this study employs a critical realist ontology and introduces the HEI-DT conceptual framework, which conceptualises digital transformation as an emergent, non-linear process shaped by multi-dimensional factors. Using mixed methods, the study synthesises survey and interview data. It finds that Irish HEIs experience three concurrent change types: exogenous rapid (e.g., COVID-19 adaptation), exogenously driven gradual (e.g., policy-driven mergers), and endogenous gradual (e.g., ongoing digitalisation). However, organisational inertia, power asymmetries between leadership and academics, and resistance to change limit HEIs' ability to undertake more ambitious transformations. Structural and resource constraints, compounded by managerialist governance that conflates efficiency with institutional legitimacy, further constrain digital transformation efforts.

This study advances theoretical, practical, and policy-based understandings of HEI digital transformation. The HEI-DT framework offers a novel approach to conceptualising digital transformation. By adopting a critical realist ontology, the study examines the external forces and internal organisational factors shaping digital transformation. Recommendations include employing mixed-methods research grounded in critical realism, and utilising the HEI-DT framework to guide digital transformation initiatives. The study advocates for a shift from metric-driven, top-down governance to context-sensitive, values-based policy that safeguards academic autonomy and public value. Emphasising collaborative leadership, stakeholder partnerships, and regional engagement, it highlights the importance of co-designing digital strategies to ensure alignment with HEI missions. These contributions offer a pragmatic foundation for advancing sustainable digital transformation in higher education.

Keywords: Digital transformation; Higher Education Institutions; organisational change; Critical realist ontology; conceptual framework; public value; Ireland

List of Acronyms

AACODS: Authority, Accuracy, Coverage, Objectivity, Date, and Significance

ADAPT Centre: AI-Driven Digital Content Technology Centre

AI: Artificial Intelligence

BERA: British Educational Research Association

CFA: Conceptual Framework Analysis

CFTT: Comprehensive Framework for Teaching with Technology

CIO: Chief Information Officer

CMF: Capability Maturity Framework

CMM: Capability Maturity Model

CMMI: Capability Maturity Model Integration

COVID-19: Coronavirus Disease 2019

CRM: Customer Relationship Management

CT: Computed Tomography

CX: Customer Experience

DCU: Dublin City University

DFHERIS: Department of Further and Higher Education, Research, Innovation and Science

DPER: Department of Public Expenditure and Reform

DT: Digital Transformation

EdTech: Educational Technology

EEI: Executive Education Institute

EU: European Union

EY: Ernst & Young

GDPR: General Data Protection Regulation

HCI: Human Capital Initiative

HE: Higher Education

HEA: Higher Education Authority

HEDC: Higher Education Digital Capability Framework

HEI-DT: Higher Education Institution Digital Transformation

HEI: Higher Education Institution

HELMA: Higher Education Leadership, Management and Administration

HSE: Health Service Executive

IADT: Institute of Art, Design and Technology

IBM SPSS: International Business Machines Statistical Package for the Social Sciences

ICT: Information and Communications Technology

IMF: International Monetary Fund

IO: International Organisation

IoE: Institute of Education

IoT: Institute of Technology

IT-CMF: IT Capability Maturity Framework

IT: Information Technology

ITIL: Information Technology Infrastructure Library

ITOT: Information Technology Organisation Transformation

IUA: Irish Universities Association

IVI: Innovation Value Institute

KPI: Key Performance Indicator

KPMG: Klynveld Peat Marwick Goerdeler

LLM: Large Language Model

MCS: Management Control System

MLR: Multivocal Literature Review

MMR: Mixed Methods Research

MRI: Magnetic Resonance Imaging

NCAD: National College of Art and Design

NFQ: National Framework of Qualifications

NPM: New Public Management

OECD: Organisation for Economic Cooperation and Development

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PV: Public Value

QA: Quality Assurance

RACI: Responsible, Accountable, Consulted, Informed matrix

RAT: Replacement Amplification Transformation

RBV: Resource Based View

RCSI: Royal College of Surgeons in Ireland

RDT: Resource Dependence Theory

RGAM: Recurrent Grant Allocation Model

RQ: Research Question

RTA: Reflexive Thematic Analysis

SAMR: Substitution Augmentation Modification Redefinition

SED-MMR: Sequential Explanatory Design Mixed Methods Research

SFI: Science Foundation Ireland

SLR: Systematic Literature Review

SP: Strategic Planning

SPF: System Performance Framework

SRESC: Social Research Ethics Sub-Committee

STS: Socio-Technical Systems

TA: Template Analysis

TAM: Technology Acceptance Model

TARS: Technology Adoption Readiness Scale

TIM: Technology Integration Matrix

TIP: Technology Integration Planning

TPACK: Technological Pedagogical and Content Knowledge

TTA: Thematic Template Analysis

TU: Technological University

UK REF: United Kingdom Research Excellence Framework

UN: United Nations

UNESCO: United Nations Educational, Scientific and Cultural Organisation

UTAUT 2: Extended Unified Theory of Acceptance and Use of Technology

WoS: Web of Science

ZCS: Zone of Current State

ZDDT: Zone of Distal Digital Transformation

ZPD: Zone of Proximal Development

ZPDT: Zone of Proximal Digital Transformation

Dedication

With love and gratitude to my wife, Lorraine, and our two wonderful daughters, Clodagh and Keelin. You can have the attic back now!

And to my late father, Patrick, and my mother, Rosemary. They inspire me every day.

Acknowledgements

It's said it takes a village to raise a child; it certainly takes a community to support the completion of a doctoral degree. I have been especially fortunate to have the support of many people throughout this endeavour.

I express my deepest gratitude to my supervisor, Dr Maija Salokangas, for her invaluable guidance, constructive suggestions, and encouragement to dig deeper throughout the writing of this thesis. Special thanks to my second supervisor, Dr Rose Dolan, for her insightful feedback and thoughtful advice. Both have significantly contributed to the development of this study.

I would like to thank the academic and administrative staff in the Department of Education at Maynooth University, who embraced digital technologies to keep the programme going during the dark days of COVID, yet never lost sight of the importance of human connection. I am also grateful to my classmates for their solidarity and companionship along the way.

I would also like to acknowledge my Innovation Value Institute colleagues, past and present, with special mention to Paul, Markus, and Martin. Thank you for your friendship, advice, and for making this work less solitary.

Last but not least, I wish to recognise the support of my extended family and friends, whose encouragement and belief in my ability to articulate my ideas have kept me going through challenging times.

Finally, in an age of AI ...no synthesizers.

Chapter 1 Introduction

1.1 Overview

The global higher education landscape is undergoing profound change, driven by technological advancements, globalisation, and shifting societal expectations (Altbach, 2016; Marginson, 2016). Digital transformation involves the strategic integration of digital technologies into organisational processes, education provision, research, and stakeholder engagement (Vial, 2019). Digital transformation is neither neutral nor apolitical; instead, it is shaped by socio-economic, cultural, and institutional contexts that influence its implementation and impact (Selwyn, 2016; Williamson, 2018). Proponents argue that it provides opportunities for innovation, efficiency, and expanded access to education (García-Peñalvo *et al.*, 2021; Verhoef *et al.*, 2021). However, critics contend that it is deeply intertwined with the ideals of New Public Management (NPM) and neoliberalism, emphasising marketisation and commodification, and undermining the civic value of higher education (Ball, 2012; Olssen & Peters, 2005). As a result of these competing ideological and practical tensions, digital transformation is increasingly recognised as a complex and multiscalar intervention, requiring HEIs to address a range of structural, operational, and cultural barriers (García-Peñalvo *et al.*, 2021; Selwyn, 2022) whilst balancing competing stakeholder demands at regional, national, and global levels (Marginson, 2022).

In Ireland, the higher education sector faces significant challenges associated with long-term underfunding and institutional inertia (Cassells, 2016; Hazelkorn, 2016) while simultaneously negotiating pressures to adapt to a newly established unified tertiary system (Department of Further and Higher Education, Research, Innovation and Science [DFHERIS], 2023a), and increasing prioritisation of market-driven outcomes among key stakeholders (DFHERIS, 2023b). These challenges are further compounded by the need to address massification, equity of access, and the integration of environmental sustainability goals, all within a context of constrained resources and competing stakeholder demands.

The COVID-19 pandemic further exposed vulnerabilities in the sector, revealing significant gaps in digital readiness, uneven resource distribution, and a reliance on emergency remote teaching practices that lacked the planning and rigour of intentional online education (Hodges *et al.*, 2020). Despite these constraints, Irish HEIs are tasked with supporting national policy objectives, such as the transition to a knowledge-based economy. At the same time, they must

address regional needs, such as workforce development and community engagement, which are central to their historical and cultural missions (Clancy, 2015; Goddard *et al.*, 2016; Walsh, 2014).

While digital transformation has been positioned as a strategic solution to these challenges, its implementation in Irish HEIs has also exposed tensions and contradictions. For instance, the emphasis on efficiency and quantifiable metrics, driven by government policies such as the Higher Education Authority's (HEA) Higher Education System Performance Framework (HESPF) can sideline broader educational missions and public value goals (Espeland & Sauder, 2007; Lorenz, 2012). Similarly, isomorphic pressures (DiMaggio & Powell, 1983) and technological determinism (Reich, 2020), rather than the strategic needs of institutions themselves (Vicente *et al.*, 2020), often dictate which digital technologies are adopted.

This thesis argues that the process of digital transformation in Irish HEIs is shaped by a confluence of external forces, internal organisational dynamics, and systemic enabling constraints, with significant implications for institutional operational capability, culture and values, and long-term sustainability. While digital transformation is often framed as a panacea for addressing the challenges facing higher education, this thesis critically interrogates the phenomenon, emphasising its double-edged nature as both an enabler of innovation and the realisation of socially beneficial outcomes, and a potential source of inequity, commodification, and managerialist governmentalities. In particular, digital transformation is not value-neutral. Its implementation often reflects broader neoliberal logics, privileging efficiency, quantifiable performativity, state capture of academic practice, and commodification at the expense of academic values, professional autonomy, meaningful structural reform, and satisfied stakeholder outcomes (Ball, 2012; Kelly *et al.*, 2012; Lorenz, 2012; Selwyn, 2016).

1.2 Problem Statement

Despite the recognised importance of digital transformation in enhancing the competitiveness and sustainability of higher education institutions, Irish HEIs face significant barriers that impede effective and comprehensive digitalisation. Reduced state funding restricts investment in essential digital infrastructure and fosters an uncoordinated approach to technology adoption. Institutional inertia, rooted in bureaucratic processes and a risk-averse culture (García-Morales *et al.*, 2021), further hinders the adoption of innovative digitalised practice.

Resistance to change among academics stems from anxieties about the changing nature of academic work and a perceived threat to professional autonomy (Lynch, 2014; Selwyn, 2016). Resistance to change often manifests as a tension between authentic transformation (Ball, 2012; Lorenz, 2012) and performativity, where surface-level conformance with digitalisation initiatives masks deeper reluctance to fundamentally alter established institutional praxis and ways of working (Selwyn, 2022). Furthermore, reliance on managerialist governmentalities can exacerbate tensions between academic and administrative staff, hindering collaboration and innovation (Deem & Brehony, 2005). These challenges raise important questions about the readiness, strategies, and impacts of digital transformation efforts in Irish higher education.

1.3 Research Aim, Objectives, and Questions

The overall aim of this thesis is to critically analyse the drivers, organisational readiness, and outcomes of digital transformation in Irish HEIs, with a particular focus on the perspectives of HEI managership with responsibility for these initiatives. The research is guided by the following objectives:

- To identify and analyse the internal and external forces driving digital transformation in Irish HEIs.
- To examine how organisational capabilities, structural barriers, and cultural factors influence the implementation and effectiveness of digital transformation initiatives.
- To evaluate the long-term impacts of digital transformation on institutional sustainability, regional engagement, and public value creation.

These objectives are addressed through three research questions:

1. What change forces drive digital transformation in Higher Education Institutions in Ireland, from the perspective of senior managers responsible for these initiatives?
2. How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland??
3. What is the impact of digital transformation on Higher Education Institutions in Ireland?

1.4 Rationale for the Study

The rationale for this study stems from the growing importance of digital transformation in higher education and the lack of comprehensive research on its implementation and impact within the Irish context. While international studies have explored the drivers and barriers of digital transformation in higher education (Benavides *et al.*, 2020; Castro Benavides *et al.*, 2022), much of the literature adopts a technocratic perspective, focusing on the operational and technical aspects of change while overlooking the socio-political and cultural forces that shape its implementation (Selwyn, 2016). Furthermore, existing studies often prioritise global trends, such as marketisation and international competition, failing to account for the localised dynamics and regional priorities that influence digital transformation in specific contexts (Bond *et al.*, 2018; Marinoni *et al.*, 2020). Of particular interest here, limited attention has been given to how these processes unfold in smaller, resource-constrained systems like Ireland's higher education sector.

This study addresses these gaps by focusing on the perspectives of senior managers in Irish HEIs, who operate at the intersection of global pressures, national policies, and institutional realities. By critically examining how digital transformation is experienced and operationalised within the Irish context, this study contributes to a more sophisticated understanding of its drivers, processes, and outcomes. In doing so, it challenges dominant narratives that portray digital transformation as a neutral or universally beneficial phenomenon, emphasising its capacity to both enable and constrain institutional change. As this thesis argues, the experience of Irish HEIs demonstrates that digital transformation is not merely a technical or operational challenge, but a deeply social and cultural process shaped by institutional identities, power dynamics, and broader systemic forces (DiMaggio & Powell, 1983; Selwyn, 2016).

1.5 Significance of the Study

This study is significant because it addresses the critical and timely issue of digital transformation in Irish HEIs at a critical juncture, in the wake of the COVID-19 pandemic and the sector's reconfiguration from a binary model to a unified tertiary system. Irish HEIs face a formidable constellation of challenges, including constraints on funding and other resources, onerous state oversight, national and regional responsibilities, and challenges to institutional legitimacy. Digital transformation is often presented as a solution to these challenges, yet it is

difficult to implement in complex organisations like HEIs, and the realisation of beneficial outcomes is uncertain. By focusing on this period, the research provides valuable insights into how HEIs respond to unprecedented circumstances and identifies recommendations for building long-term institutional resilience.

Through the perspectives of HEI senior managership with responsibility for these initiatives, the study contributes to understanding the strategic decisions that shape digital transformation efforts. Senior managers play a critical part in balancing external policy pressures with internal priorities, and their insights provide practical guidance for aligning digital transformation initiatives with public value realisation, institutional sustainability, and regional engagement. The focus on regional engagement provides a unique contribution, highlighting the potential for digital technologies to strengthen local ties and contribute to regional development. While rooted in the Irish context, the findings have broader relevance for resource-constrained higher education systems globally, offering a framework for navigating the tensions between global demands and local priorities.

1.6 Contribution to Knowledge

This study makes several important contributions to the academic understanding of digital transformation in higher education. It provides a context-specific analysis of digital transformation in publicly funded Irish higher education institutions, highlighting how resource constraints, regional responsibilities, and national policy imperatives shape its implementation and outcomes. This focus on the Irish context addresses a gap in the literature, which often emphasises global trends or market-oriented institutions, offering a deeper understanding of digital transformation in small, resource-constrained systems.

The study challenges dominant technocratic and neoliberal narratives that present digital transformation as universally positive or inevitable. By adopting a critical perspective, it highlights digital transformation's dual nature as both an enabler of innovation and a potential source of inequity and exclusion. This approach extends critical studies on higher education transformation and provides a sophisticated understanding of its complexities. The study also develops a conceptual framework, enabling a deeper analysis of the institutional dynamics around digital transformation. Additionally, it addresses a significant gap in the literature by focusing on HEI senior managership perspectives, offering empirical insights into how they perceive and engage with digital transformation challenges and opportunities. Finally, the

study identifies how systemic barriers such as resource dependence and resistance to change compel HEIs to leverage digital technologies for regional relevance and long-term institutional sustainability.

1.7 Research Approach

Employing a mixed-methods approach, this study integrates quantitative findings from online surveys with semi-structured interviews with senior managers in Irish HEIs. This approach allowed for in-depth exploration of participants' experiences, perspectives, and interpretations of digital transformation within their respective institutions. Analysis of these primary data involved thematic analysis, drawing on the novel Higher Education Institution Digital Transformation (HEI-DT) conceptual framework developed for this study, to identify themes, patterns, and relationships within the data. Supporting documentary analysis of institutional strategic plans and relevant policy documents provided additional context and insights.

1.8 Conceptual Framework

The Higher Education Institution Digital Transformation conceptual framework, developed by the researcher, is the cornerstone for this study. The HEI-DT framework integrates elements of neo-institutional theory (DiMaggio & Powell, 1983), organisational change models (Kezar, 2018; Tsoukas & Chia, 2002; Weick & Quinn, 1999), capability theory (Curley *et al.*, 2015), public value theory (Moore, 1995), and Vygotsky's sociocultural theory of development, particularly the concept of the Zone of Proximal Development (ZPD). The conceptual framework makes it possible to examine the complex interaction between external change forces, internal capabilities, and transformation outcomes. It provides a structure for the analysis of HEI digital transformation. The framework critically engages with the process across three 'zones' within a continuum of change:

1. **Zone of Current State (ZCS):** Examines the drivers of change, including exogenous (external) influences such as government policy and global trends, and endogenous (internal) factors such as institutional strategies.
2. **Zone of Proximal Digital Transformation (ZPDT):** Focuses on the processes and enabling constraints of digital transformation, including organisational capabilities,

structural adaptability, and cultural readiness, considering factors such as commitment to change, resource availability, and cultural adaptability.

3. **Zone of Distal Digital Transformation (ZDDT):** Evaluates the consequences of digital transformation on various aspects of HEI operations, including education provision, research, administration, regional engagement, public value creation, and institutional sustainability.

1.9 Structure of the Thesis

The remainder of this thesis is structured as follows:

PART I (Chapters 2–4), Foundations and Design:

- **Chapter 2: Literature Review** reviews relevant theories and empirical studies on digital transformation, higher education change management, and institutional dynamics.
- **Chapter 3: Conceptual Framework** describes the Higher Education Institution Digital Transformation framework used to analyse Irish HEI digital transformation in this study.
- **Chapter 4: Methodology** outlines the research design, data collection methods, and analytical approach used in this study.

PART II (Chapters 5–7), Findings, Interpretation, and Synthesis:

- **Chapter 5: Findings and Results** presents the key themes and insights from the data, organised around the three research questions.
- **Chapter 6: Discussion** interprets the findings within the context of the conceptual framework and the existing literature.
- **Chapter 7: Conclusion** synthesises the study's empirical, theoretical, and methodological contributions, as well as implications and recommendations for policy, practice, and future research.

1.10 Conclusion

This chapter has provided an overview of the research context, rationale, and objectives, emphasising the importance of digital transformation in Irish HEIs amidst external pressures, internal constraints, and evolving societal needs. It highlighted the need for more knowledge about the drivers, processes, and impacts of digital transformation in higher education institutions, particularly from the perspective of HEI managership. To understand the complexities of this phenomenon, it is critical to engage with the existing corpus to establish the context, identify gaps, build a conceptual framework, and establish the need for this study within the broader higher education leadership, management, and administration (HELMA) academic landscape. The next chapter, Literature Review, critically examines these areas, providing a foundation for the research questions and conceptual framework that guide this study.

PART I

FOUNDATIONS AND DESIGN:

PAGE INTENTIONALLY LEFT BLANK

Chapter 2 Literature Review

Researchers are increasingly focusing on the impact of change within the higher education ecosystem, addressing areas such as technological innovations, evolving administrative practices, shifting organisational structures, transformations in academic culture, policy reforms, the student lifecycle, and changing professional norms (Branković & Cantwell, 2022). Daenekindt and Huisman's (2020) systematic review of 17,000 HE articles identified 'organisational change' as a central topic. Other studies confirm the importance of system(ic) change as an inquiry domain (Curaj *et al.*, 2012; Daenekindt & Huisman, 2020; Boer *et al.*, 2017; Gornitzka *et al.*, 2004; Kyvik, 2004). The increasing scholarly attention to organisational change in higher education has brought greater focus to the challenges and strategies involved in managing digital transformation within the sector. This literature review explores the intersection of these two domains, examining how organisational change theories and practices inform the implementation of digital transformation in higher education institutions.

This chapter draws upon studies from digital transformation, higher education leadership, management, and administration, information systems management, and organisational change domains to critically review the contemporary literature in the field of managing digital transformation in higher education institutions. The chapter is structured as follows: Section 2.1 details the literature review strategy, including the methodological and analytical frameworks. Section 2.2 comprises nine subsections: it begins by examining the concept of digital transformation and its implications for higher education (2.2.1); investigates the dominant paradigms in the change discourse (2.2.2); analyses organisational change forces (2.2.3); investigates resistance to change (2.2.4); explores enabling constraints (2.2.5); reviews technology adoption models (2.2.6); theorises organisational capabilities as enablers (2.2.7); explores concepts of managership in digital transformation (2.2.8); and scrutinises macro-level forces influencing higher education (2.2.9). Section 2.3 synthesises the key themes that were produced through critical engagement with the literature, identifies three critical gaps, and presents three research questions, setting the research agenda for the remainder of the study. Section 2.4 concludes the review.

2.1 Literature Review Strategy

The pervasiveness of digital technologies continues to profoundly alter the properties of organisational institutions and their environment (Ly, 2023). However, higher education remains slow in adopting new technologies (Aditya et al., 2022; Prinsloo & Deventer, 2017). By extension, the contemporary HELMA studies' academic literature is arguably a lagging rather than a leading indicator of current developments in higher education that merit research attention. For example, while many studies have explored the relatively niche topic of shifting to remote teaching and learning during the COVID-19 pandemic (Saucier *et al.*, 2022), there is a scarcity of research on the broader domain of operationalising digital transformation in HEIs (Benavides *et al.*, 2020). Prominent digital sociologist and education scholar Neil Selwyn (Selwyn & Jandrić, 2020) remarks that he does not closely follow education studies' publications. Citing his recent work on the use of artificial intelligence (AI) in 'CopTech' for student surveillance, he believes that "nearly all of the interesting stuff is to be found well beyond education [...] journals and conferences" (p. 994). Selwyn's critique highlights how traditional HELMA studies can exhibit methodological and theoretical conservatism, weak interdisciplinarity, and lags in addressing new and complex challenges in higher education. Brennan and Teichler (2008) and Tight (2014b) similarly argue that HELMA research should extend beyond the boundaries of the established scholarly discourse. This perspective reinforces my decision to include grey literature in this study.

Consequently, I selected a multivocal literature review (MLR) methodology to review the literature for this dissertation. MLRs are a form of Systematic Literature Review (SLR); they admit the grey literature in addition to the formal peer-reviewed literature (Gerousi *et al.*, 2022). Inclusion of these sources was considered important because it provides access to contemporary, context-specific, and practice-oriented insights that may not yet be captured in academic research. Given the rapidly evolving nature of digital transformation in higher education, grey literature from government and international organisation (IO) publications, private sector and consultancy firms, and established education and technology commentaries offers real-world perspectives and up-to-date data that complement the theoretical and empirical grounding of peer-reviewed sources. Grey literature included in this study are Irish government legislation, such as the *Higher Education Authority Act 2022*; government policy documents (e.g., Department of Further and Higher Education, Research, Innovation and Science [DFHERIS], 2022a; 2022b; 2023a); reports by state agencies (e.g., HEA, 2019; 2020);

publications by supra-national organisations (e.g., European Commission, 2003; 2020; 2022); and reports by international organisations (e.g., Organisation for Economic Co-operation and Development [OECD], 2018a; United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2016a; 2018; 2022).

These sources are valuable because they are produced by entities with a mandate to provide evidence-based policy recommendations and reflect the priorities of governments and supranational institutions. As a result, they are essential for providing contextual understanding in applied research (Adams *et al.*, 2017; Petticrew & Roberts, 2006). Public-sector grey literature is recognised as an indispensable tool for bridging the gap between theory and practice, particularly in fields like education and digital transformation, where timely policy insights are critical. While consultancy firms (e.g., Bucy *et al.*, 2021; KPMG, 2022) and research organisations (HolonIQ, 2018; 2020) occasionally contribute actionable insights on operational frameworks and emerging trends, their role is secondary to the contributions of governments, state agencies, and international organisations in providing policy-driven, evidence-based, and relevant information. This approach ensures that both academic and practical perspectives contribute to the development of the study's key arguments and conclusions.

To ensure the credibility and reliability of the grey literature, the AACODS¹ checklist (Tyndall, 2008) was applied as a critical appraisal framework. The AACODS checklist combines principles from established evaluation frameworks with common criteria for assessing web resources (p. 6). Each source was assessed on the criteria of Authority, Accuracy, Coverage, Objectivity, Date, and Significance to ensure the reliability and relevance of the material used (Appendix B). Authority is established by assessing the credentials and affiliations of the author or issuing body. Accuracy is determined through the identification of supporting evidence, references, and methodological transparency. Coverage is examined by evaluating the scope, depth, and acknowledged limitations of the document. Objectivity is assessed by identifying the presence of bias, balanced argumentation, or potential conflicts of interest. Date is recorded to ensure the timeliness and currency of the information. Significance is appraised by considering the relevance, originality, and potential contribution of the source to the field

¹ Authority, Accuracy, Coverage, Objectivity, Date, Significance

of study. Through systematic application of these criteria, the quality and reliability of grey literature are enhanced within academic research. This approach emphasises the intellectual content of grey literature over its format, based on its authority, methodological rigour, relevance, and significance (Appendix B). For example, reports from international organisations such as UNESCO, the OECD, and the European Commission were selected for their credibility and reliability, as they use evidence-based methodologies and extensive datasets. Irish state legislative documents, such as the *Higher Education Authority Act 2022*, were included for their significance in understanding the regulatory, structural, and governance dynamics in the Irish higher education system. Policy-focused documents including DFHERIS (2022b; 2023a; 2023b) and HEA (2017; 2018; 2019; 2021; 2022) publications were selected for their relevance to the study’s research objectives, particularly in addressing higher education sectoral transformation. Consultancy reports, such as those published by McKinsey (2020) and KPMG (KPMG & Parker, 2020), were carefully scrutinised for potential commercial bias. These sources were included only if they met the criteria laid out in the AACODS checklist. For instance, McKinsey’s (2020) analysis of the COVID-19 pandemic-driven acceleration of organisational digital transformation provided useful insights into the obstacles HEIs encountered during this period.

2.1.1 Inclusion and Exclusion Criteria

The inclusion and exclusion criteria for the study are listed in Table 2.1.

Table 2.1 Literature Review Criteria (adapted from Gerousi et al. (2022))

Source: Author’s own work

Criteria	Description
Target Population	Higher Education Institutions
Intervention	Managed Digital Transformation (DT) implementation in HEIs
Outcomes	1. Research gap(s) related to managed digital transformation implementation in HEIs 2. Impact of changes brought about distinctive characteristics of digital transformation processes that took place in HEIs

Criteria	Description
Date Range	To November 30 th , 2023, the date I concluded my fieldwork for this study. Publications after 2014 were prioritised to mitigate obsolescence of literature.
Setting	Analysis of published peer-reviewed papers from academic databases, and grey literature including policy documents, national education strategies, and reports from international organisations.
Language	English
Literature Review Aim	Summarise the distinctive characteristics of digital transformation in HEIs
Exclusion / Out of Scope	‘EdTech’; ‘digital pedagogy’; ‘COVID response’; ‘online/remote teaching’; ‘authoring tools’; ‘e-*’ [wildcard] (e.g., e-learning)
Literature Review Question (Research Question)	What are the distinctive characteristics of managing digital transformation implementation in HEIs?
Characterisations of Digital Transformation & Related Concepts	Search for literature that defines and differentiates digital transformation; digitisation; digitalisation; digital innovation; particularly in the context of higher education. Institutional change and related concepts: Search for literature that articulates organisational change theory and practice; change management; success and failure factors; exogenous and endogenous forces. Integration of digital technologies in higher education: Find studies that focus on the practical integration of digital technologies in the higher education sector. Research Gap: Identify reviews and critiques that highlight gaps in the impact of digital transformation in HEI bureaucracy, operations, and practice.

2.1.2 Time Horizon and Literature Sources

The initial literature search was conducted in March 2020 as discovery review of citation databases available from Maynooth University Library. Web of Science (WoS) and Scopus were selected as the most appropriate databases to search for literature relevant to this study. To ensure an up-to-date understanding of my research domain, I systematically reviewed literature throughout my doctoral programme. This involved monthly automated alerts, quarterly broad searches, and adding relevant sources to an Excel matrix object-linked to a Word master document. Primary data collection concluded in November 2022, before the public release of OpenAI's ChatGPT large language model (LLM). Incorporating AI/LLMs discourse was deemed methodologically inappropriate due to the advanced stage of my research. After a study pause (May 2023–March 2024), a final literature review in June 2024 ensured my study included the latest developments in the field.

2.1.3 Search Terms and Keywords

I used keyword selection, search operators, and wildcards when undertaking the literature searches. Here is an example from the 'Digital Transformation and Related Concepts' search on WoS:

TS = ("digiti*" OR digiti*ation" OR "digitali*ation" OR "digital transformation") AND (SU="Higher Education & Higher Education Institute" OR "Universit*" OR WC=("Education & Educational Research" OR "Education, Scientific Disciplines").

Subsequent citation and snowball searches were undertaken based upon my analysis of the returned literature dataset. For example, exploring what the corpus says about '[Type of Change]' was a logical and necessary outcome of gathering and analysing more than 50 characterisations of the term 'digital transformation'. Table 2.2 lists subsequent search themes and subsequent citation search terms².

² Search terms are rendered here in full text for legibility. In the search proper, I used the search operators, Boolean operators, and wild cards as described for the primary search.

Table 2.2 Subsequent citation search terms

Source: Author's own work

Search Theme	Subsequent Citation Search Terms
Process: [Type of] Change	Transitions and Change Management: Search for literature on organisational transitions, types of change, and change management theories, with a focus on disruptive innovation and its effect on higher education.
Ecosystem: Exogenous and Endogenous Forces Driving HEI Digital Transformation	Indicators and Forces Influencing HEIs: Look for research on the indicators of digital transformation and the exogenous and endogenous forces that influence higher education institutions. Globalisation, Internationalisation, and Neoliberalism: Gather literature on how globalisation, internationalisation, and neoliberal policies affect HEIs. Technologies of Marketisation: Search for works discussing the marketisation of higher education and the technologies that enable it. Internal Forces and Organisational Change: Find studies that examine internal forces within higher education institutions that drive or hinder organisational change.
People: Impacts on Culture and Management	Organisation Culture and Management in HEI: Search for definitions and case studies on how digital transformation impacts organisational culture and management within higher education institutions. Long-term Cultural/Management Evolution: Look for research gaps regarding the long-term effects of digital transformation on institutional culture and management.
Capability: Institutional Performance and Outcomes	Institutional and Organisational Capabilities: Find literature on definitions and theories related to institutional and organisational capabilities, including capability maturity models like CMMI and IT-CMF and their application in higher education institutions.

The literature screening and selection workflow was tracked using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement (Page *et al.*, 2021) illustrated in Figure 2.1.

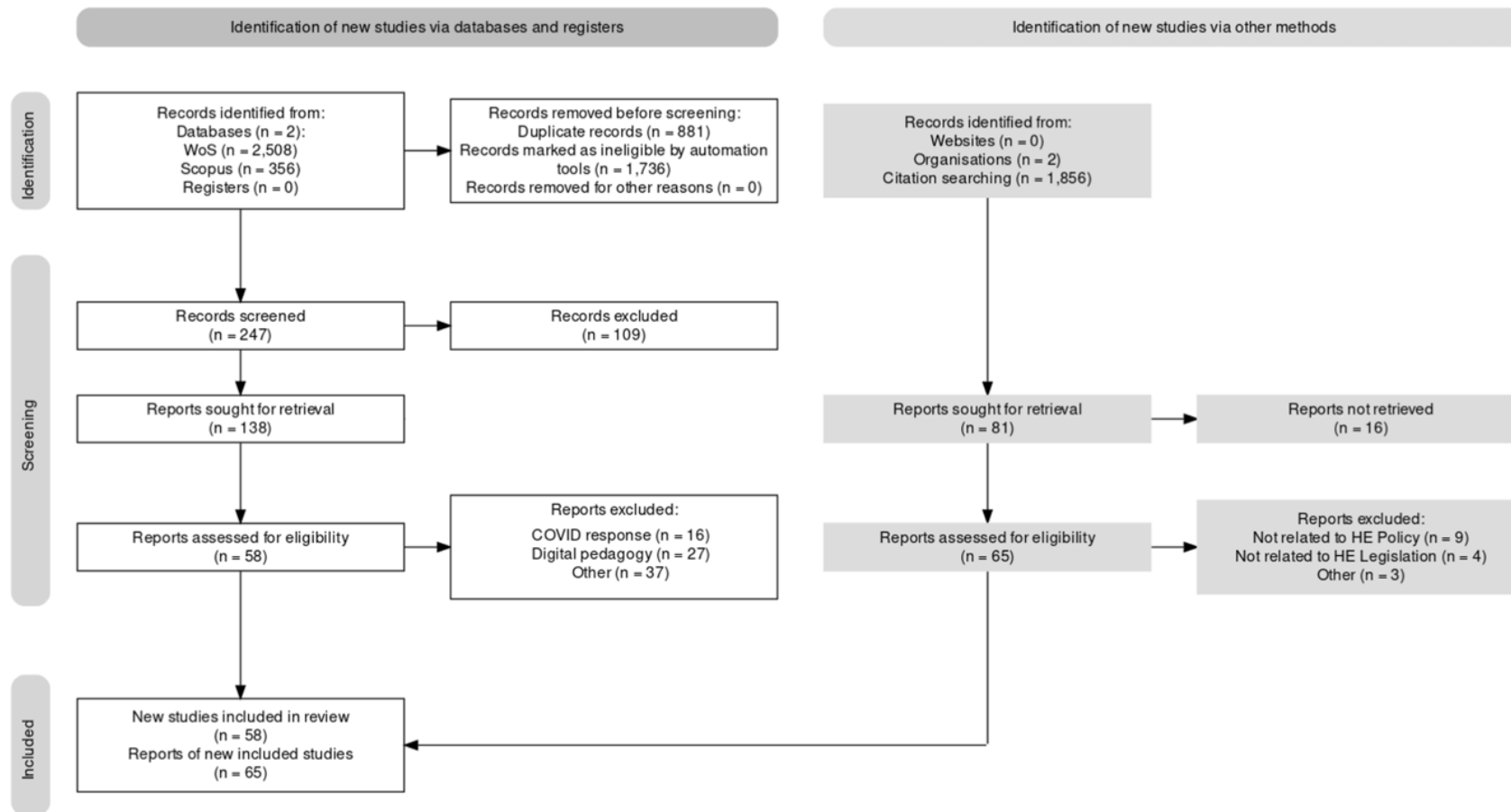


Figure 2.1 PRISMA Workflow for literature search

Source: Author's own work

Subsequent citation and discovery searches were managed using the Connected Papers literature mapping tool, which graphically visualised the bibliometric landscape of peer-reviewed articles related to digital transformation in HEIs (see Figure 2.2). Thematic analysis and synthesis were undertaken using Microsoft Excel and MAXQDA 2022 software applications; diagrams were generated in Microsoft PowerPoint.

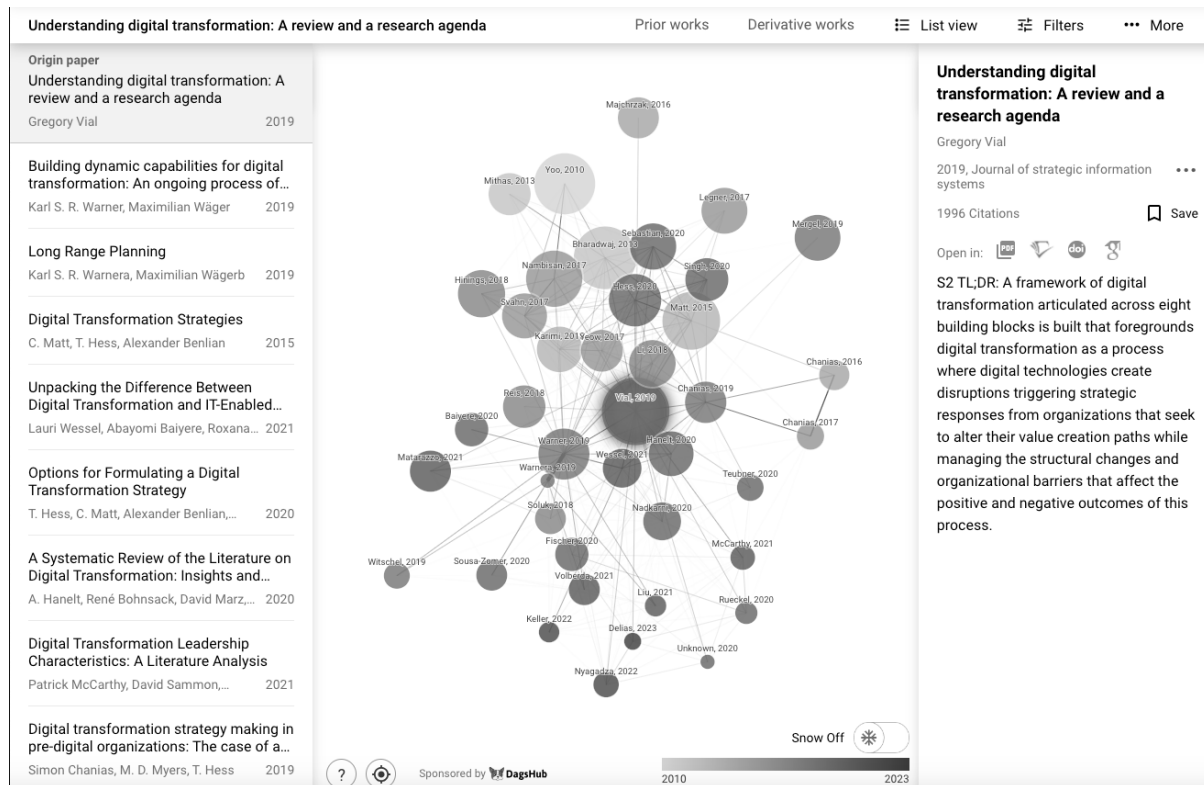


Figure 2.2 Connected Papers bibliometric mapping software showing the citation network for Vial's (2019) landmark paper.

Source: Author's own work

2.1.4 Limitations

The MLR methodology, while effective in integrating academic and grey literature, has several limitations. The inclusion of grey literature introduces subjectivity and potential bias, as these sources lack academic studies' rigorous peer-review process. Additionally, inconsistencies in terminology across digital transformation literature (see Section 2.2) and the exclusion of recent AI/LLM-related developments due to timing constraints may limit the study's scope and relevance.

In the next section, I describe the findings of my literature review in detail.

2.2 The Literature Review

This section reviews the literature related to the conceptualisation of the key term ‘digital transformation’. Digital transformation has become a central topic in HELMA discourse, particularly in the wake of the COVID-19 pandemic. Given the rapid evolution and importance of digital transformation, it is critical to understand how it is conceptualised in the literature. The growing attention to digital transformation is reflected in Google Trends data, which shows a sharp and sustained rise in searches for “digital transformation of universit*” beginning in 2020 (Verhoef *et al.*, 2021). Similarly, the proliferation of peer-reviewed papers, conferences, and special journal issues underscores the increasing relevance of this topic in higher education discourse (Al-Hail *et al.*, 2023; Gkrimpizi *et al.*, 2023; Rof *et al.*, 2022).

2.2.1 Conceptualising digital transformation

The term ‘digital transformation’ lacks conceptual clarity; an agreed definition remains elusive (Danielsen *et al.*, 2022; Vial, 2019). It builds upon two foundational constructs: digitisation and digitalisation.

- Digitisation refers to the conversion of analogue information into digital binary form, enabling computational processes such as storage, retrieval, and manipulation (Engineers, 1953; Hess *et al.*, 2016; Legner *et al.*, 2017).
- Digitalisation involves the application of digital technologies to streamline and automate organisational operations (Brooks & McCormack, 2020; Zouari *et al.*, 2020).

Building on these concepts, digital transformation is more complex and remains the subject of ongoing scholarly debate (Verhoef *et al.*, 2021; Vial, 2019). Many scholars conflate the term with desired outcomes, rather than defining it independently (Bharadwaj *et al.*, 2013; Westerman *et al.*, 2014). Furthermore, most research has focused on for-profit organisations, which differ significantly from public-sector entities like HEIs in terms of values, goals, structures, and stakeholders (Kraus *et al.*, 2020).

The emergence, growth, dominance, and decline of four distinct ‘waves’ of digital transformation theories, practice, areas of focus, and paradigms over the last 20 years are evidenced in the literature (Verhoef *et al.*, 2021; Vial, 2019). Each wave represents different

conceptualisations and approaches to understanding the phenomenon of digital transformation (Table 2.3). Each wave extended the insights of the previous wave (Nadkarni & Prügl, 2021; Reis *et al.*, 2018).

The first wave focused on the technological aspects of digital transformation, emphasising the digitalisation of organisational processes to reduce errors and organisational systems' complexity (Bharadwaj *et al.*, 2013; Stolterman & Fors, 2004). The second wave broadened the scope and took the organisational implications of digital transformation and the need for technology to align with institutional strategic goals into consideration (Bharadwaj *et al.*, 2013; Hess *et al.*, 2016). The third wave introduced a multi-dimensional perspective, examining the relationship between technology, organisations, and society in the context of digital transformation (Bharadwaj *et al.*, 2013; Kane *et al.*, 2015; Liao *et al.*, 2015; Matt *et al.*, 2015; Westerman *et al.*, 2014). In this wave, digital transformation becomes increasingly connected to the commodification of HE services. In particular it referenced (1) globalisation (Ball, 2007; Ball *et al.*, 2010; Marginson, 2007); (2) human capital development (HEA, 2020a; Marginson, 2019; OECD, 2018a; Spring, 2015); and (3) private sector higher education provision (Caballero & Gallagher, 2021; Jessop, 2018).

Table 2.3 Chronological evolution of Digital Transformation Practice Themes
(Source: Author's own work)

Time period	Digital Transformation Theme	Key Papers
Early-Mid 2000s	The use of digital technologies to improve business processes; the adoption of new business models enabled by digital technologies	Sambamurthy & Zmud, 2000; Sambamurthy <i>et al.</i> , 2003; Stolterman & Fors, 2004; Stolterman & Fors, 2004
2010 - 2013	The transformation of business culture and mindset to embrace digital technologies	Agarwal <i>et al.</i> , 2010; Bharadwaj <i>et al.</i> , 2013; Berman, 2012; Fitzgerald <i>et al.</i> , 2013; Jameson, 2013; Liu <i>et al.</i> , 2011; Lucas <i>et al.</i> , 2013; Mithas <i>et al.</i> , 2013; Westerman <i>et al.</i> , 2011
2014 – 2019	The integration of digital technologies into all aspects of	Andriole, 2017; Bekkhus, 2016; Berghaus & Back, 2016; Bloomberg, 2018; Chantias <i>et</i>

Time period	Digital Transformation Theme	Key Papers
	business operations. This can be done in a variety of ways, such as enhancing customer experience (CX), streamlining operations, or creating new business models.	<i>al.</i> , 2019; Demirkan <i>et al.</i> , 2016; European Commission, 2018a; Grab <i>et al.</i> , 2019; Hartl & Hess, 2017; Haffke <i>et al.</i> , 2017; Henriette <i>et al.</i> , 2015; Hess <i>et al.</i> , 2016; Hinings <i>et al.</i> , 2018; Horlacher <i>et al.</i> , 2016; Legner <i>et al.</i> , 2017; Li <i>et al.</i> , 2017; Liere-Netheler <i>et al.</i> , 2018; Matt <i>et al.</i> , 2015; Morakanyane <i>et al.</i> , 2017; Nwankpa & Roumani, 2016; OECD, 2018; Paavola <i>et al.</i> , 2017; Reis <i>et al.</i> , 2018; Schwertner, 2017; United States Government Accountability Office, 2016; Vial, 2019; Westerman <i>et al.</i> , 2014
~2020 onwards	The holistic use of digital technologies to (i) fundamentally reconfigure institutional identity as well as (ii) change how organisations operate and deliver value. This can involve changes to the organisation's vision, strategy, operational processes, products and services, user experience, and value proposition.	Benavides <i>et al.</i> , 2020; Danielsen <i>et al.</i> , 2022; Díaz-García <i>et al.</i> , 2022; Fernandez-Vidal <i>et al.</i> , 2022; Gong & Ribiere, 2022; IBM, 2023; Jablonski & Jablonski, 2019; Jørgensen, 2019; Komljenovic, 2021; Kraus <i>et al.</i> , 2020; KPMG, 2022; Kromydas <i>et al.</i> , 2022; Leonardi & Treem, 2020; Loonam <i>et al.</i> , 2018; Mergel <i>et al.</i> , 2019; Peter <i>et al.</i> , 2020; Sailer <i>et al.</i> , 2021; Warner & Wäger, 2018; Wirtz <i>et al.</i> , 2022

More recently, and particularly since COVID-19, the current fourth wave of scholarly inquiry is integrating these perspectives. Researchers' attention has shifted from conceptualisation to implementation. Frameworks and models are emerging as mechanisms to understand the complexity of digital transformation (Jørgensen, 2019; Komljenovic, 2021; Kromydas *et al.*, 2022; Sailer *et al.*, 2021). These frameworks address various aspects of transformation: organisational management requirements (Loonam *et al.*, 2018), dynamic capability building and agility (Warner & Wäger, 2019), social factors (Jablonski & Jablonski, 2019), digital maturity assessment (North *et al.*, 2020), and strategic drivers (Peter *et al.*, 2020). Building on

the theoretical foundations established in this chapter, Chapter 3 will present a new conceptual framework for understanding digital transformation in higher education institutions.

In parallel in the current wave, Mergel *et al.* (2019), Kraus *et al.* (2020), and Danielsen *et al.* (2022) report an increasing prevalence of papers researching public sector digital transformation, including publicly funded higher education. In the HE context, this is centred around whole-of-institution digitalisation. Scholars have explored administrative systems, data utilisation, stakeholders' (e.g., staff, students, state agencies, social partners, industry actors) experience, and education and research service provision (Alenezi *et al.*, 2023; Hess *et al.*, 2016; Kaputa *et al.*, 2023; McCarthy *et al.*, 2023; Rof *et al.*, 2020; Rogers, 2003; Schwertner, 2017). This study characterises education service provision as the state's responsibility to ensure access to quality education through institutions such as universities and technological universities. Over the last 50 years, the term 'education service provision' has been co-opted by neoliberal ideology, reducing education to a marketable commodity focused on 'teaching and learning', and privileging human capital development (Ball, 2016; Giroux, 2002). This thesis reclaims the term to align with education's role as a public good and universal right, drawing on Bourdieu's (1998) notion of the 'left hand of the state', which emphasises the state's responsibility to address citizens' basic needs. Reframing it in this manner connects to Ireland's welfare system philosophy. The Irish model policy borrows elements from the UK Beveridge model (1942) and, to a lesser extent, the Nordic model (Schrama *et al.*, 2020), situating education as an integral part of state responsibility. Additionally, Biesta's (2015) critique of 'learnification' highlights the reduction of education to individual learning, while Biesta and Säfström's (2023) 'new publicness' expands the discourse to emphasise education as a shared public good, fostering democratic engagement, collective inquiry, and social solidarity.

The literature reflects that the utility and purposes of digital technologies in higher education have developed significantly over the last 70 years. From initial use in research in the 1950s, Information Technology (IT) expanded HE institutional administrative capabilities in the 1960s and 1970s (Lucas *et al.*, 2013; Robey & Sahay, 1996; Zilvinskis, 2022). In the 1990s, the expansion of the internet and invention of the World Wide Web increased access to information (Meyer *et al.*, 2019). In the 2000s, so-called educational technology ('EdTech') emerged. Subsequently, artificial intelligence, data analytics, and other fifth-generation

technologies are prompting new questions around the purpose and value of digital technologies for higher education futures (Zawacki-Richter, 2019).

To date, research exploring HEI digital transformation has predominantly focused on digital pedagogies, digital courseware delivery models such as MOOCs, EdTech, and other aspects of the “learnification of educational discourse and practice” (Biesta, 2013, p. 5). EdTech has not proven to be a major driver of broader higher education technological innovation and development (Cukurova *et al.*, 2018). In practice, HEIs are consumers of general-purpose software rather than users of technologies designed for educational purposes (Selwyn, 2022). Increasingly, digital systems mediate critical university functions (Henderson *et al.*, 2017). Core university operations are now dependent on real-time data flows, networked infrastructures, automated processes, and digital platforms to manage the student life cycle from recruitment through to graduation, and beyond (Jones & Shao, 2011; Selwyn, 2022).

The COVID-19 pandemic stimulated further operational and policy responses to digital technology utilisation in the global HE ecosystem. Many countries, including Ireland, were forced to rapidly expand their digital capacity and integrate technical infrastructure, tools, and new technologies into education systems, in particular modifying education service delivery arrangements (Adedoyin & Soykan, 2020; DFHERIS, 2022a; HEA, 2020a; UNESCO, 2022). The rapid scaling of HE systems’ digital capacity and requirement to integrate digital infrastructure, tools, and technologies into education models has likely set in motion a series of changes with unpredictable outcomes for the HE system (Gong *et al.*, 2021).

Besson and Rowe (2012) and Gregory Vial (2019) point out that the increased intensity of digitalisation moves higher education institutions beyond the domain of IT-enabled organisational transformation (ITOT) to a more fundamental digital transformation. Problematically, digital transformation is conceptualised in the literature in almost exactly the same way as ITOT. Both digital transformation and ITOT require human agency and directed intent (purpose) to generate value, rather than simply improve functionality (Kane *et al.*, 2015; Peppard & Ward, 2007; Vial, 2019; Wessell *et al.*, 2021). The critical differentiator is ITOT supports “existing value proposition and identity” (Wessell *et al.*, 2021, p. 101): in contrast, digital transformation reconfigures institutional identity by redefining and reconfiguring whole-system architectures, processes, cultures, and value propositions (Hess *et al.*, 2016; Sebastian *et al.*, 2017). This study defines digital transformation as the integration of digital technologies into all areas of an institution, fundamentally altering how it operates and delivers

value to stakeholders. This definition, informed by Hinings *et al.* (2018) and Vial (2019), encompasses both digital technology integration and its wide-ranging effects on operations, value delivery, and stakeholder relationships, which is crucial for examining the impact of digital transformation on HEIs in Ireland. It aligns with the systemic impact described by Hinings *et al.* (2018) whilst incorporating Vial's (2019) improvement orientation. Furthermore, it acknowledges the potential for both positive and negative consequences, including workforce disruption, ethical concerns, and the risk of exacerbating inequalities, echoing the contested nature of digital transformation highlighted by Wessel *et al.* (2021).

The conceptualisation of digital transformation in HEIs is intrinsically linked to theories of organisational change. While digital transformation represents the technological imperative for change, organisational change theories provide the frameworks for understanding how institutions adapt and evolve.

2.2.2 Organisational Change in HEIs

According to Kingston (2019), the literature on institutional change is “voluminous, [...] diffuse and eclectic” (p. 1153) and he notes, affected by uncertainty over the meaning of commonly used terms, including ‘institution’ and ‘organisation’. Building on earlier work by Giddens (1984), Scott's (2014) ‘omnibus definition’ describes institutions as cognitive, normative, and regulative structures and activities that contribute stability and meaning to social behaviour, operating at multiple levels. Organisations, on the other hand, can be described as structures of relationships where actors use technology and processes to achieve specific objectives, influenced by the normative contexts provided by institutions (Bouma, 1998; Huq & Stevenson, 2018).

Higher education institutions can be characterised as organisations purposed for (1) the production of knowledge through research; (2) the exploitation of knowledge through education service provision (Altbach, 2009); (3) the application of knowledge for civic welfare (Gewirtz & Ball, 2010; Gunter & Ribbins, 2016); and more recently (4) knowledge diffusion and innovation through university-industry collaboration (O'Dwyer *et al.*, 2023; Thomas & Paul, 2019). Meyer and Rowan (1977) assert that in institutions like HEIs, these activities and purposes become encoded as myths. They become ritualised, rationalised, and reified as socially valorising.

The accompanying political, economic, and social legitimisation endorses the endowment of “resources, stability, and enhanced survival prospects” (p. 353). Cardona Mejía *et al.* (2020) emphasise that coercive pressures from established peer institutions and normative pressures from governmental and regulatory bodies collectively drive HEIs towards homogenisation. When a stable pattern for institutional longevity emerges, mimetic isomorphism influences similar institutions to adopt the successful mythos as a survival strategy (Hinings *et al.*, 2018; Meyer & Rowan, 1977). According to Perez (2002), the HE pattern has shown itself to be remarkably resilient, having more or less endured for 250 years. Perez’s theory reflects Clark’s (1983) paradox³ regarding the simultaneous resistance to and generation of change within higher education institutions.

This apparent contradiction invites a deeper examination of the factors that enable and constrain change in higher education systems, which can be understood through an institutional framework lens. An institutional framework is a set of formal and informal rules, norms, and practices that shape and govern the behaviour of individuals and organisations within a particular institution or sector (Ostrom, 2005). It encompasses legal, regulatory, and policy structures, as well as cultural values, beliefs, and traditions that influence decision-making and actions (Scott, 2014). In the context of HEIs, the institutional framework refers to the dominant system of governance, policies, procedures, and cultural norms that inform institutional legitimacy and survival (Trowler, 2008). Institutional frameworks shape HEI strategy, institutional priorities, and operational practices. They influence HEIs’ ability to respond to changing environments and integrate novel innovations such as digital transformation (Kezar & Eckel, 2002).

Oliver’s (1991) Strategic Responses Model combines insights from institutional theory and resource dependence theory, challenging the assumption of organisational passivity often attributed to institutional theory. Her model identifies strategic responses ranging from compliance to resistance, shaped by factors such as legitimacy, alignment with organisational goals, and coercion. O’Shea and O’Hara (2020) used Oliver’s model to analyse how higher education institutions in Ireland responded to the introduction of the HEA’s Higher Education

³ “How can it be that the university, and indeed the higher education system at large, is sluggish, even heavily resistant to change, but somehow also produces virtually revolutionary change?” (Clark, 1983, p. 182)

System Performance Framework (SPF). The study found that Irish HEIs complied with the SPF to maintain legitimacy but lacked the incentives or resources to operationalise the strategic priorities and performance targets set out in the SPF. This case highlights how competing priorities, resource constraints, and institutional legitimacy concerns influence change processes within organisations. These findings, in turn, offer insights into broader approaches to understanding organisational transformation. In the literature, three paradigms—planned organisational change, punctuated equilibrium, and emergent change—offer distinct frameworks for analysing the dynamics of change in HEIs.

One of the more well-understood approaches, planned organisational change is generally characterised as episodic change interventions in otherwise stable institutional environments (Weick & Quinn, 1999). Change is ‘planned in’ based upon articulated need and typically occurs in short-term outcome-based interventions, leading to a predetermined desired future state (Kotter, 1996; Kotter & Schlesinger, 2008; Lewin, 1947; Van de Ven & Poole, 1995; Weick & Quinn, 1999). Planned organisational change is operationalised by an incremental ‘waterfall’ approach to development epitomised by the Plan-Build-Run model (Agarwal *et al.*, 2013). Lewin’s (1947) three stages of change (unfreeze, change, and (re)freeze) remains the ideal type for planned change. According to Hendry (1996), “the whole theory of change is reducible to this one idea of Kurt Lewin’s” (p. 624). It is a cornerstone for understanding and implementing change within organisations (Cummings *et al.*, 2016; Hussain *et al.*, 2018). In higher education digital transformation settings, Hawes (2022) documented Lewin’s 3-Step Model’s adaptability in supporting an HEI faced with the need to rapidly implement remote teaching delivery during the COVID-19 pandemic, demonstrating its relevance beyond traditional organisational change scenarios (Ribeiro *et al.*, 2018).

Despite its durability, recent scholarship challenges the planned change paradigm. Building on but diverging from planned change approaches, punctuated equilibrium theory (Dawson, 2003; Hanelt *et al.*, 2021; Tsoukas & Chia, 2002) provides an alternative framework for understanding organisational transformation. This theory suggests that change in complex systems, including HEIs, does not occur in a linear or gradual fashion as suggested by planned change models. Instead, it is characterised by long periods of relative stability or ‘equilibrium’, punctuated by short bursts of rapid, transformative change or ‘punctuations’ (Phillips & Merrill, 2015; Xiong & Wang, 2022). In the context of HEIs, these punctuations can be

triggered by various external factors, such as technological disruptions, changes in government policies, or major socioeconomic shifts (Alshoubaki & Harris, 2020).

The theory also helps explain the duality observed in HEIs: while academic communities often resist change to preserve traditional academic autonomy and standards (Fialho *et al.*, 2009; Ponzi & Aizawa, 2000), they can exhibit remarkable agility when faced with significant external shocks—such as the COVID-19 pandemic—these same organisations demonstrate remarkable capacity for rapid adaptation (Sánchez *et al.*, 2022). Punctuated equilibrium helps explain why digital transformation efforts often face challenges related to limited financial resources, insufficient digital skills, and data security concerns (Joshi & Ahir, 2015; Zouari *et al.*, 2020). It suggests that digital transformation requires both effective executive leadership during periods of stability, and the capability to capitalise on moments of disruption when they occur (Sahputri *et al.*, 2022; Terziev *et al.*, 2021).

Whilst planned and punctuated approaches to organisational change adopt a synoptic perspective, viewing change as discrete events between stable states, contemporary scholarship emphasises the importance of understanding organisations through the lens of ‘continuous becoming’ (Tsoukas & Chia, 2002, p. 567). This premise reflects a view of organisations as complex, adaptive systems that continuously interact with and respond to their external contexts (Weick, 1976; Vaill, 1996). Given the inherent dynamism and uncertainty of the organisational environment, this so-called emergent change perspective approach is predicated upon the assumption that organisations operate in a turbulent, dynamic, and unpredictable environment. Vaill (1996) rejected the “model of a smooth-running macrosystem” (p. 8). He used the metaphor of ‘permanent white water’ to reconceptualise change as a dynamic system, continuously adapting and co-evolving with its environment.

Consequently, a variety of analytical lenses can be applied to understand and theorise the nature of organisational change. Pettigrew (1997) viewed organisational change as a ‘processualist’ activity where a “sequence of individual and collective events, actions, and activities unfolding over time in context” (p. 338), which can lead to significant organisational transformation, comprising a series of multi-level cross-organisational projects, unfolding messily over years (Dawson, 2003; Quinn, 1982). Weick (1976) reimagined HEIs as complex, adaptive, loosely coupled systems which exist as an open system. By continuously experimenting and adapting, organisations continually make micro-adjustments to align their capabilities within a dynamic and uncertain external environment (Weick & Quinn, 1999). The open systems-oriented

understanding of change aligns with Tsoukas and Chia's (2002) view of change as a continuous “reweaving of actors’ webs of beliefs and habits of action” (p. 577).

Gioia and Chittipeddi (1991) argue that change involves a cognitive reorientation of the organisation. Their ethnographic study of change at a large public university took a symbolic, cognitive approach to interpreting organisational transformation. The researchers developed a framework to analyse change in terms of a first-order qualitative analysis for rationalising (‘sensemaking’) and legitimising (‘sense-giving’) change, and using a second-order analysis to theorise the change in context. However, Orlikowski (1996) views change as a political-social rather than a cognitive-interpretive process. She frames organisational change through the lens of power relations and resource dependencies, where stakeholders actively compete to secure and control vital resources and influence. In higher education, this manifests as ongoing tension between academic and administrative spheres, each seeking to maintain or expand their resource base and decision-making authority. This often results in compromised versions of initial change initiatives, as stakeholders negotiate and compromise to achieve a balance of competing interests. This process, in turn, helps maintain institutional equilibrium by balancing competing resource needs and stakeholder interests. The significance of Orlikowski’s perspective lies in its ability to capture the sociopolitical complexities of organisational change, which are especially relevant in higher education institutions undergoing digital transformation. Unlike cognitive approaches, this view highlights the need to actively manage resource dependencies—including the resource of power relationships—to navigate competing stakeholder interests. Therefore, change initiatives depend on actively managing these resource dependencies and power relationships, recognising that change is a negotiated process rather than a straightforward processual implementation, as also highlighted by Kezar & Eckel (2002) and Tsoukas & Chia (2002).

Hanelt *et al.* (2021) assert that digital transformation represents a distinct form of organisational change that challenges both the cognitive-interpretive and political-social frameworks of established change paradigms, particularly through its capability to transcend conventional organisational and sectoral boundaries. They argue that digital technologies have distinctive properties of generativity, malleability, and combinatoriality that enable organisations to reconfigure themselves and their relationships with ecosystems in novel ways, requiring more emergent, adaptive, and dynamic approaches to change. Nambisan *et al.* (2017) further reinforce this view by positioning digital transformation as requiring organisations to

rethink how change is conceptualised and implemented in a digital context. They argue that digital transformation challenges traditional assumptions about the boundaries and agency of change and innovation, arguing that digital technologies dissolve rigid organisational structures and enable distributed, ecosystem-based innovation. This approach emphasises how digital transformation fosters fluid change and innovation processes, distributed agency, and new forms of collaboration across organisational and sectoral boundaries.

Change carries high stakes and risks. The success rate of organisational change initiatives is low. Kotter (1996) noted that 70 per cent of organisation change initiatives fail, where failure is characterised as a deviation from the “goals and outcomes that are expected and desired from organisational change” (Schwartz *et al.*, 2022, p. 162). Whilst such a dramatic claim has rightly been questioned, most notably by Hughes (2011), Kotter’s original findings have been validated and reproduced by subsequent research over the years (Capgemini, 2021; Forth *et al.*, 2020; Marckstadt *et al.*, 2020), to the extent that it has been described as an “enduring truth” (Bucy *et al.*, 2021, p. 2.) within the literature. Consequently, organisational change discourse frequently occurs within a failure narrative (Dunphy, 1996). However, such discourse is rarely straightforward or absolute, requiring deeper exploration beyond surface-level factors like inadequate strategic planning, lack of resources, or poor leadership (Benavides *et al.*, 2020). Scholars such as Heracleous and Bartunek (2021), O’Donnell (2014), Reich (2020), and Schwarz *et al.* (2021) view failure as a dynamic process shaped by deeper organisational structures, cultural norms, and spatial-temporal considerations. Deep structures (Heracleous & Bartunek, 2021), such as shared meanings, power dynamics, and norms, operate beneath the surface, shaping and constraining change while often remaining unaddressed. For example, Xerox (p. 210-213) failed to shift its dominant logic despite surface-level successes. In parallel, temporal dimensions like urgency and competing timelines complicate how organisations perceive and respond to failure. NASA’s long-term adaptive strategies (pp. 218-219) illustrate how failure at the individual project level can coexist with broader organisational success. O’Donnell (2014) and Reich (2020) argue that sociopolitical pressures demanding “perfection” (O’Donnell, 2014, p. 262) and the closing of the “global achievement gap” (Reich, 2020, p. 47) cultivate a fear of failure within HEIs, which in turn stifles experimentation and innovation. Biesta *et al.* (2014) note this rhetoric can “almost sound like threats” (p. 61). These scholars emphasise the importance of reframing failure as a natural and constructive part of organisational change. Shifting from rigid, success-driven narratives to a discourse that values persistence, adaptability, and deeper structural alignment supports institutional development.

Contemporary change theory emphasises the significant influence of both external environmental pressures and internal dynamics of power and culture on organisational change processes. (Weick & Quinn, 1999). In this context, change is interpreted as an ability to create continuously adaptive organising structures. There is limited empirical evidence in the literature to strongly support any one change management model over others in achieving this (Dechow *et al.*, 2012; Hallencreutz & Turner, 2011; Pirta & Grabis, 2015). In order to address this gap, some researchers have shifted their attention towards characterising the relationships between the dynamics of change processes.

2.2.3 Organisational Change Forces

Organisational change is driven by both exogenous and endogenous forces (Gerschewski, 2016; Weill & Woerner, 2017; 2019). However, classifying these forces as external or internal is not always straightforward. The level of analysis (Kyvik & Aksnes, 2015; Scott, 2014), and the specific context and the perspective of a given organisation can blur categorisation boundaries (Altbach, 2009); Bensimon, 2007; Kezar & Eckel, 2002; Scott, 1987). For example, government policies can be considered exogenous to individual HEIs but endogenous to the higher education sector as a whole (Phillips, 2015). Moreover, the same force can manifest differently across organisations. For instance, technological innovation may be an exogenous force within HEIs for education service delivery, or it may be an endogenous influence for research activities (Teixeira *et al.*, 2021). This phenomenon is particularly evident in the context of HEI digital transformation (Gerschewski, 2016; Weill & Woerner, 2017; 2019).

In the discourse on organisational change, traditional explanations have focused on a binary model where exogenous shocks cause sudden ruptures, and endogenous forces promote gradual changes that occur over time (Gerschewski, 2016; Tsoukas & Chia, 2002). These are represented as Types I and II, respectively, in Table 2.4. However, Gerschewski argues that the existing literature has overlooked a critical dimension by conflating the source of change with the velocity of change. To address this gap, he proposed a bi-dimensional taxonomy that disentangles the scope (exogenous/endogenous) and velocity (rapid/gradual) of change into four distinct types.

Table 2.4 A Typology of Institutional Change

Source: Gerschewski (2016)

Scope of Change	Type and Velocity of Change	
Exogenous to institution	Type I: exogenously driven sudden rupture	Type II: exogenous, gradual change
Endogenous to institution	Type III: endogenously driven sudden rupture	Type IV: endogenous, gradual change

Recent research on digital transformation pathways by Ross *et al.* (2016) and Weill and Woerner (2017; 2019), along with Weick and Quinn's (1999) work on episodic and continuous change, further emphasises the need for a more comprehensive understanding of organisational change mechanisms. Understanding the dynamics of organisational change provides a foundation for examining the specific change forces influencing higher education institutions.

2.2.4 Resistance to Change

Resistance is the negative reaction to change that an organisation's members can engage in during a change intervention (Jaros, 2010; Meyer & Stensaker, 2006; Pardo-del-Val & Fuentes, 2003). Erwin and Garman (2010) explained the concept of resistance to change as "multi-dimensional" (p. 42). involving behavioural, cognitive, and affective dimensions. It is frequently rooted in the unpredictable effect disruption causes to prevailing organisational structures and practices (Goskoy, 2017). Change typically requires redefinition of roles, structures, and work methods, leading to uncertainty and a desire to uphold the status quo (Lee & Joshi, 2016). Many scholars adhere to the doxa of positive change discourse, leaving unchallenged the prescriptive assumption that change is critical for organisational 'success'. This narrative esteems change leaders and stigmatises those hesitant about change (Parent & Lovelace, 2018).

HEIs face unique challenges in adopting new technologies and practices. According to García-Morales *et al.* (2021), they are fundamentally conservative institutions lacking "innate technological capabilities" (p. 1). However, while higher education institutions tend to adopt new technologies more slowly than other sectors, some scholars argue that this characterisation as uniformly technologically conservative may be overstated or unfounded (Prinsloo & Deventer, 2017). Oliver (1991) and Selwyn (2013) suggest that rather than simple institutional

conservatism, the challenge lies in how digital transformation influences academic values, governance, culture, and ways of working. This is reflected in recent studies (Gkrimpizi *et al.*, 2023; 2024; Omol, 2023) that identify fear, uncertainty, and traditional thinking as significant factors contributing to resistance to change in HEIs. As Watty *et al.* (2016) note, characterising HEIs as innately resistant to change might downplay the role of competing institutional interests and stakeholder agendas in shaping technology adoption.

Nevertheless, stakeholders within HEIs often view technological and organisational changes as disruptive, prompting unease at all levels of an organisation's hierarchy. HEI executive leadership is legitimately concerned about the high costs and uncertain returns on investment in new technologies (Selwyn, 2016). Managers and administrators may be sceptical of operational disruptions caused by rapid technological changes (Donnelly & McSweeney, 2009). Academics may be apprehensive about the impact of technology on their traditional teaching and research practices, fearing a loss of academic autonomy and control over their work (Biesta, 2015; Reich, 2020). These concerns are often exacerbated by psychological anxieties about working in unfamiliar environments, workload pressures, and concerns about optimising student time (Buchanan *et al.*, 2013). Students themselves often prefer familiar educational formats and skeuomorphic tools due to poor digital literacy (Biesta, 2013; Oswald & Kolb, 2014; Page, 2014). These stakeholder concerns are often validated when inappropriate or poorly implemented technologies increase staff workload, create unnecessary bureaucracy, and undermine service quality (Selwyn 2016).

While resistance to change is frequently viewed negatively, it can be a logical strategy for institutional actors to pursue when confronted with changes perceived as having a high risk of failure (see above) or misaligned with educational values and institutional missions (Anderson, 1999; Craig, 2004). As O'Reilly and Reed (2010) argue, resistance to change may defy dominant reform narratives in quite subtle ways, in order to uphold institutional integrity. For example, Reich and Ito (2017) found actors within HEIs often "domesticate" (n.p.) technologies to fit existing routines, undermining the intended change effect in order to maintain a sense of continuity, and to preserve institutional norms. Such subtle forms of resistance highlight the tensions that can emerge between innovation and the preservation of established practices within HEIs. Thus, as Kezar (2018) argues, resistance to change is not always unfounded, and may protect institutional mission and values amidst pressures to change.

2.2.5 Enabling Constraints

In this regard, resistance to change serves as a diagnostic tool, shedding light on areas where institutional structures, resources, or values may be misaligned with proposed changes. It can be reframed as an opportunity to identify constraints and address underlying concerns. These constraints, such as limited resources, cultural traditions, or competing stakeholder interests, can seem like obstacles to change. However, Snowden and Rancati (2021) argue that certain limitations, when approached constructively, can act as “enabling constraints” (p. 12), fostering creativity and innovation within organisations, especially during periods of transformation. The rapid adoption of digital technologies in HEIs in response to the COVID-19 pandemic is a prime example of this phenomenon. Tungpantong *et al.* (2022) highlight how the pandemic, as a significant enabling constraint, necessitated digitalisation of education service provision and administrative processes, pushing HEIs to adapt at an unprecedented pace. This rapid shift not only prompted the implementation of new digital tools and platforms but also encouraged a re-evaluation of pedagogical practices and fostered the emergence of creative solutions to address the challenges of remote learning. Furthermore, such constraints can encourage increased collaboration and communication across the institution. As broad boundaries and complex decision-making processes are challenged, bottom-up innovations and more purposeful stakeholder interactions are promoted (Acar *et al.*, 2019). Hashim *et al.* (2022) argue that this collaborative approach to digital transformation can act as a competitive advantage for HEIs if it is effectively implemented.

2.2.6 Technology Adoption in HEIs

In contrast to the limited research on digital transformation in higher education in general, one area that has attracted substantive attention in the literature is the adoption and integration of digital *technologies* in HEIs (Benavides *et al.*, 2020; Orlikowski, 1996). Numerous studies and theoretical frameworks have explored the factors influencing digital technology implementation in higher education institutions. For example, the National Forum for the Enhancement of Teaching and Learning in Higher Education (2020) highlights specific challenges faced by Irish HEIs, including resource constraints, staff training needs, and the integration of digital tools into existing teaching and learning practices. This report underscores the importance of targeted investments and strategic planning to address these barriers, situating the discussion within the Irish higher education context. Table 2.4 presents an

overview of the most prominent technology adoption models used to identify factors critical to the HEI digital transformation literature.

Table 2.5 Chronological list of technology adoption models

Source: Author's own work

Name	Acronym	Descriptor of Use	Related Scholars	Year
Innovation Diffusion Theory	-	Explains how, why, and at what rate new ideas and technology spread through cultures. Introduced concepts including 'early technology adopters' and 'technology laggards'.	Rogers	1962 [2003 5 th ed.]
Technology Acceptance Model	TAM (1989); TAM2 (2000); TAM 3 (2008)	The Technology Acceptance Models (TAM) explain technology adoption through perceived usefulness, ease of use, social influence, and cognitive factors, predicting user attitudes, intentions, and behaviours.	Venkatesh & Davis, (1989, 2000); Venkatesh & Bala (2008)	1989-2008
Unified Theory of Acceptance and Use of Technology	UTAUT	Examines core factors affecting acceptance and use of technology: 1) performance expectancy; 2) effort expectancy; 3) social influence; 4) facilitating conditions.	Venkatesh <i>et al.</i> 2003	2003
Substitution Augmentation Modification Redefinition	SAMR	Categorises changes in teaching tasks resulting from technology adoption.	Puentedura	2006
Replacement Amplification Transformation	RAT	Offers an alternative approach to understanding the impact of technology on teaching and learning.	Hughes <i>et al.</i>	2006
Technological Pedagogical and Content Knowledge	TPACK	Examines the relationships between content, pedagogy, and technology knowledge.	Mishra & Koehler	2006
Technology Integration Matrix	TIM	Provides a framework for describing and targeting the use of technology to enhance learning.	Allsopp <i>et al.</i>	2007
Extended Unified Theory of Acceptance and Use of Technology	UTAUT 2	Evaluates acceptance of technology with additional focus on consumer contexts.	Venkatesh <i>et al.</i>	2012

Name	Acronym	Descriptor of Use	Related Scholars	Year
Technology Integration Planning	TIP	Offers a pragmatic, research-based model for planning and evaluating technology integration in classroom instruction.	Hutchison & Woodward	2014
Comprehensive Framework for Teaching with Technology	CFTT	Provides a holistic approach to technology integration, considering various factors such as teacher beliefs, knowledge, and context.	Hsu	2016
Ecological Model	-	Acknowledges the complex and multidimensional nature of academic practice and the varying internal and external influences that may shape technology use in higher education.	Shelton	2018
Technology Adoption Readiness Scale	TARS	Assesses an individual's readiness to adopt new technologies based on four dimensions: optimism, innovativeness, discomfort, and insecurity.	Parasuraman & Colby	2022

Paradoxically, by focusing on technology, these studies have, by omission, highlighted the non-technical factors critical for digital transformation, such as management approaches, organisational processes, stakeholder behaviour, and institutional culture. While the models in Table 2.5 offer valuable insights into adoption factors, they often overlook the role of organisational capability in leveraging digital technologies. While understanding adoption factors is important, evaluating the impact of digital technologies requires a focus on broader organisational outcomes. This study distinguishes outcomes as the societal impact or results of an organisation's activities, as opposed to process-focused metrics like efficiency or outputs. Examples in higher education include alumni employment rates, research impact, and alignment with societal goals such as the UN's Sustainable Development Goals (SDGs). These indicators are essential for demonstrating the achievement of public value (Salemans & Budding, 2022; 2023).

A mature organisation possesses the necessary structures, processes, and skills to not only implement new technologies but also to adapt, learn, and continuously improve its use of those technologies. This shift in focus from individual technology adoption to the broader organisational context necessitates an examination of organisational capabilities and their maturity.

2.2.7 Organisational Capabilities as Enablers for Change

Organisational capabilities are the collective skills and expertise that enable organisations to achieve their objectives (Ulrich & Smallwood, 2004). These include operational, dynamic, and core capabilities (Prahalad & Hamel, 1990; Teece *et al.*, 1997; Winter, 2009), which help organisations adapt to ecosystem changes and ensure institutional longevity (Helfat & Peteraf, 2003). This thesis defines organisational capability as an organisation's ability to effectively mobilise and deploy resources, processes, and competencies to achieve its strategic objectives and adapt to changing environments (Curley *et al.*, 2015; Teece *et al.*, 1997). It encompasses the skills, knowledge, and routines within an organisation that contribute to its success in delivering value. In the context of public value, organisational capability ensures that institutions have the operational capacity to achieve outcomes that align with societal needs and stakeholder expectations (Curley *et al.*, 2015).

For HEIs undergoing digital transformation, developing these capabilities is critical for managing change and sustaining new processes. Organisational capability maturity reflects an

organisation's ability to mobilise resources to achieve its goals (Paulk *et al.*, 1993). It is typically assessed using a five-level maturity curve—a peer-reviewed framework that defines clear, measurable, and reproducible stages of organisational capability (Curley *et al.*, 2015; CMMI Product Team, 2010; Wendler, 2012). Capability Maturity Models (CMMs) employ standardised, peer-reviewed criteria for each maturity level developed in collaboration with academia, industry, and practitioners. This approach creates a common understanding of current and progressive organisational capability maturity. The effectiveness of these organisational capabilities is ultimately demonstrated by the value they generate for the organisation (Yin *et al.*, 2020).

Originally developed in the 1980s for software engineering, Capability Maturity Models have since been widely adopted to enhance organisational processes and manage change (Paulk *et al.*, 1993; Wendler, 2012). Capability maturity models are implemented through Capability Maturity Frameworks (CMFs), which provide tools to assess current maturity, identify gaps, and integrate improvements into organisational planning (Curley *et al.*, 2015; Rosemann & Vom Brocke, 2015).

2.2.7.1 Managing Capability Maturity in HEIs

Capability maturity frameworks are applied to complex adaptive organisations like HEIs to engender control. As Wieck (2009), citing Langdon (1991), observes, frameworks keep organisations from the “edge of chaos” (p. 4), by instilling structure, improving communication, and guiding progress. Over the past two decades, there has been interest in applying capability maturity models and capability maturity frameworks in higher education settings. The trend is particularly noticeable in relation to technology initiatives and pedagogical practice (Tocto-Cano *et al.*, 2020). For example, Petrie and Chambers (2009) designed the Higher Education Process Improvement Framework, and Marshall (2010) proposed an eLearning Maturity Model for HEIs based on capability maturity model principles. In their 2020 review, Tocto-Cano *et al.* identified 23 capability maturity models used in HEIs. However, these capability maturity models were predominantly theoretical, lacking assessment methodologies and improvement practices (Marshall, 2018; Tocto-Cano *et al.*, 2020). Consequently, they have had limited adoption and little empirical validation. Notable exceptions Harigopal and Satyadas (2001) and Monteiro *et al.* (2019) applied capability maturity models in HEIs to improve administrative processes. Both studies found that

implementing a capability maturity methodology improved productivity, quality, and efficiency, highlighting their potential benefits in HEI contexts.

Building on Tocto-Cano *et al.*'s (2020) work, my review identified 60 capability maturity models and frameworks applied in HEIs (see Appendix C). These include theoretical, conceptual, and digital transformation frameworks, as well as models addressing leadership, governance, and organisational performance. Existing studies have not explored the use of capability maturity models or frameworks to evaluate digital transformation initiatives in HEIs, particularly within the Irish context. This gap in the literature highlights the need for further scholarly inquiry into how capability maturity models can be applied to assess and guide digital transformation initiatives in HEIs. Specifically, there is a need to integrate the concept of capability maturity into a digital transformation conceptual framework and to examine how these models can address the unique characteristics, challenges, and cultural contexts of higher education institutions, ensuring they are both practical and effective in driving sustainable change.

This is particularly relevant given that, as Reyhaneh and Burgess (2022) observe, the primary barriers to digital technology adoption in HEIs are not technical, but rather social and organisational, emerging from institutional stakeholder behaviours and the complexity of organisational dynamics. To understand how these barriers manifest and can be addressed, it is essential to examine the broader context in which HEIs operate, and how they are managed and led. The application of capability maturity models in HEIs operates within a broader context of shifting administrative paradigms that have fundamentally altered how HEIs function and adapt to change. The shift from traditional academic administration to contemporary management approaches has profoundly influenced how HEIs approach organisational development, including digital transformation initiatives.

2.2.7.2 Evolving Paradigms of Administration, Management, and Leadership in HEIs

In higher education studies, the labels 'administration', 'management', and 'leadership' have undergone substantive shifts in meaning and status since the 1960s (Gunter, 2004). Weberian public administration logics (1922/1978) have been deprecated, replaced by a 'new' public managerialist paradigm (Courtney *et al.*, 2018; Dunleavy & Hood, 1994), emphasising business practices like competition, customer choice, contracting, output-based performance measurement, and organisational unbundling (Figure 2.3). In particular, New Public

Management influenced public sector reform in the Anglosphere and Scandinavia in the late 1980s and 1990s by importing private sector management theory and practice into public services (Pollitt & Bouckaert, 2011). It aimed to redefine citizens as customers, promote efficiency through separating policy and management functions, and curb wasteful public spending by instilling a results-oriented mindset (Ball, 2003; Pollitt & Bouckaert, 2011).

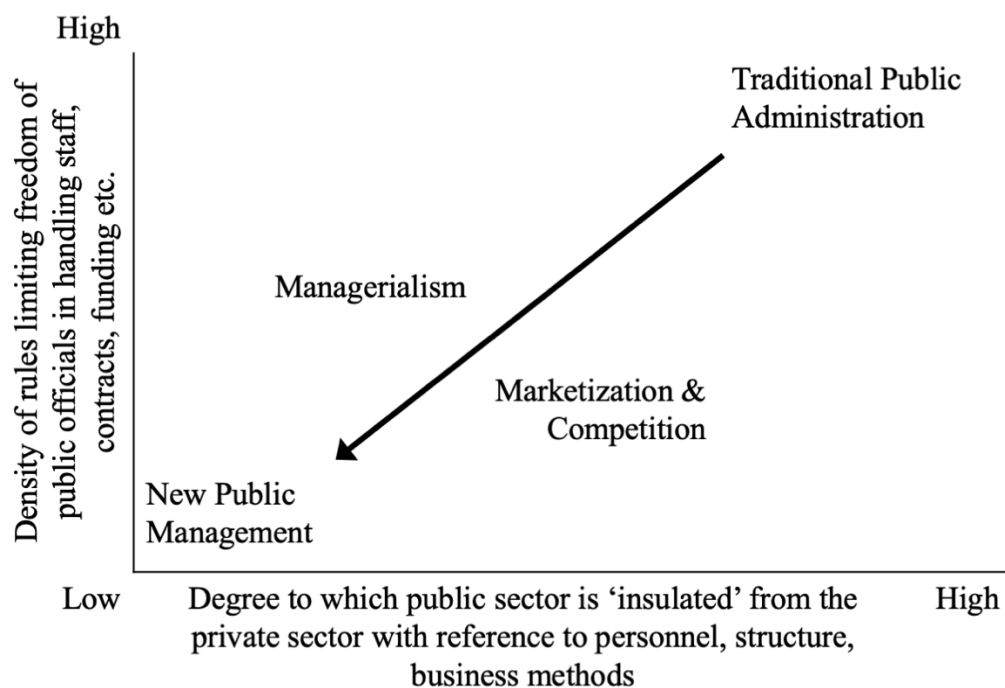


Figure 2.3 Comparing Traditional Public Administration and New Public Management

Source: Adapted from Dunleavy & Hood, 1994

Over the past 25 years, the discourse of educational and public sector leadership has increasingly aligned with NPM ideologies, recasting leaders as entrepreneurial agents tasked with delivering ‘improvement’, enforcing accountability, and advancing market-oriented values (Courtney & Gunter, 2015; Ball, 2012). This so-called ‘leaderist’ rhetoric reframes neoliberal reforms as technical, apolitical challenges that require ‘strong leadership’, with the intent to depoliticise policy decisions and legitimise market-driven institutional transformation (O’Reilly & Reed, 2010). As Säfström and Månsson (2022) argue, this process reflects what they term the “aristocratic principle” (p. 124): a mode of governance that displaces democratic discourse and participatory processes in favour of hierarchical decision making and the reproduction of existing power relations. In such a context, opportunities for open deliberation concerning higher education governance are diminished.

Authority, though rarely accountability, is instead centralised in managerialist elites, valorised by what Blackmore and Sachs (2003) term the “highly masculinist neo-corporate bureaucratic” (p. 478) logics of reform, which conflate decisiveness with efficacy. This results in a twofold manoeuvre: market-driven reforms are normalised as inevitable outcomes of ‘progress’ (Ball, 2012), while dissent and alternative visions of governance are systematically marginalised through hierarchical discursive practices that frame opposition as ‘resistance to progress’ (Blackmore, 1999; 2013; Gunter, 2016; Learmonth & Morrell, 2021).

Within HELMA studies, the ‘leaderist’ discourse privileges performative decision-making by institutional executives, formulating it as a ‘heroic’ vision of organisational leadership. It reflects an exceptionalist narrative attributing senior HEI roles with unique competencies (Fullan, 2001; Law & Glover, 2000). However, Gronn (2009) counters that skills associated with leadership roles are acquired through an ‘activation’ phase, where neophyte leaders learn to embody their institution’s mission. This association, when attached to the doxa of positive change discussed earlier in this chapter, has elevated the symbolic and social capital of senior HEI post-holders (Gunter, 2004; Gunter *et al.*, 2016). The valorisation of leadership as “vision work” (Courtney & Gunter, 2015, p. 395) reinforces an apparent dichotomy in the literature: leadership is framed as strategic and aspirational, while management is reduced to the systemic, procedural arm of governance implementation—a set of structures and policies that codify organisational control (Deem & Brehony, 2005; Shin & Jung, 2014). However, this binary posture overlooks the requirement for interpretive labour to enact governance in practice.

To address this gap, for this study I introduce the term *managership* to delineate the embodied, contested work, through which individuals occupying managerial roles translate vision and strategy into practice. Distinct from management, managership concerns the embodiment of abstract human labour (Marx, 1906, p. 101). Institutionally, managership is systemically devalued. Its intellectual and affective contributions are rendered invisible or dismissed in order to sustain the symbolic and social capital of leadership (Bourdieu, 1989). Within ideologies such as NPM, the leadership/managership dyad operates through a discursive hierarchy that positions leadership as visionary, creative, and agentic (O’Reilly & Reed, 2010), relegating managership to the realm of the ‘uncreative’, and ‘non-educational’ (Bush, 2008; Cuban, 1988), associated with enforcing bureaucratic norms and practices of hierarchy, control, and efficiency (Fitzgerald, 2009; Lumby, 2012).

This is illustrated by Watermeyer and Chubb's (2019) study of the UK's Research Excellence Framework (REF) impact evaluation process. Their research shows how REF panellists, tasked with judging the societal and economic impact of research, were required to translate abstract, ambiguously defined criteria (e.g., "reach," "significance") into concrete evaluative decisions. Panellists described the process as "loose," highlighting the emotional and intellectual vulnerability involved in making judgments without clear standards or empirical anchors. This work was inherently interpretive and contested: evaluators navigated unclear mandates, conflicting expectations, and institutional pressures, often relying on group consensus and narrative construction rather than strictly procedural rules. The case demonstrates how managership is enacted in practice, as individuals tasked with it do more than simply apply policies—they actively interpret, negotiate, and embody the mandates handed down to them. As managers translating "academic excellence" into practice, REF assessors engaged in liminal, improvisational labour to codify impact, exposing the conditionality of 'vision work' when abstract ideals are confronted with material constraints. The study reveals the unpredictable, contested, and embodied nature of translating institutional directives stemming from the often ambiguous and politically charged vision work of senior leadership into situated practice in higher education, underscoring how managership operates within the gap between institutional rhetoric and situated praxis.

In this way, the interpretive, strategic, and demanding nature of the work is diminished, erasing its critical role in translating policy and governance into practice (Bourdieu, 1992). Deem (2004) argues that the leaderist discourse enables institutional elites to disavow the alienating effects of organisational change, displacing accountability for systemic failures onto managerial 'inefficiencies.' Thus, managership characterises the dialectical tension of managerial labour (Foucault, 1991) as a site where institutional power is simultaneously reproduced and contested. Recognising the contested nature of managership clarifies how power, responsibility, and day-to-day practice interact within HEIs. This understanding is essential for analysing how these dynamics affect the way HEIs respond to current challenges, including digital transformation. The distinction between managership and leadership in higher educational settings is thus centred on the locus of responsibility: managership is anchored in the responsibility for systems, while leadership is characterised by the act of influencing within those systems (Courtney *et al.*, 2018). The differentiation between managership and leadership has profound implications for digital transformation in HEIs.

Effective managership is needed to establish robust technical infrastructures, ensure data governance, and supervise the allocation of technological resources (Plekhanov *et al.*, 2023). Leadership, on the other hand, is crucial for driving the adoption of digital initiatives, inspiring innovation, and aligning technological transformation with the institution's strategic goals (Schiuma *et al.*, 2021). Understanding the distinct role each plays in digital transformation can be the basis for ensuring that digital strategies are implemented efficiently and embraced culturally across the campus. However, the leadership and managership dyad (O'Reilly & Reed, 2010) has arguably led to a concentration of decision-making power in the hands of a small executive group. Centralising authority through a hierarchical management structure undermines traditional values such as collegiality, academic autonomy, and shared governance (Deem & Brehony, 2005). Moreover, the emphasis on leadership and managership has been criticised for promoting a narrow, instrumental view of universities as corporate enterprises, rather than as institutions with a broader social mission (Giroux, 2002). In this light, digital technologies and platforms enable greater surveillance, standardisation, and quantification of academic activities, which some scholars argue reduces autonomy (Williamson, 2018). Selwyn (2014) notes that digital transformation, often framed as enhancing efficiency, flexibility, and quality, also provides a means to extend top-down control and market-oriented logics that erode academic values and identities.

2.2.8 Managership and Digital Transformation in HEIs

The multifarious nature of institutional management in complex organisations is underestimated (Alon, 2012; Høiland & Klemsdal, 2020; Pache & Santos, 2013). In the literature, HEI managership involves espousing the HEI executive's vision, undertaking strategic and operational planning; enforcing governance; setting and achieving goals; fostering relationships; managing resources; exploiting intangible assets such as a sense of group identity and institutionalised expertise; executing projects; and realising value for institutional investments in people, processes, and technology (Ekanem *et al.*, 2020; Schein, 2010). These managerial responsibilities are intrinsically linked to the implementation of digital transformation initiatives, as they provide the foundational support required to integrate new technologies and processes (Reis *et al.*, 2018; Warner & Wäger, 2019). HEI managers make a critical contribution to institutional culture in order to sustain a sense of group identity (Schein, 2010). All of these attributes are essential to undertaking the management of digital transformation initiatives (Reis *et al.*, 2018; Warner & Wäger, 2019).

As in other economic sector settings, managers in European HEIs (for example, Austria, Germany, Ireland, Portugal, United Kingdom) have decision-making duties spanning areas such as strategy, operations, budgeting, and stakeholder management (Fulton, 2003; Kehm & Lanzendorf, 2007; Politis *et al.*, 2012; Santiago *et al.*, 2006). They also manage specialised academic functions like admission standards' management, academic programme selection, quality assurance (QA), setting faculty research priorities, and so on (Krücken *et al.*, 2013; Politis *et al.*, 2012). While the role is sometimes perceived as monolithic and tightly coupled (Brazzill, 2020), managers in HEIs require the capability to adapt in a dynamic and uncertain institutional landscape (Connolly *et al.*, 2017; Weick, 1976).

A category of 'third space' professionals known as hybrid managers has arisen in higher education institutions (Whitchurch, 2008a). These professionals, such as Heads of Department, blend academic and administrative roles. They lead teams within their expertise areas and act as intermediaries between administration and academia (Fitzgerald & Ferlie, 2021; Santiago *et al.*, 2006). While crucial for knowledge exchange, strategy execution, and organisational change, hybrid managers often lack the social and cultural capital of professors or the status of middle managers in industry (Ackroyd *et al.*, 2007; Krücken *et al.*, 2013). Their identity is often tied to their original profession, limiting authority. However, as digitalisation reshapes institutional priorities, their evolving role is increasingly critical for fostering technological integration and innovation (McGivern *et al.*, 2015).

The evolution of hybrid-management roles is particularly evident in academic settings, where academics taking on management roles can generate a tension between their dual identity of professional habitus and their managerial responsibilities (Blackmore & Kandiko, 2011; Spyridonidis *et al.*, 2015). In their 2006 study of hybrid managers in Portuguese HEIs, Santiago *et al.* described them as "at best, reluctant managers, experiencing a number of conflicting expectations and often desiring to spend more time on things other than managerial [work]" (p. 242). McGivern *et al.* (2015) highlighted the struggle for identity faced by hybrid managers when reconciling the demands of their professional academic roles with their managerial responsibilities. Floyd and Dimmock (2011) describe these individuals as "jugglers, strugglers, or copers" (p. 396), reflecting the various ways they manage these dichotomous tensions.

Within the Irish system, Politis *et al.*'s 2012 study of nearly 1,200 academics found that managers in Irish HEIs were perceived to have more decision-making influence than

academics, especially within Institutes of Technology (IoTs). Senior and male academics were considered more influential than junior and female colleagues. HEIs were reported to operate an authoritarian management style, reinforced by overly bureaucratic administrative processes, leading to a decline in collegiality and communication, and restricting employee stakeholder involvement in decision-making. Such an authoritarian style may pose challenges to digital transformation, which typically thrives in environments that encourage collaboration and open communication. Politis *et al.*'s findings stand in contrast to the Hunt Report's (2011) recommendation that Irish HEIs must enhance their organisational capabilities in order to undertake new management tasks and strike a balance between market demands and their academic mission.

Kromydas (2017) situates the challenges of higher education within the rise of managerialism, where corporate practices prioritise performance metrics, accountability, and market-oriented goals. This shift diminishes academic autonomy and collegiality, aligning with Politis *et al.*'s findings of authoritarian management and reduced stakeholder involvement. Kromydas highlights the tension between managerialism's instrumental goals and education's intrinsic purposes, such as critical thinking and societal development. He warns that prioritising efficiency risks administrative burdens and undermines academic values, but advocates for a hybrid model balancing autonomy with external demands. Similarly, Deem *et al.* (2007) note that the complexity of academic work limits the effectiveness of direct managerial control, preserving some collegiality. However, over time, traditional practices may erode as administrative burdens and managerialist norms become entrenched (Barry *et al.*, 2001; Clegg, 2009; Donoghue, 2008; Krücken *et al.*, 2013; Santiago *et al.*, 2006).

The management of digital transformation in HEIs depends on whether emergent or planned organisational change dominates. Both paradigms often portray managers as fostering a digitally literate workforce responsible for identifying change needs and implementing digital solutions (Anderson & Ackerman-Anderson, 2010; Kezar, 2013; Sheninger, 2019). Managers are expected to articulate a shared vision for digital transformation and provide organisational direction (Kezar & Lester, 2011; Seaman *et al.*, 2018). They must also monitor external disruptors, identify opportunities, and allocate resources to support emergent digital initiatives (Bonvillian & Singer, 2013; Christensen & Eyring, 2011). However, critics argue this approach imposes an unsustainable workload on managers, with little evidence of its overall effectiveness (By, 2005; Kezar, 2013).

While the emergent change paradigm emphasises the importance of creating an environment that fosters experimentation, learning, and adaptability (Higgs & Rowland, 2005; Kezar, 2014), the planned organisational change approach requires managers to adopt a more strategic and structured approach to change management (Burnes, 2008). Advocates of planned organisational change argue that it enables managers to identify improvement objectives and develop plans to achieve organisational change goals (Benavides *et al.*, 2020). Applying structured change management models, such as Kotter's 8-step model, has been shown to be effective in mitigating the potential negative effects of digital disruption in HEIs (Fernandez *et al.*, 2010; Limani *et al.*, 2019; Luna & Breternitz, 2021).

However, the prescriptive nature of planned organisational change models has been criticised for being too abstract, impractical, or difficult to generalise to different organisational contexts (Collins, 1998; Pascale *et al.*, 1998). Furthermore, the rapid pace of change in the digital era may require more flexible and adaptive approaches to change management than 'n-step models' (Collins, 1998) provide. Limitations include communication issues, difficulties in evaluating change, and a lack of reflexive organisational learning mechanisms when implementing a planned organisational change-based initiative (Akins *et al.*, 2019; Caeiro *et al.*, 2020; Kotter, 1996; Parajuli *et al.*, 2022). Moreover, the focus on processes and organisational outcomes in planned organisational change may neglect the attitudinal responses of those affected by change (Sharpe, 1998). In addition, it is important to pay attention to forces influencing organisational change.

2.2.9 Forces Influencing Higher Education

The higher education landscape is shaped by a constellation of pressures and influences that can be understood as dynamic 'forces', akin to the concept of forces in Porter's Five Forces framework (Porter, 2008). They reflect both external pressures and internal responses driven by policy decisions, stakeholder actions, and institutional strategies. Key forces include globalisation (Altbach & Knight, 2007; Marginson, 2016), internationalisation (De Wit *et al.*, 2015; Knight, 2004), marketisation (Molesworth *et al.*, 2011), massification (Trow, 2000), neoliberalism (Giroux, 2014, Selwyn, 2016; 2022), and the adoption of new public management and managerialism (Deem & Brehony, 2005; Ferlie *et al.*, 2008; Lynch, 2014).

These forces do not operate in isolation; rather, they emerge through a complex interaction of policy decisions, institutional practices, and global trends. For example, globalisation and

internationalisation are often linked to national policies aimed at enhancing competitiveness, while marketisation and neoliberalism reflect ideological shifts in governance and resource allocation. Similarly, the adoption of new public management and managerialism arises from deliberate efforts to align higher education with principles of efficiency and accountability borrowed from the corporate world.

The following sections explore each of these change forces and their relevance to this study.

2.2.9.1 Globalisation and Internationalisation in Higher Education

Globalisation and internationalisation have had a profound effect on the global higher education system, leading to increased competition, massification, and the need for operational efficiency. It has lowered trade barriers and created global markets for services, goods, ideas, and people, while increasing competition, including in the higher education sector. In the higher education context, Stiglitz (2002) describes globalisation as “worldwide economic integration” (p. 473) with political and social dimensions. Altbach (2009) described it as

the reality shaped by an increasingly integrated world economy, new information and communications technology, the emergence of an international knowledge network, the role of the English language, and other forces beyond the control of academic institutions (p. 7).

However, early globalisation theories overestimated global interconnectedness; the ‘second wave’ of critical scholars refined the theory by describing how the asymmetrical power relations inherent in the system selectively distributed globalisation processes into ‘global’ and ‘local’ tiers (Appadurai, 1996; Castells, 1999; Held *et al.*, 1999; Robertson, 2005; Smith, 2001). Recognising the limitations of simpler models, scholars have introduced concepts such as ‘glocalisation’ (Robertson, 2005) and ‘translocality’ (Smith, 2011) to better capture the multiscalar relationship between global forces and local contexts in higher education.

Digital transformation has played a crucial role in accelerating and facilitating the globalisation and internationalisation of higher education (Castañeda & Selwyn, 2018; Komljenovic, 2019). The rapid advancement of digital technologies, including online learning platforms, mobile devices, and social media, has enabled HEIs to reach a global audience, collaborate with international partners, and deliver educational content across borders (Knight, 2014; Rumbley, 2015). Digital transformation has also contributed to the emergence of new forms of

internationalisation, such as massive open online courses (MOOCs) and transnational education (Altbach & Knight, 2007; De Wit *et al.*, 2015).

The evolving demands on HEIs affect institutional identity and legitimacy, governance, organisational structures, and academic professionalism (Marginson, 2006). Political geography concepts like ‘scale’ help analyse power dynamics in higher education (Harvey, 2006; Çağlar & Glick Schiller, 2011). For example, the ‘glonacal agency heuristic’ combines global, national, and local scales to explore the complex relationships shaping HEIs (Marginson, 2022). In Europe, higher education supports economic policies, such as the Lisbon Agreement’s goal to make the EU a leading knowledge-based economy (European Commission, 2003). However, the 2007/2008 financial crisis forced HEIs to enhance efficiency, optimise resources, and streamline processes (Altbach, 2015). Digital transformation enabled these changes by automating tasks, using data analytics, and adopting agile practices (Seres *et al.*, 2019).

Giroux (2002) and Naidoo *et al.* (2011) argue that the intensifying market pressures in competitive HEI environments underscore the need to re-examine public service obligations and the social responsibilities of contemporary higher education systems. As institutions navigate the complex landscape of globalisation, internationalisation, and digital transformation, it is crucial to recognise the multiple layers of influence, local agency in global contexts, and the potential for both empowerment and containment in the ongoing transformation of higher education (Robins & Webster, 2002; Selwyn, 2016).

2.2.9.2 Neoliberalism, New Public Management in Higher Education

Neoliberalism, an ideology within the globalisation ecosystem, represents the schema through which global, national, regional, and local economic relations are structured. A contested concept with multiple meanings, it is often used as an explanatory device in critical scholarship on capitalist, free-market policies (Springer, 2010; Venugopal, 2015). However, Slobodian (2018) argues that neoliberalism is not just a “political swearword” (p. 3) representing a coherent philosophical doctrine seeking to extend market principles to all aspects of life, including the state. Rather than dismantling the state, neoliberalism seeks to reconfigure it to serve market interests by promoting competition, privatisation, and the commodification of public goods (Gamble, 1988; Harvey, 2005). According to Harvey (2005), the neoliberal state minimally engages in economic affairs but actively intervenes to sustain a ‘good business

climate’, protect financial systems through bailouts, and safeguard capital accumulation. Public services are privatised, welfare is rolled back, deepening inequality. Meanwhile, corporate influence over policymaking grows, blurring the line between state and private power, as the coercive arm of the state strengthens to manage dissent. These patterns are evident in higher education policy through the adoption of New Public Management doctrines (Olssen & Peters, 2005). NPM, derived from neoliberal principles, applies market-based logics to publicly funded institutions. NPM emphasises competition, measurable performance, and institutional restructuring, as summarised in Hood’s (1995) doctrines (Table 2.6),

Table 2.6 New Public Management doctrines

Source: Hood (1995, pp. 95-97)

Doctrine	Description
Disaggregation of Entities	In higher education, this is reflected in the restructuring of HEIs for economies of scale and a more centralised approach to higher education.
Competition and Market Mechanisms	Competition is promoted both within and between HEIs, often through public tendering, term contracts, and rankings. This promotes market logics that put HEIs, faculties, and even individual academics in competition with each other.
Private Sector Management Practices	Universities increasingly adopt accounting norms, flexible hiring policies, and performance-based rewards, mirroring private-sector management tools.
Resource Discipline and Parsimony	Austerity measures and the imperative to “do more with less” lead to cost-cutting, efficiency drives, and heightened scrutiny over resource allocation.
Accountability and Visible Management	Executive leadership assumes a more active, transparent, and visibly accountable role, with responsibility clearly assigned to individuals.
Goal Definition and Performance Measurement	Quantifiable targets and performance metrics are imposed to measure success, shifting focus to measurable outcomes, often at the expense of broader academic objectives.

Doctrine	Description
Output-Oriented Control	HEIs are increasingly judged based on measurable outputs, such as research income, publication metrics, graduate employment rates, and student satisfaction scores, with resource allocation tied to these outcomes.

In the Irish context, Mercille and Murphy (2015) argue that the 2008 financial crisis and subsequent bailout facilitated the implementation of NPM practices in the higher education system. They contend that the crisis served as a pretext to introduce reforms aligned with market-based principles, including reduced public funding, increased student fees, and greater administrative control. Hardiman and MacCarthaigh (2017) argue that Ireland’s response to the 2008 financial crisis illustrates the exploitation of exogenous change forces to implement NPM-influenced reforms. Under the oversight of the Troika⁴, Ireland adopted austerity measures. These interventions, ostensibly aimed at addressing fiscal challenges, served to align public services, including higher education, with market principles. Beyond Troika-mandated measures, the Irish government leveraged the crisis to pursue broader reforms, consistent with NPM trends emphasising efficiency and centralisation. The Irish case demonstrates how neoliberalism adapts public institutions to prioritise market logic, where crisis-driven, ideologically driven measures reconfigure state functions under the guise of reform.

2.2.9.3 Managerialism in Higher Education

Managerialism in higher education, driven by NPM, increasingly holds academics accountable to performance metrics rather than intrinsic educational or research quality. This shift, as Flynn (2002) observes, replaces collegial governance with hierarchical, business-oriented management, creating tensions within academic communities. Clarke *et al.* (2018) and Deem *et al.* (2007) describe how managerialism reinforces NPM through coercive ‘control technologies’ such as productivity targets, performance expectations, and restructured hierarchies, ultimately enforcing market-oriented institutional change. For example, tying

⁴ The ‘Troika’ refers to the trio of international institutions—the European Commission (EC), the European Central Bank (ECB), and the International Monetary Fund (IMF)—that worked together to manage and oversee bailout programmes for Eurozone countries in financial distress, including Ireland (European Parliament, 2014).

research funding to metrics like publication output incentivises quantity over quality. Bourdieu and Passeron (2000) conceptualise these interventions as acts of “legitimate symbolic violence” (p. 4), where managerialism imposes a hegemonic narrative of efficiency and accountability, marginalising dissent and reinforcing institutional authority.

Felício *et al.* (2021) argue that imposing standardised, one-size-fits-all NPM doctrines as a management control system generates an irreconcilable tension between managerialist logics and long-term organisational goals, reflecting broader critiques of NPM in higher education. Lapuente and Van de Walle (2020) found that while NPM reforms can improve efficiency, this is highly context-dependent and often comes at the expense of public values like intrinsic motivation, collaboration, and holistic accountability. Pollitt (1995) memorably asserted that ‘radical reformers’ (e.g., New Zealand and Canada) “faith” (p. 133) in NPM doxa and managerialist diktat has not been “justified by works” (p. 133), undermining the normative discourse that NPM-influenced reforms have led to measurable improvements in performance at the systemic or institutional level. Questions therefore remain about the long-term sustainability of market-oriented approaches, particularly with regard to their capability to balance efficiency with broader institutional objectives, such as fostering innovation, preserving academic autonomy, and ensuring equitable access to education.

This study adopts the concept of public value as a framework for evaluating such objectives. Public value refers to the value created by public organisations such as higher education institutions that benefits society as a whole. It involves delivering sustainable outcomes that address societal needs while ensuring legitimacy among stakeholders and operational capacity to achieve goals (Moore, 1995). In the context of higher education, public value emphasises contributions to societal well-being, regional development, and fostering responsible professionals. These unresolved tensions raise concerns about whether such reforms generate public value or merely perpetuate a narrow focus on measurable outputs at the expense of intrinsic academic values. While the literature review has established a comprehensive understanding of digital transformation in higher education, particularly its conceptual, theoretical, and practical dimensions, a key gap remains: understanding how these dynamics manifest in resource-constrained and regionally embedded systems like Irish HEIs. Specifically, the literature lacks a clear examination of how HEI leadership navigates the interaction between external change forces and internal constraints while managing digital transformation initiatives.

Building on the theoretical and empirical foundations outlined above, the next section identifies the key research themes, analyses gaps in the existing literature, and presents the research questions guiding this study. It also briefly explains how these research questions were developed based on the identified gaps and themes.

2.3 Themes, Gap Analysis, and Research Questions

The literature review produced five research themes that are central to understanding digital transformation in higher education. The first theme, change forces, is significant because these forces act as accelerators for digital transformation in higher education (Rapanta *et al.*, 2020; Watermeyer *et al.*, 2021). These forces require HEIs to rapidly adopt and integrate digital technologies, which can have a profound impact on the strategies and practices employed by HEI managers. This theme highlights the importance of being prepared for and responsive to unexpected disruptions that can catalyse digital transformation in HEIs. This theme is relevant to all three research questions, as it influences the strategies and practices adopted by HEI managers, as well as the change forces influencing HEIs, and the impact of digital transformation on HEIs.

The second theme focuses on globalisation and marketisation pressures. These pressures are significant because they compel HEIs to develop their institutional capabilities to provide accessible and appropriate education services (Altbach, 2016; Castro Benavides *et al.*, 2022; Hazelkorn, 2015; Marginson, 2006). In a globalised and increasingly competitive higher education market, HEIs must adapt to meet the needs of a diverse student population and deliver educational experiences that are relevant and valuable. This theme underscores the importance of developing digital capabilities to respond to these external pressures effectively.

The third theme explores technological advancements. The rapid digitalisation of HEIs is significant because it challenges existing institutional culture, identity, policies, governance, and academic values. The interaction between new technologies and these internal dynamics creates a need for structured methodologies for planned organisational change (Guppy *et al.*, 2022; Kezar & Eckel, 2002; Selwyn, 2016). This is crucial for HEIs to successfully navigate the challenges of digital transformation and effectively integrate new technologies into their operations and educational practices.

The fourth theme addresses societal shifts. Changing societal expectations regarding the role of higher education are significant because they drive digital adoption in HEIs (Bulger *et al.*, 2014; Henderson *et al.*, 2017; Kaputa *et al.*, 2022; Olawale & Mutongoza, 2021). As society demands more accessible, flexible, and technology-driven educational experiences, HEIs must adapt their strategies and practices to meet these expectations. This theme highlights the importance of understanding and responding to external pressures that shape the digital transformation of HEIs.

The final theme considers the impact of digital transformation. The significance of digital transformation lies in its ability to enable new opportunities for education, research, innovation, and engagement. Digital technologies facilitate collaboration, data-driven analysis, and the exploration of emerging research areas (Grand-Clement, 2017; Daniel, 2019; Kaputa *et al.*, 2022). This theme emphasises the potential for HEIs to leverage digital technologies to advance knowledge creation and foster innovation, which is critical for maintaining relevance and competitiveness in the digital age. The five research themes are one output from the literature review that inform the research questions. The next section summarises the research gaps, which are the other component informing research question development.

2.3.1 Research Gaps

Despite the growing body of knowledge on digital transformation, most of the literature remains focused on business and for-profit enterprises (Bharadwaj *et al.*, 2013; Fitzgerald *et al.*, 2013; Ismail *et al.*, 2017; Liu *et al.*, 2011; Westerman *et al.*, 2014). The needs, demands, and expectations for digital technology differ between commercial enterprises and public sector organisations like higher education institutions (Collins, 1998; Danielsen *et al.*, 2022). Consequently, digital transformation in HEIs is under-researched (Cohen *et al.*, 2018; Hausberg *et al.*, 2019; Nadkarni & Prügl, 2021). This is the first gap in the literature. Critically, the role of HEI managers in effecting digital transformation remains under-theorised in the literature. This is a substantive gap, as middle managers play a crucial role in translating national policy, institutional strategy, and executive vision into actionable plans, driving digital transformation. Floyd and Wooldridge (1999) noted that:

a middle management perspective has thus far been completely neglected in digital transformation research. We see this as a major gap, since the middle layers of management are 'where the action is' (p. 124).

More than two decades later, the gap remains unresearched (Gfrerer *et al.*, 2021; Kaivo-Oja *et al.*, 2017; Nadkarni & Prügl, 2021; Wu *et al.*, 2021). Current discourse lacks a unified framework for integrating key dimensions of change, such as its source, pace, and nature (Ross *et al.*, 2016; Weick & Quinn, 1999; Weill & Woerner, 2017; 2019). This study engages with the complexities involved in digital transformation in HEIs. In particular, the development and application of the Higher Education Institution Digital Transformation conceptual framework (detailed in Chapter 3) supports an exploration of digital transformation from a managerial perspective, integrating multiple dimensions of change and managerial strategies.

2.3.2 Research Questions

The research questions (RQs) were developed using the following process. Having identified the five key themes and the research gaps from the literature, I mapped them to formulate broad research question domains. These domains were refined to focus on three areas: 1) change forces driving digital transformation in Irish HEIs, 2) effects of operational and cultural factors on digital transformation, and 3) the impact of digital transformation on Irish HEIs. The refined domains were mapped back to the themes to ensure comprehensive coverage (see Table 2.7). The process is described in detail in Appendix A.

Table 2.7 Research question domains mapped to research themes identified in the literature review

Source: Author's own work

Research Question Domains Research Themes	Change forces (related to RQ1)	Operational and cultural factors (related to RQ2)	Impact of digital transformation (related to RQ3)
	Research Question Domains Mapped to Research Themes		
1. Change Forces	✓	✓	✓
2. Globalisation, Marketisation, and Massification	✓	✓	
3. Technological Advancements	✓	✓	✓
4. Societal Shifts	✓	✓	
5. Outcomes and Value Realisation		✓	✓

Next, I reviewed and finalised the questions to align with the study's objectives and to address the gaps in the literature. This approach enabled the development of the three research questions for the study:

1. What change forces drive digital transformation in Higher Education Institutions in Ireland, from the perspective of senior managers responsible for these initiatives?
2. How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?
3. What is the impact of digital transformation on Higher Education Institutions in Ireland?

2.4 Conclusion

The literature review has examined the existing research on digital transformation, organisational change, and higher education management, identifying significant gaps in understanding the role of managership in the contested space of higher education institution digital transformation. According to the literature, digital transformation is driven by a variety of factors, including technological advancements, societal changes, globalisation, and disruptive events. There is a paucity of empirical research on digital transformation implementation, particularly from the perspective of HEI managership.

Additionally, it introduced theories relevant to the study, such as neo-institutionalism, resource dependence theory, as well as typologies of change. The literature review also highlighted the need for a conceptual framework that integrates these perspectives. Building on this analysis, the following chapter develops a conceptual framework to investigate digital transformation in Irish HEIs, providing the theoretical foundation for this study's research design and methodology.

Chapter 3 Conceptual Framework

3.1 Introduction

This chapter introduces a conceptual framework designed to guide the investigation of digital transformation within higher education institutions. Named the Higher Education Institution Digital Transformation framework (HEI-DT), it integrates institutional theory and resource dependence theory (RDT). By combining these theoretical perspectives, the HEI-DT provides a systematic approach to understanding how HEIs manage digital transformation initiatives.

The chapter begins by establishing the need for a conceptual framework. Existing theories are integrated to underpin the framework's infrastructure. Building on these theories, the chapter introduces key concepts, such as Gerschewski's Typologies of Change model, conceptualisation of organisational capability as a 'change space' for organisation digital transformation, and public value as lens to recognise HEI benefits realisation. Next, the framework development process is described. Finally, the framework's operational structure is presented. This section highlights critical elements such as enabling constraints, organisational capabilities, and the Zone of Proximal Digital Transformation, providing a structured approach to engage with HEIs' digital transformation.

3.2 The Need for a Conceptual Framework

Imenda (2014) distinguishes theoretical from conceptual frameworks. Theoretical frameworks are grounded in established theories; they provide a lens for researchers to interpret their findings. However, when a research problem cannot be sufficiently addressed by a single theory or the concepts within it (Leonardi, 2012; Orlikowski & Scott, 2008), researchers may need to synthesise concepts from multiple bodies of knowledge. Building on Deleuze and Guattari's (1991) definition of a concept as a 'construct that shapes meaning', Jabareen (2009) contends that to fully grasp a concept, it must be considered in relation to its constituent parts, its links to other concepts, and the specific problems or needs it is intended to address. This synthesis of "interlinked concepts that together provide a comprehensive understanding of a phenomenon" (Jabareen, 2009, p. 51) is referred to as a conceptual framework, which is a bringing together of related concepts to explain, predict, or provide a broader understanding of a phenomenon of interest (Imenda, 2014; Jabareen, 2009; Liehr & Smith, 1999).

Conceptual frameworks have several key features: (1) they are constructs where each conceptual component has an integral function, laying out key concepts and presuming relationships between them (Miles & Huberman, 1994); (2) they provide an interpretive, not rather than a causal approach to social reality; (3) they offer understanding, not theoretical explanations like quantitative models (Levering, 2002); (4) they are indeterminist, enabling comprehension and interpretation - but not prediction - of human behaviour (Levering, 2002); (5) they can be developed through qualitative analysis; their sources are concepts from many disciplines that become the empirical data (Jensen & Allen, 1996; Nelson, 2006; Sandelowski *et al.*, 1997).

It is clear from the literature review that no single contemporary theory can adequately explicate the complexity of managing HEI digital transformation. Digital transformation in higher education institutions cuts across technological, organisational, institutional, societal, cultural, spatial, and temporal domains (Castañeda & Selwyn, 2018; Robey & Abdalla Mikhaeil, 2016). As outlined in Chapter 2, a key characteristic of the ‘fourth wave’ of digital transformation literature is the rise of conceptual models and frameworks within the discourse, reflecting efforts to bring structure and define boundaries to the field. For example, Teece’s (2007) dynamic capabilities framework identifies clusters of capabilities based around the concepts of sensing, seizing, and transforming within organisations. Navarro-Prieto *et al.* (2019) applied Teece’s framework to study universities’ dynamic capabilities development for information technologies adoption. However, scholars (Pezeshkan *et al.*, 2016) have criticised the quite abstract nature of Teece’s verb-based conceptual clusters, reporting difficulties in quantitatively measuring the qualitative descriptions of his dynamic capabilities. Additionally, Teece’s framework was developed for large, for-profit enterprises, potentially limiting its relevance to publicly funded entities like HEIs (Laswad & Redmayne, 2015; Pablo *et al.*, 2007).

Khanagha *et al.*’s (2013a) conceptual framework identified four technology management domains: (i) strategy making; (2) investment making; (3) resource orchestration, and (4) knowledge management. However, the framework was developed based on studies of large, multinational corporations, and its applicability to the often resource-constrained and bureaucratic environment of HEIs seems limited (Khin & Ho, 2019). Furthermore, the framework focuses primarily on the management of technologies and may not fully address the broader organisational and cultural changes required for digital transformation (Khin & Ho,

2019). Nieves and Quintana's (2018) conceptual model focuses specifically on technological capability, which they conceptualise as comprising managerial, operational, and dynamic capabilities. However, the model focuses on the technological aspects of digital transformation and does not capture the broader organisational, cultural, and strategic dimensions of digital transformation in HEIs. Additionally, the model was developed based on studies of manufacturing firms, and its relevance to the service-oriented nature of HEIs has not been critically examined (Benavides *et al.*, 2020; Warner & Wäger, 2019).

In HELMA studies, researchers have, at various times, created conceptual frameworks to engage with digital transformation in higher education ecosystems. Prominent among them are the socio-technical systems (STS) framework (Berman, 2012), Svahn *et al.*'s (2017) strategic renewal model, and Haffke *et al.*'s (2017) organisational change and innovation model. They have been variously criticised for lack of practical guidance (Morakanyane *et al.*, 2017), simplifying power relationship between human actors within technical systems (Mikalef & Pateli, 2017), undervaluing the importance of organisational culture, employee engagement, and change management processes in the renewal process (Soluk *et al.*, 2021), and treating digital transformation as an episodic activity, rather than an ongoing process (Morakanyane *et al.*, 2017).

A number of capability maturity frameworks have focused on addressing digital transformation in HEIs. In an older study, Martins and Duarte (2013) identified eight educational maturity models based on the Capability Maturity Model Integration model (CMMI), and one Information Technology Infrastructure Library (ITIL) service catalogue-based model adapted for HEIs. More recently, Alidrisi *et al.* (2020) proposed a capability maturity framework to assess HEI e-learning capability maturity. Similarly, Thong *et al.*'s (2020) model looked at integrating Industry 4.0 education in HEI curricula. Zhou (2017) developed a capability-based methodology to assess both technology governance maturity and administrative process management maturity. Konopik *et al.*'s (2022) model is based on seven organisational capability themes for digital transformation, whilst the HolonIQ (2022) Higher Education Digital Capability Framework (HEDC) evaluates HEI digital capability.

Even though they are situated in the HELMA studies domain, these models have several limitations. They are too broad and generalised to capture the specific characteristics and business areas of academic organisations. The models tend to focus narrowly on technology-

based, domain-specific, or systems control-focused aspects of the topic, neglecting other domains of HEI activities (Becker *et al.*, 2009; Röglinger *et al.*, 2012). For example, frameworks focused on pedagogy processes do not provide guidance on aligning education service delivery with institutional management and administration. Whilst the models indicate desired attributes and best practices at each capability maturity level, they do not offer practical implementation strategies for process improvement within higher education institutions. None of the models consider value, which is a critical metric for capability measurement (Curley *et al.*, 2015; Yin *et al.*, 2020).

As Vial (2019) observed, many existing models exhibit a technocratic bias, failing to account for the sociocultural and operational dimensions of organisational change (Selwyn, 2020; Williamson, 2018). Similarly, Nambisan *et al.* (2017) argue that digital transformation frameworks often overlook important institutional factors such as organisational identity, institutional logics, and culture. Bearing the shortcomings and gaps within contemporary theoretical frameworks in mind, it is evident that a more holistic approach is needed to address managing digital transformation in higher education institutions. It could be argued that a conceptual framework is required that incorporates theoretical and practical considerations. Such a framework should not only integrate institutional factors such as technological and social dimensions, but also must acknowledge the dynamic nature of organisational change. In other words, a conceptual framework is required that can (1) provide a means to understand change forces, (2) identify the enablers and constraints for digital transformation, (3) address the relationship between institutional logics and organisational capabilities, and (4) assess the generation of benefits over time.

Given that no such conceptual framework exists, it was necessary to design and develop a higher education institution digital transformation framework for this study. The framework draws on knowledge from a range of disciplines, including organisational theory, information systems, capability management, digital transformation studies, change theory, and HELMA studies, as these critical components are often under-theorised in contemporary frameworks and models. These criteria directly support the three research questions that were developed from the literature review (see Section 2.3.2):

1. What change forces drive digital transformation in Higher Education Institutions in Ireland, from the perspective of senior managers responsible for these initiatives?

2. How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?
3. What is the impact of digital transformation on Higher Education Institutions in Ireland?

To address the research questions, it was necessary to ground the conceptual framework in a robust theoretical foundation. The following section explores the theoretical foundations which informed the framework design.

3.3 Theoretical Foundations

Digital transformation in higher education institutions is frequently characterised as a complex process arising from the interaction of rapid technological advancements, external pressures such as globalisation and state policy, and internal organisational dynamics (Alenezi, 2021). The literature on organisational change often highlights the challenges and high failure rates associated with transformation initiatives (see Section 2.2.2). However, a number of scholars argue that change initiative efficacy can be significantly improved when change agents draw on multiple theories of change to address complex challenges, align interventions to specific contexts, and facilitate sustainable transformation (Curley *et al.*, 2015; Kezar, 2013; 2018; Snowden & Boone, 2007). Adopting a multi-theory perspective provides a deeper understanding of the complexities of organisational transformation and increases the likelihood of achieving beneficial outcomes.

While complexity is inherently unpredictable (Weick, 1976; Tsoukas & Chia, 2002)—where the relationship between interventions and outcomes is often only understood in retrospect (Snowden & Boone, 2007)—patterns can still emerge in how HEIs respond to change forces (Curley *et al.*, 2015). These patterns echo broader organisational theories related to institutional behaviour, resource dependency, and organisational absorptive capacity (Weick & Quinn, 1999). In the first case, institutional norms often compel HEIs to prioritise externally legitimised digital strategies over internal operational needs (DiMaggio & Powell, 1983; Scott, 2014). In the second instance, dependence on external resources (such as funding, partnerships, or technology) can coerce HEIs to adopt specific digital ‘solutions’, even if these technologies do not possess the necessary capabilities or features to help the organisation achieve its long-

term objectives (Pfeffer & Salancik, 1978). Ultimately, digital transformation hinges on a higher education institution's capacity to manage its organisational capabilities to absorb change (Besson & Rowe, 2012; Curley et al., 2015; Teece, 2007).

Four theories provide insights for understanding these patterns: Neo-Institutional Theory, Resource Dependence Theory, Continuous Change Theory, and Capability Management Theory. Table 3.1 summarises their contributions to understanding digital transformation in HEIs:

Table 3.1 Key theories for understanding digital transformation in HEIs

Source: Author's own work

Theory	Key Scholars	Contribution to Understanding HEI Digital Transformation
Neo-Institutional Theory	DiMaggio & Powell (1983), Oliver (1991), Scott (2014)	Explains how institutional pressures and legitimacy needs compel HEIs to adopt digital transformation strategies that align with sector norms and external expectations, even when misaligned with internal priorities.
Resource Dependence Theory	Pfeffer & Salancik (1978)	Highlights how HEIs' dependency on external resources (e.g., funding, policy, stakeholders) drives digital transformation initiatives, often prioritising resource acquisition over long-term stability.
Continuous Change Theory	Weick & Quinn (1999), Weick (2009), Tsoukas & Chia (2002)	Demonstrates that whilst HEI digital transformation typically unfolds through ongoing, incremental changes, sudden, radical shifts can occur, reflecting the emergent nature of organisational change.
Capability Management Theory	Curley <i>et al.</i> (2015), Teece (2007)	Emphasises the importance of building capabilities, technological readiness, and organisational maturity to successfully implement and sustain digital transformation initiatives.

Figure 3.1 illustrates the interoperation of these theories, demonstrating how each contributes to a holistic understanding of HEI digital transformation.

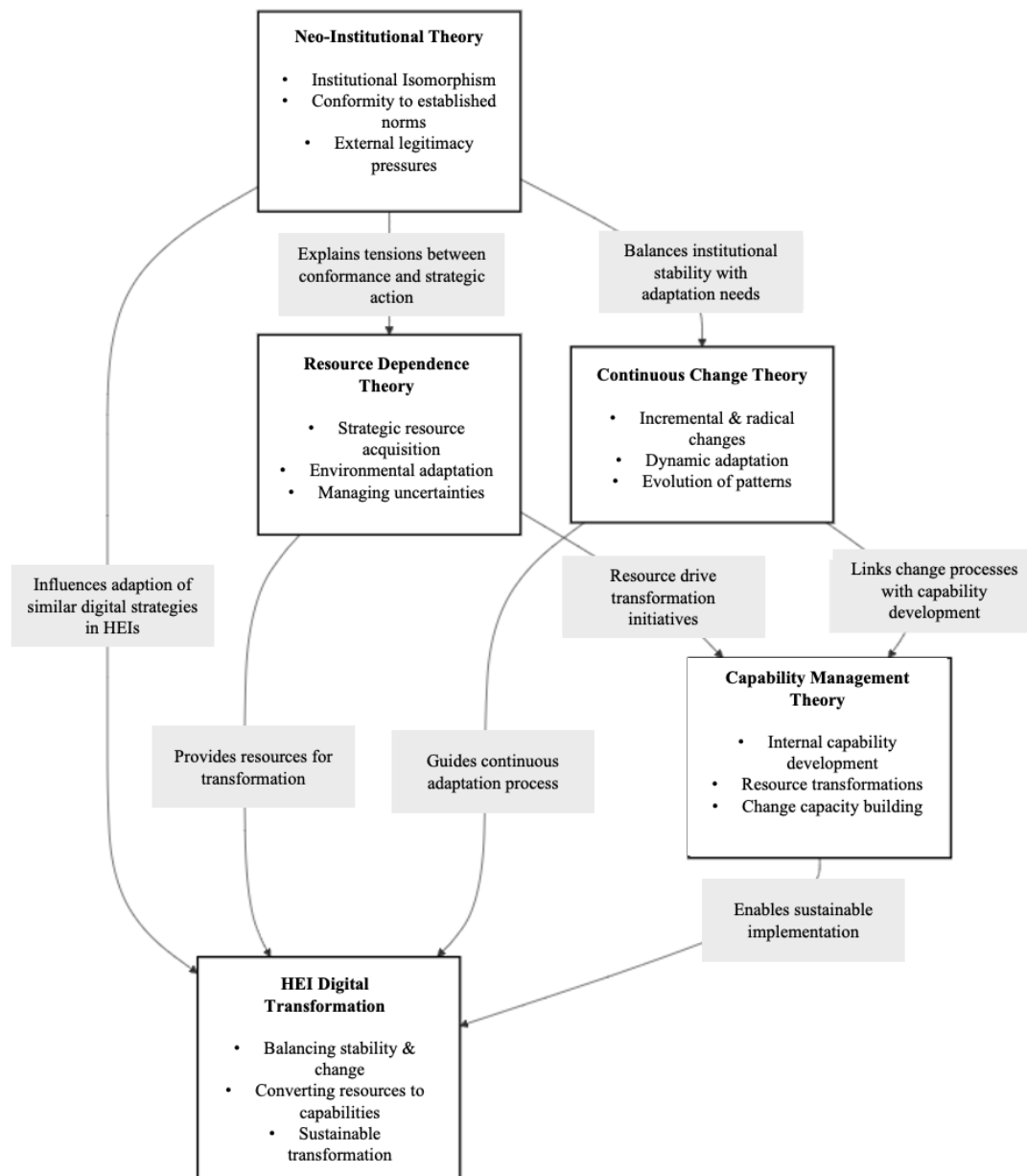


Figure 3.1 Action-on-arrow diagram connecting theories underpinning the HEI-DT conceptual framework

Sources: DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Pfeffer & Salancik, 1978; Teece, 2007; Weick & Quinn, 1999.

Adapted by the Author.

Neo-institutional theory explains how institutional isomorphism enables organisations to maintain stability by conforming to established sociocultural norms (DiMaggio & Powell, 1983). In particular, the conceptual framework is influenced by the Institutionalist scepticism of rational-actor models (Powell & DiMaggio, 1991, p. 12). A key premise for this study is

that institutionalisation is shaped by an organisation's context or state, which develops based on the organisation's history and environment. The unfolding of this process constrains an organisation's ability to act in a goal-oriented way. This occurs because institutionalisation establishes norms that limit the range of options available to an organisation, even when other choices might be more effective or practical. While organisational behaviour is guided by an internal logic grounded in these institutional norms and pressures, such logic does not necessarily facilitate, and may even hinder, the achievement of strategic goals such as digital transformation or innovation. Thus, the very mechanisms that promote stability and legitimacy may simultaneously constrain adaptability and goal attainment (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). From a critical realist perspective (see Section 4.5.1), it is essential to distinguish between the empirical (what is observed in organisational practices), the actual (what occurs, whether observed or not), and the real (the underlying generative mechanisms—such as institutional norms and power structures—that produce these observable patterns). This approach enables a deeper analysis of how unseen institutional mechanisms shape, and sometimes limit, the possibilities for organisational change. Consequently, an organisation's current state influences and reinforces its future actions. This dynamic highlights how institutional pressures shape organisational behaviour, often prioritising conformity and stability over efficiency or innovation. In parallel, Resource Dependence Theory (RDT) explains how individual organisations strategically leverage actions to secure the resources necessary for adaptation and responses to environmental uncertainties (Pfeffer & Salancik, 1978). Together, these theories illustrate the tension between institutional equilibrium and strategic adaptation in digital transformation (Scott, 2014; Oliver, 1991).

Neo-institutional theory and Resource Dependence Theory (RDT) explain how external pressures drive HEIs to adopt similar digital strategies over time in order to maintain legitimacy and secure essential resources. These theories highlight the influence of sociocultural norms and environmental dependencies in shaping institutional behaviour. In contrast, Continuous Change Theory (Weick & Quinn, 1999) focuses on how HEIs adapt internally within a dynamic and rapidly evolving global higher education ecosystem. This theory explains how institutions evolve through incremental adjustments over time, while remaining capable of implementing radical transformations when significant shifts in their environment demand it (Tsoukas & Chia, 2002). Together, these perspectives illustrate the balance HEIs must maintain between external conformity and internal adaptability to thrive in a complex, fast-changing landscape.

Resource Dependence Theory's focus on external resource acquisition (Pfeffer & Salancik, 1978) is enhanced by Capability Management Theory's emphasis on internal capability development (Teece, 2007). While resource dependence theory can explain the materiality of transformation initiatives, capability management shows how these resources are mobilised to to achieve specific outcomes (Curley *et al.*, 2015). Finally, Continuous Change Theory's description of transformation processes (Weick & Quinn, 1999) is strengthened by Capability Management Theory's focus on developing organisational capacity to manage change (Peppard & Ward, 2004). This connects the nature of organisational change with the capabilities needed to implement and sustain digital transformation initiatives (Curley *et al.*, 2015; Teece, 2007).

Neo-Institutional Theory's focus on isomorphism aligns with Research Question 1, which examines the change forces driving digital transformation. Resource Dependence Theory supports Research Question 2 by explaining how HEIs navigate external dependencies to implement transformation initiatives. Continuous Change Theory and Capability Management Theory together address Research Question 3 by highlighting the processes and capabilities needed to build sustainable digital transformation capacity.

The next section builds on these theoretical foundations by operationalising these theoretical principles into concepts that enable the design of a conceptual framework for this study.

3.3.1 The Zone of Proximal Digital Transformation (ZPDT): A Key Conceptual Innovation

One of the key innovations introduced in this study is the concept of the Zone of Proximal Digital Transformation (ZPDT). The ZPDT addresses critical gaps in existing digital transformation models, which often overemphasise technology, neglecting the importance of organisational, cultural, and strategic dimensions of change. Additionally, many models fail to incorporate the broader institutional context or account for the unique needs, readiness, and maturity of HEIs.

Drawing inspiration from Lev Vygotsky's (1978) Zone of Proximal Development (ZPD), the ZPDT represents the optimal space where an organisation's transformation efforts are most likely to succeed. Just as Vygotsky's ZPD highlights the gap between what a learner can

achieve independently and what they can achieve with guidance from a ‘more knowledgeable other’, the ZPDT identifies the transitional space where HEIs can navigate the complexities of digital transformation with appropriate scaffolding and support. The Zone of Proximal Digital Transformation represents the ideal space where an organisation’s digital transformation efforts are most likely to be effective.

3.3.1.1 Key Components of the ZPDT

The ZPDT comprises four key components, which together enable institutions to manage the complexities of transformation effectively:

1. **Organisation Capabilities**, which enable the institution to develop and deploy the skills, strategies, and processes required to respond effectively to change. Adaptive capabilities represent the institution's internal attributes and resources that enable it to respond effectively to change and implement digital initiatives. They act as the ‘more knowledgeable other’ (Vygotsky, 1978), providing the scaffolding necessary to bridge the gap between the current state and the desired target state. Adaptive capabilities include:
 - a. **Strategic planning** to align transformation efforts with institutional goals.
 - b. **Governance frameworks** to manage complexity and ensure accountability.
 - c. **Organisational design and planning** to build the capability for sustained change.
 - d. **Funding and financing** to ensure adequate resources to undertake change.
2. **Structural Adaptability**, which drives the transformation process by reconfiguring key organisational elements.
3. **Structural Inertia**, which highlights the barriers and resistance to change that constrain transformation efforts.
4. **Value Transformations**, which represent the tangible outcomes of digital transformation, demonstrating the institution’s ability to realise value in a digital environment.

3.3.1.2 Role of the ZPDT in the Conceptual Framework

The ZPDT is a central component of the conceptual framework developed in this study. It provides a structured approach for understanding and managing the complexities of digital

transformation in HEIs, addressing both internal and external challenges. By situating transformation efforts within the ZPDT, institutions can better connect their current state (ZCS) to their desired long-term outcomes (ZDDT). In the context of this study, the ZPDT aligns closely with the research questions by providing:

- A method for identifying and understanding the internal and external change forces driving digital transformation in HEIs to address Research Question 1.
- A mechanism for leveraging organisational capabilities, addressing cultural influences, and overcoming barriers to implement effective digital transformation initiatives to address Research Question 2.
- A practical approach for building sustainable transformation outcomes, achieving long-term value creation through digital transformation to address Research Question 3.

This conceptual innovation is central to the broader HEI-DT conceptual framework. It strengthens the overall conceptual framework by building on the theoretical foundations and key concepts discussed in this chapter, providing a pragmatic approach to understanding HEI digital transformation.

3.4 Key Concepts Emerging from the Literature and Theory

3.4.1 Enabling Constraints

As discussed in the literature review (see Section 2.2.5), enabling constraints are boundary conditions that both structure and enable complex adaptive systems to maintain coherence while maximising adaptability (Snowden & Rancati, 2021). Snowden & Rancati (2021) argue that enabling constraints can provide a structure within which people can explore and adapt, enhancing their capacity to respond to changing environments (p. 12). They shape the ‘possibility space’ for institutional agents (Allen *et al.*, 2019) and provide a framework for managing complexity (Stacey, 1996; Uhl-Bien & Arena, 2017) that enables organisations to maintain coherence while undergoing change (Tsoukas & Chia, 2002). Within the framework of institutional enabling constraints—encompassing strategy, operational principles, cultural logics, and ethical guidelines—heuristics and rituals become powerful tools for engaging with HEI digital transformation. Heuristics, as simple guiding principles, effectively translate strategic vision (e.g., “prioritise accessibility to digital resources for students”) and cultural

values (e.g., “ensure people understand how to use digital tools”) into actionable directives. Rituals, as structured activity patterns involving symbolic actions and communication, for example, regular training sessions on using new digital tools, digital onboarding ceremonies for new staff, organisation or team ‘hackathons’ to solve pressing digital technology related HEI challenges, and the routine use of ‘digital champion’ roles, where individuals are formally recognised for supporting their peers’ adoption of digital technologies. These practices serve to reinforce institutional cultural values, sustain a sense of community, and provide a sense of stability and meaning during periods of change (Deal & Kennedy, 1982; Meyer & Rowan, 1977). It could be argued that enabling constraints are a form of scaffolding (Vygotsky, 1978), providing structured peer support that can preserve identity while allowing flexibility. Unlike restrictive constraints, which impose rigid limitations on individual agency, enabling constraints use minimal critical specifications (Cherns, 1976; Snowden & Rancati, 2021). By aligning enabling constraints with institutional logics and operational principles, institutional stakeholders can participate in emergent adaptation whilst the organisation maintains strategic focus and legitimacy during digital transformation. Therefore, thoughtfully designed enabling constraints can empower HEIs to navigate the complexities of digital transformation in a coherent and focused manner.

3.4.2 Organisation Capability

Organisational capability is characterised as the coordinated deployment and combination of resources through established patterns of routines, processes, and practices (Curley et al., 2015; Helfat & Peteraf, 2003). This capability is essential for organisations such as HEIs to engage with the complexities of digital transformation. As established in the literature review, capability maturity models and capability maturity frameworks (see Section 2.2.7) have proven effective in providing a structured approach for building the capabilities organisations require to achieve their strategic objectives (Dingsøyr *et al.*, 2012; Wendler, 2012; Paulk *et al.*, 1993). Anchoring the HEI-DT conceptual framework within the organisational capability space provides a stable reference point. This ensures that the other concepts - and their relationships within the framework - can be systematically organised and articulated in relation to the central idea of enhancing organisational capability maturity.

3.4.3 Value Discourses in Higher Education

The NPM-influenced emphasis on metrics and accountability mechanisms (Broucker & De Wit, 2013) has created a tension in higher education between prioritising measurable performance indicators—such as student outcomes, research outputs, and efficiency—and fulfilling its traditional role as a public good. This shift risks prioritising market-driven goals over the broader, less quantifiable mission of higher education (Salemans & Budding, 2022), leading to what Tilak (2008) describes as the commodification of education. It could be argued that the implementation of performance-based funding agreements (Jongbloed *et al.*, 2018), known as ‘compacts’ in the Irish HE system (HEA, 2018), has reshaped academic roles into managed knowledge work focused on meeting predefined performance targets (Deem *et al.*, 2007). This approach has raised concerns about the long-term sustainability of public funding models, as it risks financial instability for HEIs and may undermine the broader societal mission of higher education (Marginson, 2011).

In response, there has been a growing recognition of the importance of public value (PV) in higher education (Salemans & Budding, 2022). Public value refers to the value created by government, public sector bodies, and publicly funded organisations through their services, policies, and within the ‘strategic triangle’ of value outcomes’ production, within resource and capability constraints, in a legitimising environment of legal frameworks and public mandate (Moore, 1995). PV must account for both the utilitarian and deontological dimensions of value (Moore, 2014, p. 465), as citizens want government to be both effective at the “continuous process of social problem solving” (p. 474) and fair in how it uses its authority and money.

Therefore, public value encompasses benefits realisation beyond managerialist performance indicators. Faulkner and Kaufman’s (2018) review of the literature on public value measurement identified four key domains that “broadly reflect the most common terms in describing public value measurement” (p. 77): (1) outcome achievement, (2) trust and legitimacy, (3) service delivery, and (4) efficiency. For example, Salemans and Budding (2022) describe how Dutch HEIs accompany established performance metrics with narratives to describe not only what has been done, but also how the objectives are realised in order to gain legitimacy, and as a form of sensemaking.

By leveraging digital technologies for public value, HEIs can better understand and respond to evolving stakeholder needs, optimise their operations and service delivery, and assess benefits

and value realisation more comprehensively (dos Santos *et al.*, 2022). Within HEIs, value and benefits are realised as both organisational return on investment and public value realisation. Enhanced organisational performance, driven by efficient processes, cost-effectiveness, and improved service delivery through digital transformation, characterises organisational return on investment (Yin *et al.*, 2020). Public value emerges when organisational capability improvement translates into societal benefits, promoting trust, legitimacy, and service delivery aligned with stakeholders' needs and expectations (Benington & Moore, 2011; Melville *et al.*, 2004). However, negative value (disbenefits) can arise from an overemphasis on one value dimension at the expense of the other. Prioritising organisational return on investment without adequate consideration for public value can lead to a technocratic approach, potentially undermining HEIs' broader societal mission and eroding institutional legitimacy (Moore, 1995; Selwyn, 2014).

Despite such innovations, Faulkner and Kaufman's (2018) study shows that most HE systems remain focused on managerialist approaches, underscoring the challenges of integrating public value within higher education systems. The challenge for HEIs lies in balancing efficiency and accountability demands with maintaining their broader societal responsibilities and intrinsic educational values. Public value creation requires active stakeholder engagement (Williams & Shearer, 2011) and comprehensive evaluation methods that capture both quantitative and qualitative impacts (Christensen, 2016). Funding management practices must align resources with public value creation (Salemans & Budding, 2023), while moving beyond NPM approaches toward frameworks prioritising societal outcomes (Broucker *et al.*, 2017).

The HEI-DT conceptual framework uses a holistic approach that balances the organisational efficiency (utilitarian) with societal impact (deontological), so that HEIs can ensure that digital transformation efforts ultimately enhance their capability to generate sustainable public value for the communities they serve. However, achieving this balance requires a clear understanding of how value is defined, measured, and realised within the context of higher education.

3.4.4 Value as an Outcome of Digital Transformation

As explicated in the literature review, organisational capability maturity is typically measured in terms of organisational value outcomes and benefits realisation (Yin *et al.*, 2020) (p. 50). This study conceptualises Value (V) as representing the worth of something, as determined by its practical application or Function (F) and its desirability or Need (N) to stakeholders, all

considered against its life cycle Cost (C) (Benington & Moore, 2011; Che Mat & bin Hj Mohd Shah, 2006; Melville *et al.*, 2004; Moore, 1995). Value, as conceptualised in this study, is determined by the interaction of three factors: the practical application of organisational capabilities (Function), the worth created for stakeholders (Need), and the resources required to achieve these outcomes (Cost). This conceptualisation draws on established frameworks for understanding value in organisational contexts. Table 3.2 outlines the three constructs used to characterise value in the context of higher education institutions.

Table 3.2 Conceptual Constructs of Value in Higher Education Institutions

Source: Adapted from Benington & Moore, 2011; Che Mat & bin Hj Mohd Shah, 2006; Melville et al., 2004; Moore, 1995

Construct	Definition	Context in Study
Value (V)	The outcome resulting from the interaction of Function, Need, and Cost.	Value in HEIs is determined by how digital transformation enhances capabilities, meets needs, and balances resources.
Function (F)	Represents the organisational capabilities of HEIs enabled by digital technologies.	Explores how digital technologies enhance organisational capabilities, such as teaching, research, and operational efficiency.
Need (N)	Represents the worth created for stakeholders, including service provision, strategic outcomes, trust, and public value.	Investigates how digital transformation meets stakeholder needs, builds trust, and aligns with societal expectations in higher education.
Cost (C)	Represents the resources (e.g., financial, time, effort) required to achieve the desired outcomes.	Examines the resource-related challenges or trade-offs involved in achieving value outcomes through digital transformation.

The concept of value is linked to value creation, which involves generating benefits for stakeholders through targeted utilisation of resources and capabilities (Amit & Zott, 2001). In higher education digital transformation, value creation leverages digital technologies and organisational capabilities to enhance the quality, accessibility, and relevance of HEI services, improving stakeholder outcomes (Serdyukov, 2017). Benefits realisation in HEIs can include research outputs, educational outcomes, societal impact, and economic return on investment (Brennan *et al.*, 2013; Findler *et al.*, 2019; Kromydas, 2017). Additionally, digital technologies enable HEIs to create new forms of value, such as personalised learning, data-driven decision-making, and enhanced stakeholder collaboration (Lim *et al.*, 2021). However, realising digital value requires mature organisational capabilities aligned with HEI strategic objectives and stakeholder needs (Marks *et al.*, 2018).

Having established the need for a conceptual framework, its theoretical foundations, and the importance of value creation as an outcome of digital transformation, the next section focuses on the design and developing the conceptual framework.

3.5 Conceptual Framework Development

Given its important role in this study, conceptual framework design began early in the project. The duration of the development and validation phases was about 30 months from early 2020 to mid 2022 (see Table 3.3 below). Initial design work began soon after the literature review was completed. As discussed in the previous section, the initial stage of framework development drew on existing theories and models of organisational change, digital transformation, and capability maturity. At this stage, the framework was primarily conceptualised as a tool to map the drivers and outcomes of digital transformation.

When undertaking early-stage design, which was informed by critical analysis of other frameworks in the academic and grey literature, it was observed that in many cases they exhibited very high complexity. For example, Konopik *et al.*'s (2022) organisation capability model comprises over 200 capabilities. Meanwhile, the Higher Education Digital Capability framework by advisory firm HolonIQ (2022) has 70 capability areas. One practitioner colleague who reviewed my conceptual framework remarked that in their experience:

Too many frameworks confuse complexity with sophistication. A transformation strategy based on a framework with too many moving parts is just going to be put on the shelf marked 'Too Hard To Do' and be forgotten about.

To address the inherent complexity of digital transformation in HEIs, I began the design phase by identifying a relatively modest 15 concept domains comprising 82 items drawn from the literature review. The aim of this design task was to (1) generate a baseline taxonomy of conceptual categories and items that were grounded in the literature and relevant to my research agenda; (2) clarify the terminology by linking items to familiar definitions in the literature; (3) encourage parsimony by purposefully reducing extraneous categories and items by merger, synthesis, or elimination; and (4) engender sense-making within the conceptual framework in order to guide my study's fieldwork research logics towards meaningful and scientifically sound conclusions.

The framework is grounded in concepts related to digital transformation, HELMA studies, organisational capability theory, and change management, designed to construct a holistic view of HEI digital transformation (Benavides *et al.*, 2020; Hess *et al.*, 2016; Vial, 2019). For example, the framework incorporates elements from capability management theory (Curley *et al.*, 2015) in the ‘Organisation Capabilities’ component, and aspects of neo-institutional theory (Scott, 2014) in the ‘Institutional Framework’ and ‘Structural Inertia’ components. The conceptual framework development processes followed Jabareen’s (2009) Conceptual Framework Analysis (CFA) method to elicit the content for the conceptual framework. CFA is an eight-stage process designed for building conceptual frameworks for multidisciplinary phenomena (see Table 3.3).

Table 3.3 Conceptual Framework Analysis Method

Source: Jabareen (2009)

Stage	Process	Description of Process
1	Map data sources	Conduct a literature review; gather data; map research themes.
2	Data familiarisation and categorisation	Distribute the selected data by discipline and importance within each discipline.
3	Identify and name concepts	Discover concepts through data ongoing analysis. Identify each concept’s attributes, characteristics, assumptions, and function.
4	Deconstruct and categorise concepts.	Break down each concept into its constituent parts. Reorganise and categorise concepts based on their ontological, epistemological, or methodological function.
5	Integrate concepts into new concepts.	Group similar concepts into overarching concepts. Distil the number of concepts to a manageable amount.
6	Synthesise concepts into a theoretical framework	Synthesise concepts into a theoretical framework through an iterative process. Continue until a coherent and sensible general framework emerges.
7	Validate the framework	Confirm the framework and concepts are sensible to the researcher and other scholars/practitioners. Present the evolving framework at academic conferences or seminars for feedback and constructive criticism.
8	Revise framework as required	Continually evolve and revise the framework based on new evidence, insights, and feedback. Ensure the multidisciplinary framework is sensible and expands theoretical perspectives for relevant disciplines.

Agile methodology (Dingsøyr & Moe, 2014) was adopted to manage the development of the conceptual framework because its core principles directly support CFA’s iterative nature. Agile projects are typically structured into short development cycles, known as ‘sprints’, during

which ‘working’ system components are developed frequently and incrementally (Dingsøyr & Moe, 2014). The methodology emphasises iterative development and the ability to pivot and respond to change (Dingsøyr *et al.*, 2012; Fitzgerald *et al.*, 2013). The approach enables systematic progression while allowing for continuous refinement. Unlike traditional ‘waterfall’ methodologies, the Agile methodology facilitates the frequent validation and revision cycles required by CFA stages 7 and 8, while its emphasis on stakeholder feedback aligns with the framework validation requirements. The methodology’s inherent flexibility also accommodates the multidisciplinary nature of the framework, allowing for rapid integration of new concepts as they emerge from different theoretical domains. This flexibility afforded by the Agile methodology proved valuable as it accommodated the dynamic nature of framework development as new concepts emerged and relationships between elements became clearer. This iterative process supported the framework’s development from a proof-of-concept ‘alpha’ version to a number of ‘beta’ versions, to the final ‘full’ framework (Figure 3.2), which was applied in the study.

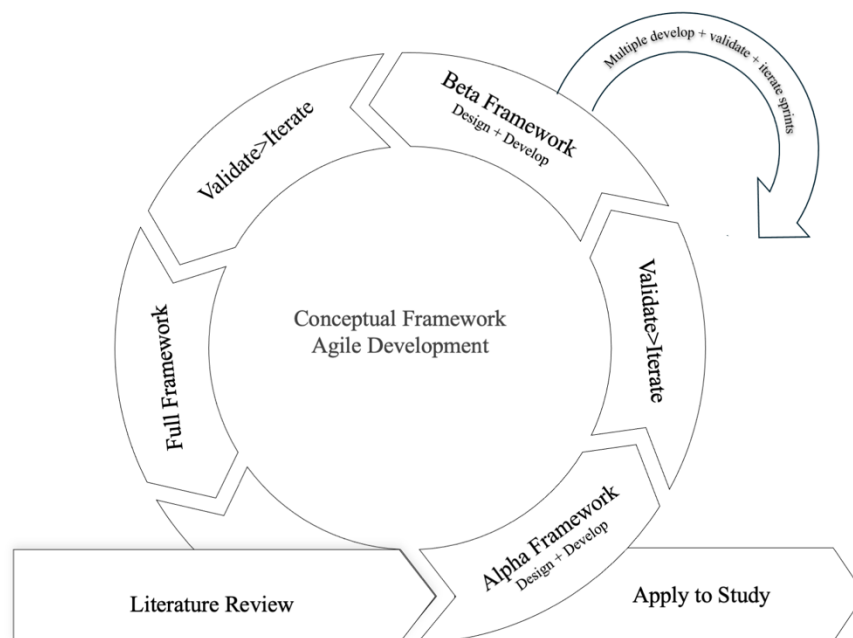


Figure 3.2 Conceptual Framework Agile Development Process

Source: Author’s own work

Validation is critical for establishing conceptual framework reliability, transferability, dependability, and confirmability (Creswell & Plano Clark, 2017). The development and refinement of the HEI-DT conceptual framework was underpinned by a programme of

validation activities, as summarised in Table 3.4. These activities were conducted across multiple settings and with diverse audiences to ensure the framework's robustness, practical relevance, and applicability to real-world digital transformation challenges in higher education and related domains (e.g., public sector, complex organisations). The framework was presented in ways appropriate to each specific validation event context and activity. For instance, it functioned as a conceptual tool in academic settings and as a practical instrument for problem-solving in strategy and digital transformation workshops. These validation activities facilitated the systematic collection of feedback, which informed the ongoing refinement of the framework.

Table 3.4 Summary of Validation Activities for the HEI-DT Conceptual Framework

Source: Author's own work

Date	Event / Activity	Location	Audience	Purpose/Context	Key Feedback/Outcome
March 2021	Early beta-stage framework expert review	'Big 4' Consultancy HQ, London	Digital transformation consultants	Usability review	Highlighted need for clearer definitions and practical case examples; recommended streamlining framework steps for industry settings.
June 2021	Breakout session at 2021 IVI Summit	Maynooth University	Academics, industry stakeholders	Presentation, feedback	Suggested refinement of academic terminology; recommended visual enhancements for clarity.
September 2021	Digital strategy planning workshop	Maynooth University	Third sector organisation leadership team	Developing a digital transformation strategy	Positive feedback on framework's alignment with strategic objectives; requested guidance on integrating with existing strategic plan.
November 2021	Design-thinking workshop	HSE Dr Steevens' Hospital, Dublin	Practitioners, managers	Digital service development	Identified jargon that could be simplified; recommended more practical / discipline workflow use cases; raised questions on scalability.
December 2021	Digital transformation workshop	ADAPT Centre, Trinity College Dublin	Academics, industry stakeholders	Develop organisation digital transformation plan	Encouraged inclusion of organisational culture factors; suggested adding metrics for change assessment; requested templates for implementation.
January 2022	Kemmy School of Business	University of Limerick	Practitioners, clinicians, administrators, managers	Session within the MSc. in Digital Healthcare Transformation	Understood relevance to healthcare context; recommended creating use cases specific to public sector digital transformation; valued conceptual framework components.

The beta-stage conceptual framework was introduced at each event according to its context—for instance, as an educational tool in lectures and as a problem-solving tool in workshops. These events contributed to validation, feedback collection, and further development of the framework.

A significant milestone in the development of the HEI-DT conceptual framework was the early-stage beta review conducted by digital transformation consultants at the London office of a ‘Big 4’ consultancy firm in March 2021. This was a particularly important test of the framework’s pragmatic application, as consultants regularly operate in complex organisational environments and must respond to demanding clients, leaving little tolerance for abstract or impractical models. During this review, the consultants highlighted the need for clearer definitions and practical case examples, and recommended streamlining the framework steps to better suit industry settings. This feedback provided valuable initial insights into the framework’s usability and practical relevance, directly informing improvements to enhance its clarity, applicability, and effectiveness in real-world industry contexts.

In June 2021, I presented a refined iteration of the framework during a breakout session at the Innovation Value Institute Summit in Maynooth University, where I received further feedback from academic and industry stakeholders. Later in 2021 and early 2022, Additional workshops and training sessions were held at the Health Service Executive headquarters, Dr Steevens’ Hospital, and the ADAPT Centre at Trinity College Dublin. These sessions engaged over 40 participants, including practitioners, managers, from the Irish public sector and academics from HEIs. In addition, the beta framework was incorporated into a postgraduate lecture on healthcare digital transformation, delivered at the Kemmy School of Business, University of Limerick, to 50 postgraduate students. These refinements gathered during the validation process enabled it to be progressively aligned with the specifics of HEI digital transformation.

The next section of the chapter explicates the conceptual framework’s components, characteristics and definitions.

3.5.1 Conceptualising the HEI-DT Components as Ideal Types

The HEI-DT framework components can be conceptualised as ideal types in the Weberian (1949) sense: that is, analytical constructs that distil the key characteristics of HEI digital transformation. Through abstraction, ideal types provide a clear and robust schema for

analysing institutional contexts and practices (Table 3.5). The HEI-DT components align with this interpretation, providing a schema within the conceptual framework for analysing how HEIs engage with digital transformation.

Table 3.5 HEI-DT components' ideal types characteristics

Source: Author's own work

Characteristic	Description
Abstract Representation	Each component isolates a critical dimension of digital transformation, such as 'External and Internal Change Forces', which captures drivers of change, or 'Structural Inertia', which highlights barriers to transformation.
Clarification of Complexity	The framework organises digital transformation into distinct, interrelated components (e.g., 'Structural Adaptability' and 'Value Transformations'), reducing complexity for analytical clarity.
Dynamic and Relational	The components emphasise feedback loops and interconnections, reflecting the evolving and systemic nature of digital transformation.
Analytical and Criteria-Based	By emphasising organisational capability, benefits realisation (e.g., 'Value Transformations'), and outcomes (e.g., 'Positive Impacts', 'Negative Impacts'), the framework supports both analysis and evaluation against explicit, established criteria. These criteria are derived from widely recognised Capability Maturity Models (CMMs) and Conceptual Models Framework (CMFs), providing objective standards for assessment.
Comparison Tool	The framework provides a baseline for evaluating how HEI operationalise these components, potentially enabling comparisons between organisations.

Building on this understanding of the components in the HEI-DT framework, the next step is to explore how they interact in relation to HEI digital transformation.

3.5.2 Conceptual Framework Characteristics

Figure 3.3 presents the finalised HEI-DT conceptual framework, which synthesises the key processes, components, and relationships essential for understanding digital transformation in higher education institutions. The framework builds on the theoretical foundations outlined in the preceding sections of this chapter and incorporates insights gained from iterative refinement, validation activities, and practitioner feedback. It is designed to address gaps

identified in existing models by capturing the dynamic, multidimensional nature of digital transformation and emphasising both practical applicability and theoretical rigour. The framework is structured around a Continuum of Transformation, which comprises three connected zones:

1. **Zone of Current State (Contextual):** Represents the starting point, encapsulating the institution's baseline and the external and internal factors influencing its need for transformation.
2. **Zone of Proximal Digital Transformation (Processual):** Reflects the immediate transitional phase where active changes in institutional structure, culture, and processes take place.
3. **Zone of Distal⁵ Digital Transformation (Realisational):** Focuses on the long-term impacts and outcomes of the transformation process, including realised value and institutional sustainability.

The continuum represents a process-oriented view of organisation transformation (Tsoukas & Chia, 2002), beginning with initial drivers and enablers and progressing toward the achievement of strategic objectives and the delivery of public value. The framework is presented as a visual structure for sensemaking purposes. However, the notion of a perfectly functioning, smoothly integrated system is rejected, as it is “intrinsically invalid” (Vaill, 1996, p. 8). Instead, feedback loops play a critical role in this framework, ensuring that outcomes are continuously tested to inform and refine future actions. The framework also highlights the dynamic, interconnected nature of higher education institutions, emphasising the bidirectional relationships between variables and reflecting their open-systems structure, where internal and external factors are constantly influencing one another.

⁵ Based on its geospatial definition (Christopherson & Birkeland, 2018), I characterise ‘distal’ in a transformation space to mean ‘the outcomes, impacts, or changes that occur farther from the immediate site of action or origin, often unfolding over time or across extended spatial, organisational, or systemic boundaries’.

3.5.3 Conceptual Framework Components and Their Definitions

The HEI-DT framework identifies ten core components, which are illustrated in Figure 3.3. They represent critical dimensions of digital transformation in HEIs. Each component's purpose and unique characteristics are described in Table 3.6, emphasising their role in driving, enabling, and capturing the outcomes of HEI digital transformation.

Table 3.6 HEI-DT framework components

Source: Author's own work

State	Component	Description
Zone of Current State	External and Internal Change Forces (Box 1 on the diagram in Figure 3.3)	Forces, trends, and developments that both drive and resist change within higher education institutions, reflecting institutional contradictions and consistencies.
	Institutional Enablers and Constraints (Box 2)	The core practices, processes, cultural logics, and configurations that both operationalise and potentially limit an institution's operations and behaviour in the context of digital transformation.
	Institutional Framework and Logics (Box 3)	The governance structures, strategic plans, policies, and competing institutional logics that shape, guide, and sometimes conflict in determining an institution's direction in digital transformation.
Zone of Proximal Digital Transformation	Organisation Capabilities (Box 4)	The key institutional competencies, processes, and resources that enable transformational change, emphasising their dynamic nature and ability to evolve through experimentation and learning.
	Structural Adaptability (Box 5)	The organisational elements, roles, and experimental initiatives that enable or operationalise institutional transformation,

State	Component	Description
		reflecting an active, iterative approach to change.
	Structural Inertia (Box 6)	The internal barriers, resistance, and restraining forces that inhibit institutional transformation, as well as the learning processes that help overcome these obstacles.
	Value Transformations (Box 7)	The evolving value propositions, educational improvements, and optimised capabilities enabled by digital transformation, with a focus on their practical consequences and experiential outcomes.
Zone of Distal Digital Transformation	Impacts (Positive) (Box 8)	Potential outcomes of digital initiatives, which may include enhancements related to institutional capability, identity, performance, and autonomy.
	Impacts (Negative) (Box 9)	Potential outcomes of digital initiatives, which may include risks related to institutional capability, identity, performance, and autonomy.
	Outcomes (Box 10)	The long-term, sustained benefits, value creation, and future positioning achieved through effective transformation, emphasising the ongoing nature of these outcomes and the continual reconstruction of institutional knowledge.

Among these core components, the Zone of Distal Digital Transformation, comprising Impacts (Positive), Impacts (Negative), and Outcomes (Boxes 8–10), is particularly significant. These components capture the complex results and long-term effects of digital initiatives within higher education institutions. The basis for identifying and evaluating these impacts and outcomes is consistent with the capability model-based criteria that underpin the entire HEI-DT framework.

While the framework identifies both positive and negative impacts, as well as long-term outcomes, it is important to clarify the basis for these standards. The criteria used to define beneficial or adverse effects—and what constitutes efficacious long-term transformation—are not arbitrary or based on personal interpretation. Rather, the standards embedded within the HEI-DT framework are grounded in widely recognised, peer-reviewed capability maturity models such as CMMI (CMMI Product Team, 2010) and the IT Capability Maturity Framework (Curley *et al.*, 2015). These models represent collective expertise and consensus across academia and industry, having been developed, validated, and refined through rigorous research, practical application, and peer review (see Section 2.2.7).

Adopting these criteria ensures that the HEI-DT's evaluative dimension is both objective and reproducible, providing a transparent and credible basis for assessment. Moreover, the framework allows for contextual adaptation, ensuring that evaluations remain relevant to the specific circumstances of each institution while maintaining alignment with recognised standards.

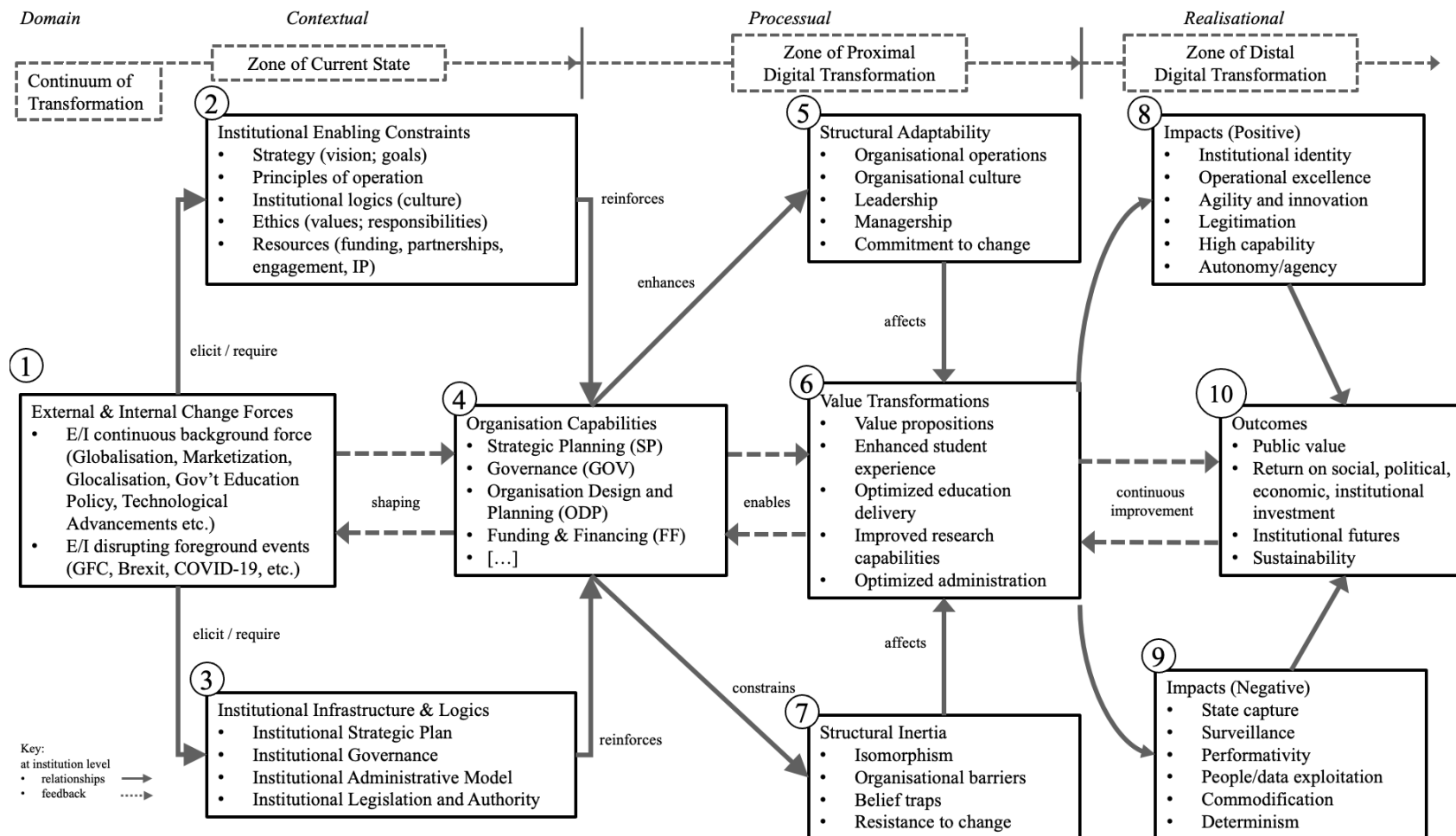


Figure 3.3 'Higher Education Institution Digital Transformation Conceptual Framework': a capability-based conceptual model for HEI digital transformation

Source: Author's own work

3.6 Digital Transformation as a Dynamic Process

While the HEI-DT conceptual framework is structured around the Continuum of Transformation, it is critical to emphasise that organisational change is not a linear, one-off progression from a defined beginning to a fixed endpoint. Instead, digital transformation is better understood as a dynamic, iterative, and continuously unfolding process, shaped by ongoing interactions between internal and external forces over time. This view of digital transformation is particularly relevant in complex environments where change emerges unpredictably and unfolds unevenly across different areas of an organisation. This perspective aligns with contemporary organisational change theories that emphasise the emergent, complex, and adaptive nature of change (Burnes, 2008; Tsoukas & Chia, 2002). For HEIs, this process can be complicated by their dual responsibilities of preserving academic traditions while adapting to rapid technological advancements within a globalised and commodified higher education ecosystem. This tension underscores the need for a flexible, iterative approach to digital transformation.

Continuous feedback mechanisms are a critical part of enabling HEIs to manage digital transformation. They allow HEI stakeholders to reassess evolving contextual factors, such as external forces or internal constraints, to keep strategic plans relevant. Feedback also helps refine outcomes, such as improved student experiences or operational efficiencies, driving further innovation. Finally, it fosters organisational learning by building on past successes and failures to enhance adaptive capabilities and prepare for future uncertainties. The distinctive properties of digital transformation, such as boundary transcendence, generativity, and malleability, reflect its dynamic nature. HEIs are not only influenced by their environments but also actively shape them through their actions.

3.6.1 Digital Transformation is Emergent and Nonlinear

HEIs operate in complex, dynamic environments characterised by uncertainty, competing priorities, and interdependencies with various internal and external stakeholders. As such, digital transformation can be conceptualised as an emergent process. The need for change often arises in response to unforeseen developments, such as technological advancements or policy changes, which reshape the organisation in unpredictable ways (Chia, 1999). This nonlinearity means that the velocity of change can vary within an organisation. Some areas may rapidly

adopt new technologies, while others exhibit resistance to change or experience delays, necessitating iterative adjustments to implementation strategies (Kotter, 1996; Burnes, 2008). Furthermore, the continuous evolution of digital technologies requires HEIs to monitor developments, as well as adapt to new tools and practices to maintain competitiveness in the globalised higher education ecosystem (Hess *et al.*, 2016; Vial, 2019).

Consequently, the HEI-DT conceptual framework is designed as a flexible construct that reflects the recursive nature of change. Each zone within the framework remains in dialogue with the others, creating a dynamic system of inputs, processes, and outcomes. For example, the realisation of outcomes in the ZDDT may reveal gaps in organisational capabilities, prompting a return to the ZPDT to refine strategies and processes (Van de Ven & Poole, 1995; Vial, 2019). Similarly, a shift in external forces in the ZCS may necessitate a reconfiguration of structural elements within the ZPDT, even as the HEI evaluates its progress in the ZDDT.

The HEI-DT conceptual framework accommodates the complexities of digital transformation in higher education institutions as an unfolding process of adaptation to change. For HEIs, this means that digital transformation is not a destination but a journey, shaped by HEIs' ability to adapt, innovate, and respond to a changing environment.

3.6.2 Conceptual Framework Principles

The conceptual framework developed for this study provides an analytical structure for investigating digital transformation in higher education institutions. Its design is informed by three principles:

Firstly, the conceptual framework is underpinned by the understanding that change within higher education institutions is dynamic and recursive. Informed by Pettigrew's (1997) processual model, digital transformation in HEIs is conceived as a series of connected events unfolding over time within a specific context. A key innovation of this framework is the introduction of three distinct zones—the ZCS, ZPDT, and ZDDT (see Section 3.3.1)—which extend prior scholarly work by providing a structured way to analyse the stages of digital transformation. Feedback loops are incorporated to capture the iterative nature of both digital transformation and the research process, allowing for the ongoing refinement of insights as new data and perspectives are generated. Secondly, the framework is organised around the interconnectedness of conceptual components, such as enabling constraints, adaptive

organisational capabilities, structural adaptability, and value transformations. These components are represented as dynamically interacting elements, rather than isolated or siloed features. This configuration facilitates the analysis of how different aspects of HEI digital transformation may influence one another. Finally, the framework is designed to accommodate analysis of the tensions that often arise during digital transformation, such as the dynamic between institutional inertia and the need to adapt to technological innovation. It provides a lens to examine how HEIs navigate and negotiate these tensions in relation to their core values, missions, and societal responsibilities.

3.6.3 Operationalising the Conceptual Framework for this Study

In this thesis, the HEI-DT conceptual framework is operationalised as the primary analytical lens for examining the complexities of digital transformation within higher education institutions. It is not a causal or predictive model; rather, the framework provides an interpretive structure that guided the design, data collection, and analysis processes of this research. Each component of the framework was directly mapped to the research questions and objectives, ensuring alignment between the conceptual model and the empirical investigation. Informed by Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD), the framework conceptualises digital transformation as a scaffolded process, with organisational capabilities acting as supports that enable institutions to progress beyond their current state. These supports help institutions bridge the gap between where they are now and their transformative potential, fostering shifts in culture, structure, and operations.

- **Zone of Current State (ZCS):** Represents the institution's existing systems, capabilities, and constraints.
- **Zone of Proximal Digital Transformation (ZPDT):** The achievable transformation space where organisations can progress through scaffolded support systems.
- **Zone of Distal Digital Transformation (ZDDT):** The target or future state where outcomes are realised after digital transformation.

Throughout the thesis, the HEI-DT framework structured both the empirical investigation and the interpretation of findings. By anchoring the research design and analytical process in these three zones, the framework provided a systematic means to trace how digital transformation unfolded within the institution, and how internal and external factors interacted to shape this process. This framework-driven approach ensured that the research remained focused on the

core complexities of digital transformation in higher education, as they were experienced and negotiated within the study.

3.7 Conclusion

This chapter has presented the Higher Education Institution Digital Transformation (HEI-DT) conceptual framework, which integrates theoretical insights and practical considerations to analyse digital transformation in Irish HEIs. The framework highlights the relationship between change forces, organisational capabilities, and transformation outcomes. To operationalise this framework, a rigorous research methodology is required to explore these components and answer the research questions. The next chapter outlines the study's ontological and epistemological posture, research design, data collection methods, and analytical approach, ensuring alignment with the conceptual framework and study objectives.

Chapter 4 Research Methodology

4.1 Introduction

This chapter outlines the study's research methodology, philosophical underpinnings, and design. It presents the researcher's positionality, details implementation and analysis methods, addresses research limitations, and establishes the ethical framework guiding this investigation.

4.2 Research Questions, Aims, and Objectives

As described in Chapter 1.3, the aim of this thesis is to critically analyse the drivers, organisational readiness, and outcomes of digital transformation in Irish HEIs, with a particular focus on the perspectives of HEI managership with responsibility for these initiatives. The research is guided by three research questions:

1. What change forces drive digital transformation in Higher Education Institutions in Ireland, from the perspective of senior managers responsible for these initiatives?
2. How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?
3. What is the impact of digital transformation on Higher Education Institutions in Ireland?

The mixed methods approach (see Section 4.6), combining quantitative and qualitative methods, will enable a more holistic understanding of the research problem, with the goal of informing evidence-based recommendations for theory, policy, praxis, and future research directions for leading, managing, and administering digital transformation initiatives in HEIs in Ireland.

4.3 Researcher Positionality

Positionality shapes not only perceptions but also the tensions and contradictions an individual might experience when navigating different fields of study. It influences all stages of the research process, from topic selection to the choice of methodology and data interpretation (Malterud, 2001). Acknowledging the role of positionality is therefore critical for ensuring

transparency, reflexivity, and trustworthiness in social science research (Tracy, 2010). Positionality can be understood as rooted in one's habitus (Bourdieu, 1977), the internalised dispositions and experiences shaped by social structures. Habitus informs the choices researchers make, including the questions they ask, the methodologies they employ, and how they interpret data. In this sense, positionality reflects the relationship between individual experiences and the broader social fields in which they operate. My own professional background and experiences inevitably shape my engagement with and interpretation of managers' perspectives, requiring purposeful reflexivity to ensure a balanced analysis. In my study of digital transformation in higher education institutions in Ireland, the influence of positionality is particularly relevant as I focus on the perspectives of HEI managers responsible for implementing these initiatives.

I locate my study within a critical realist ontology and a pragmatic epistemological framework (see Section 4.5). Critical realism acknowledges the existence of objective realities, such as power structures, resource allocations, and technological infrastructures within HEIs undergoing digital transformation, while also recognising that these realities are subjectively interpreted and acted upon through individuals' experiences and values (Archer, 1995). From a pragmatic epistemological perspective, I emphasise the importance of experience and inquiry in generating knowledge (Dewey, 1929; Rorty, 1979), viewing the knowledge produced in this study as co-constructed through my engagement with HEI managers.

With these theoretical foundations in mind, my own professional background and experiences further illustrate how positionality informs research practice. My positionality reflects the duality of my habitus and my research philosophy. Specifically, my background includes senior management roles in the technology industry until 2010, where I was responsible for professional development and training for global organisations. In that context, accountability structures and value chains for digital change were clear and well-defined. My transition into my current role as a Head of Education within Maynooth University's Innovation Value Institute research institute revealed a contrasting accountability system. It was here that my research interest was stimulated by the observation that the translation of national digital policies into meaningful institutional change was often constrained by organisational complexity and unclear lines of responsibility. These experiences led me to question how responsibility for digital change is distributed within HEIs, forming the core of my study. This

led directly to the central question motivating this study: “Who is responsible for digital change around here?”

With professional experience spanning both private sector technology management and administrative and research roles in higher education institutions, I occupy a unique position as both an insider researcher and an ‘outsider-within.’

This duality introduces tensions between my formative understanding of organisational change and how it is addressed in academia. For example, throughout this study, I became increasingly aware of the risk of overemphasising organisational efficiencies at the expense of human-centred considerations, particularly as participants often approached organisational change in ways that differed from my own prior experiences. These tensions require reflexivity to negotiate and mitigate analytical bias. Drawing on Brunson et al.’s (2023) critical realist ‘iceberg’ metaphor (illustrated in Figure 4.1), I conceptualise my positionality as comprising many layered perspectives that extend beyond a single standpoint. This approach allows me to move beyond binary insider-outsider dichotomies by acknowledging that I simultaneously inhabit multiple positionalities, shaped by my habitus and my onto-epistemology (Kipnis et al., 2021; Merriam et al., 2001). By acknowledging the complexity of my positionality, I aim to engage critically with the socio-political forces shaping digital transformation in higher education while remaining attentive to the perspectives voiced by the study participants.

However, as I am not a fully enculturated academic insider, it is more challenging to posit counter-narratives that critically examine the impact of globalised marketisation on higher education praxis and culture (Ball, 2012; Biesta, 2005). Consequently, my research might unintentionally (re)produce prescriptive and paradigmatic assumptions (Brookfield, 2017) that prioritise discourses of technological adoption and efficiency over the holistic needs of the academic community (Lynch, 2015; Selwyn, 2022). This tension requires ongoing reflexivity to ensure that my findings do not inadvertently reinforce dominant narratives.

Another critical consideration is the ethical interpretation and accurate representation of HEI managers’ perspectives. Analysing and critiquing their strategies may be problematic when filtered through the lens of my own professional experiences. Alcoff (1991) cautions against the risks of speaking on behalf of others, especially those in different positions of power, as this can reinforce existing power asymmetries. I recognise that my analysis may emphasise certain aspects of managers’ decision-making while obscuring others, potentially reinforcing

how HEIs' strategic apex (Mintzberg, 1979) exercises control through established administrative governmentalities (Foucault, 1991; Tight, 2014a).

My positionality, therefore, shapes not only my research agenda but also my analysis of findings, raising a critical question: 'How can I ensure that my research contributes to an equitable evaluation of digital transformation in higher education?' To navigate this dilemma, I draw upon Gayatri Spivak's critique of institutional power and representation (Spivak & Gunew, 1986), who argues that the question 'Who should speak?' is less critical than 'Who will listen?' (p. 1). Spivak warns of the "privileged ignorance" (p. 1) of institutional actors, who may reduce complex experiences to simplified representative voices, listening only when individuals conform to predetermined institutional narratives. This leads me to ask: 'Will policymakers and HEI executive leadership legitimately engage with the diverse and complex findings revealed in this study?' and 'Will my research challenge tokenistic engagement with managers' experiences of digital transformation in Irish HEIs, or will it merely facilitate superficial consultation?'

These questions, and the reflexive work they provoke, have positively influenced my research strategy, design, and execution. For instance, when I noticed myself gravitating towards normative 'corporate' change narratives, I made conscious efforts to document and critically interrogate these interpretations through reflective practice and peer debriefing throughout the process of undertaking the study. Firstly, I maintained a journal to document my experiences, milestones, assumptions, and preconceptions within the data gathering and analysis phases of the study. This was particularly important for regulating my industry-derived expectations of normative corporate performance perceptions of 'what good looks like', thereby enabling more open engagement with the socio-cultural and political complexities of the higher education ecosystem context described by participants.

Secondly, I engaged in regular peer debriefing sessions with my IVI work colleagues, associates across the university, and in other HEIs. These discussions were generally non-formal in nature. That is, they were goal-directed, and sufficiently structured to facilitate for critical reflection (Colley et al., 2002), while remaining flexible in timing and format. The characteristics differentiated the non-formal reflective process from both spontaneous informal exchanges and rigidly organised formal activities (Rogers, 2000; Eraut, 2004). Peer debriefings often occurred opportunistically within the course of a work day, as well as within scheduled meetings. This process provided an essential critical external perspective. Colleagues

challenged my interpretation of the data, helping me to identify where my personal habitus might be unduly influencing analysis. This process refined my analytical lens to better represent the situated complexities of higher education digital transformation on its own terms. Throughout these discussions, I adhered to the principles and practice of participant confidentiality, particularly with regard to upholding the study's ethical commitments and meeting personal data protection regulatory requirements. Colleagues were never provided with identifiable participant details, interview transcripts, or unprocessed survey data. Discussions focused solely on concept ideation, development, and realisation, interpreting patterns and trends within the data, and methodological reflections.

4.4 Undertaking Ethical Research

This study followed Maynooth University's ethical guidelines, the British Educational Research Association (BERA, 2018), and GDPR. Ethical approval for this study was granted by Maynooth University's Social Research Ethics Sub-Committee (SRESC) in March 2022. Participants provided written informed consent, and all data collection adhered to GDPR and institutional ethical guidelines. Confidentiality and anonymity were prioritised to protect participants' privacy. Pseudonyms were assigned to participants and institutions. HEIs were assigned names of indigenous Irish tree species, while participants' names were replaced with randomly assigned pseudonyms sourced from a list of popular names. A single encrypted and password-protected record linking participants, their pseudonyms, and institutions was securely stored on Maynooth University's OneDrive cloud service. All electronic data, including interview transcripts and recordings, were anonymised and securely stored, while physical copies were locked in a secure cabinet in my place of employment and study at Maynooth University. Upon completion of the research, all data were destroyed.

Risk mitigation followed Maynooth University's Research Ethics Policy, which specifies that risks to participants must not exceed those encountered in their everyday professional lives. Data collection and management adhered to GDPR and Irish Data Protection legislation. Measures to mitigate risks included removing personal and institutional identifiers, providing pseudonymised results, and allowing participants to withdraw their consent at any time before data anonymisation. These practices minimised risks to participants' physical, emotional, and professional well-being.

4.5 Research Paradigm

The selection of a research paradigm has profound consequences for the research type, design, and the subsequent stages of data gathering, analysis, and presentation of results and findings. Social science research is founded upon beliefs about the nature of reality (ontology), what can be known about it (epistemology), and the methods used in the research process (methodology) to investigate it (Creswell, 2009). This study uses a critical realist ontology, together with a pragmatic epistemology, and a mixed methods research methodology as the research paradigm to investigate the research questions posed in this dissertation.

4.5.1 Ontology: Critical Realism

Critical realism posits a stratified ontology, acknowledging both the existence of objective realities that exist independently of our knowledge of them (ontological realism), while recognising that knowledge is subjectively interpreted, theoretically mediated, and therefore fallible (epistemological relativism) (Bhaskar, 1975; Sayer, 2000). It maintains there is an intransitive dimension of reality outside the mind, but our understanding of it is transitive, that is, socially constructed and shaped by our imperfect sensory information and conceptual frameworks (Danermark *et al.*, 2002; Fletcher, 2017), and consequently always open to revision and improvement as new evidence and insights are produced (Fleetwood, 2005).

Central to critical realism is a layered, open systems perspective that explicates three ontological domains: the empirical (observable experiences), the actual (events occurring whether observed or not), and the real (underlying generative mechanisms) (Bhaskar, 1975; Collier, 1994; Fleetwood, 2005). Critical realist inquiry aims to uncover the generative mechanisms motivating both the situated, temporal flow of episodic events, as well as relatively enduring causal processes and mechanisms that generate observable patterns over time (Sayer, 2000). Brunson *et al.*'s iceberg metaphor (Figure 4.1) neatly articulates the importance of studying these ontological domains in a coordinated manner. By understanding the relationship between discrete events and deeper causal forces, critical realism provides a framework for interpreting phenomena.

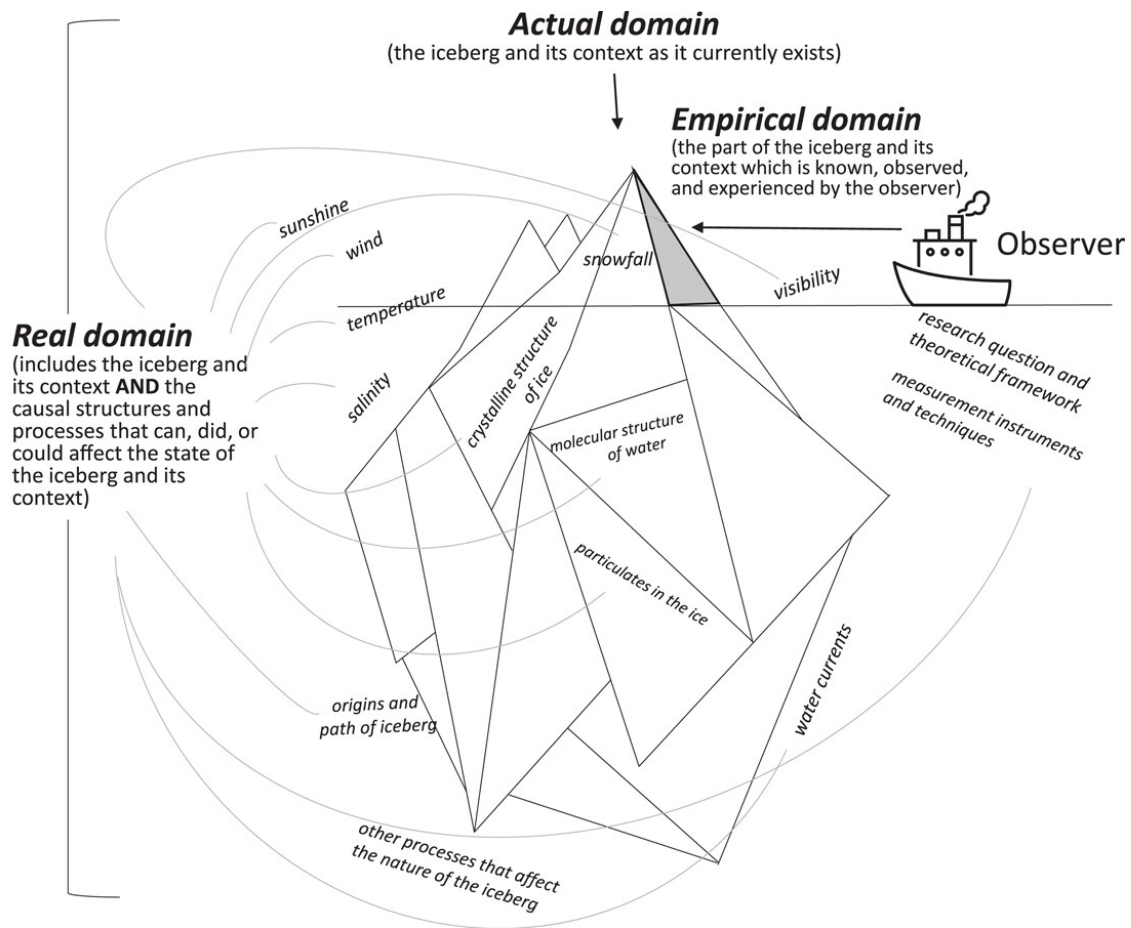


Figure 4.1 An iceberg metaphor for three domains of reality represented in critical realism.

Source: Brunson et al. (2023)

The constructs in the HEI-DT conceptual framework, which is reproduced for reference in simplified form as Figure 4.2, map to the stratified critical realist domains in the manner outlined in Table 4.1.

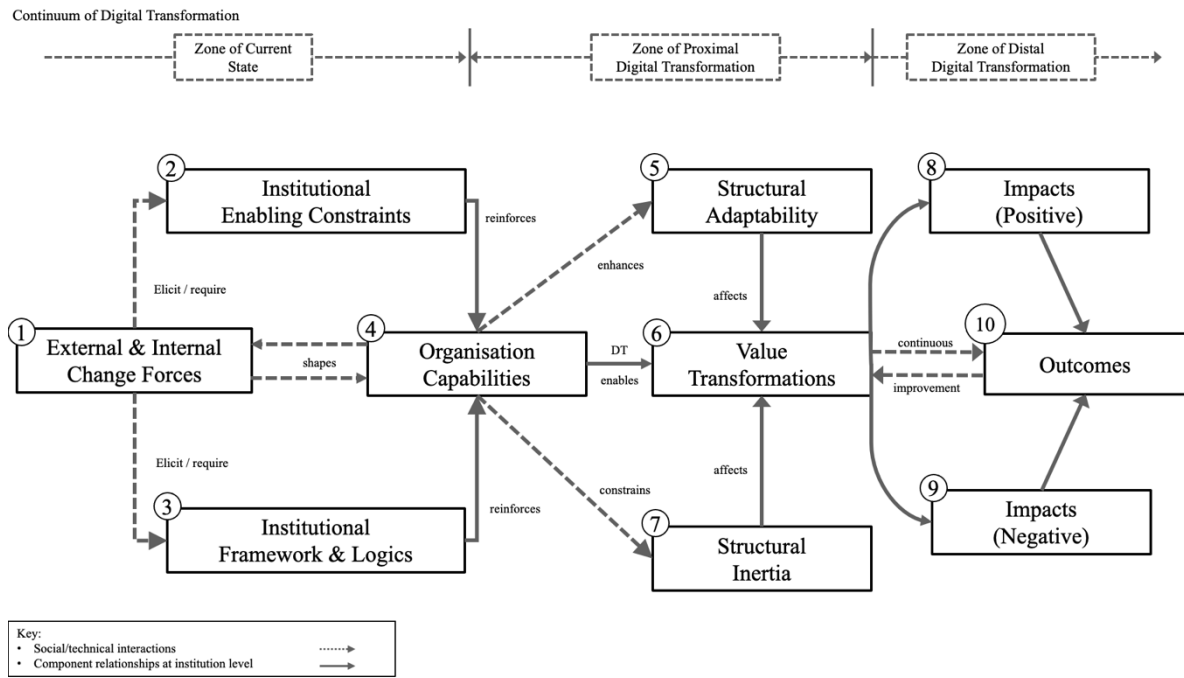


Figure 4.2 High-level view of the conceptual framework for this study

Source: Author's own work

The HEI-DT conceptual framework reflects critical realism's stratified reality across the Real, Actual, and Empirical domains (Table 4.1). The relationships between concepts demonstrate how factors from one domain influence phenomena in another - from foundational structures and mechanisms (Real), through operational practices and initiatives (Actual), to observable outcomes (Empirical). The framework's cyclical nature shows how empirical observations feed back into real and actual domains, providing a comprehensive lens for analysing digital transformation in Irish HEIs.

Table 4.1 HEI-DT conceptual framework reflects critical realism's stratified reality across the Real, Actual, and Empirical domains

Source: Author's own work

Critical Realist Domain	Framework Concept	Details
The Real	Institutional Framework	Includes institutional strategy, governance, administrative models, and legislation. These foundational structures shape the institution's approach to and capacity for digital transformation.
	Change Factors	Globalisation, societal shifts, disruptions, and technological advancements act as external forces that drive the need for digital transformation and influence the institution's response.
	Organisational Capabilities	Strategic planning, governance structures, and enterprise architecture management represent the underlying capabilities that enable or constrain the institution's ability to enact change.
	Structural Inertia/Motion	Deep-seated mechanisms that either resist (inertia) or facilitate (motion) transformation, including isomorphism, organisational barriers, belief traps (inertia), and shifts in organisational structure, leadership, and culture (motion).
The Actual	Institutional Enablers	Practices, processes, institutional logics, and configurations that represent how the institution operationalises its approach to digital transformation.
	Digital Transformation Pathway	Specific initiatives, projects, and activities undertaken by the institution to energise digital transformation.

Critical Realist Domain	Framework Concept	Details
	Value Transformations	The material changes experienced by the institution as a result of digital transformation efforts, such as enhanced student experience, optimised education delivery, and improved research capabilities.
The Empirical	Zones of Digital Transformation	The current capability, and proximal and distal transformation zones represent the observable stages of the institution's digital transformation progression.
	Outcomes and Impacts	Measurable results, both positive and negative, of the institution's digital transformation efforts. Impacts include changes in institutional identity, operational efficiency, agility, and potential negative consequences like increased surveillance, unethical data exploitation, and academic deprofessionalisation.
Relationship between Domains	Real to Actual	The institutional framework and organisational capabilities concepts (Real) shape the development and implementation of the institutional enabler concepts and specific digital transformation initiatives (Actual).
	Actual to Empirical	The activities and initiatives undertaken as part of the digital transformation pathway (Actual) lead to observable outcomes and impacts (Empirical) on the institution and its stakeholders.
	Empirical to Real/Actual	The observed outcomes and impacts (Empirical) can then feed back into the system, influencing future strategies, resource allocation, and adjustments to the institutional framework and organisational capabilities (Real), leading to further transformations.

Structuring the framework across the three domains of critical realism gives the analysis of digital transformation in Irish higher education institutions greater ontological depth.

4.5.2 Epistemology: Pragmatism

This study uses a pragmatic epistemology. It was chosen because its principles align with the complex, practice-oriented nature of institutional digital transformation. While traditional epistemological approaches might separate theory from practice, or prioritise quantitative or qualitative methods, pragmatism's methodological pluralism is particularly valuable for examining how HEIs navigate digital transformation. Three key principles underpin pragmatic inquiry, each crucial for understanding digital transformation: actionable knowledge grounds theory in practice, enabling the study to capture real implementation challenges; recognition of interconnectedness between experience and action helps reveal how institutional changes affect stakeholder behaviours; and the emphasis on iterative, collaborative processes (Kelly & Cordeiro, 2020; Morgan, 2014) aligns with how HEIs actually implement digital initiatives. These principles are particularly valuable because they enable research that captures both the theoretical frameworks and practical realities of institutional change.

While critics highlight pragmatism's potential limitations in addressing systemic issues (Ormerod, 2006; Biber, 2015), integrating it with critical realist ontology proves especially valuable for this study. This combination, supported by Danermark *et al.* (2002), Elder-Vass (2022), and Sayer (2000), enables the research to examine both the concrete practices of digital transformation and their broader institutional implications. This integrated approach is particularly critical for understanding how Irish HEIs navigate the tension between immediate practical needs and longer-term strategic transformation, allowing the research to contribute both theoretical insights and practical recommendations for institutional digital transformation.

4.6 Mixed Methods Research

This study used Mixed Methods Research (MMR) to tackle the research questions. I present three arguments for selecting MMR to address the research questions for this study. In the first instance, for this study's research paradigm discourse, it is beneficial from an ontological and epistemological perspective. The pragmatic emphasis on using multiple methods to address research questions aligns with critical realism's recognition that reality operates at different levels, therefore requiring multiple instruments to investigate it. This requirement makes MMR

particularly appropriate (Bhaskar, 1975; Johnson & Onwuegbuzie, 2004). By combining quantitative and qualitative methods, MMR investigates both observable outcomes (empirical domain) of events (actual domain) and the underlying causal mechanisms (real domain) (Zachariadis *et al.*, 2013). Furthermore, the critical realist acknowledgement of a socially constructed epistemology aligns with pragmatism's emphasis on the contextual and consequential aspects of research (Biesta, 2015; Sayer, 2000). This complementarity allows for a holistic understanding of complex phenomena such as digital transformation in higher education.

Secondly, from a scholarship perspective, HELMA research has been diminished by several limitations: a lack of multidisciplinary and methodological diversity (Jarvis, 2018); a failure to synthesise findings across thematic strands (Tian & Huber, 2019); a homogeneous trend with researchers clustering in specialised “research islands” (Daenekindt & Huisman, 2020, p. 587); and a scarcity of “existential accounts” (Watts, 2017, p. xvii) capturing the realities of modern universities. These issues have led to a fragmented and disintegrating field that oscillates in attention and struggles to address important domains (Daenekindt & Huisman, 2020). By embracing MMR, this study addresses these limitations through methodological diversity and a holistic understanding of the complex phenomena of digital transformation in Irish HEIs. Finally, MMR provides the optimal blend of research methods to answer the research questions. In practical terms, this requires a quantitative component to collect data and a qualitative strand to gain deeper insights and explore participants’ experiences related to the topic. Together, they provide a more complete investigation into digital transformation management in Irish HEIs than possible through a mono-method study.

It is critical to acknowledge the potential biases and limitations inherent in this approach. One significant challenge in MMR is reconciling discrepancies or contradictions between quantitative and qualitative findings (Creswell & Plano Clark, 2018). Without a clear strategy for handling such discrepancies, the study may be susceptible to confirmation bias, where the qualitative phase merely confirms or reinforces the quantitative results rather than providing genuine, independent insights (Morse, 1991). Additionally, the integration of quantitative and qualitative data can be complex, and if not done rigorously, may lead to inconsistencies or misinterpretations (Fetters *et al.*, 2013). To mitigate these potential biases and limitations, the study employed triangulation and transparent reporting of integration procedures (Creswell & Plano Clark, 2018; Fetters *et al.*, 2013). Additionally, acknowledging the researcher's

positionality and adopting a reflexive approach ensured the qualitative phase provided authentic, independent insights (Creswell & Poth, 2018; Morse, 1991).

The following sections of this chapter provide a detailed overview of the research design and the methodology employed in this study.

4.7 Research Context, Scope, and Sample Population

Ireland’s higher education system is predominantly publicly funded, with private higher education institutions accounting for fewer than 10 per cent of student enrolments (HEA, 2016). Because private higher education providers constitute a relatively small proportion of the sector, this research focuses exclusively on publicly funded HEIs, which operate under a shared regulatory and policy framework. This ensures that data relevant to digital transformation initiatives is consistent and comparable across institutions. This uniformity facilitates a more holistic representation of the Irish higher education ecosystem. Publicly funded higher education institutions in Ireland are categorised into three types: Irish Universities Association (IUA) institutions, Technological Universities (TUs), and Institutes of Education (IoEs). Recent data from the Higher Education Authority (HEA, 2023a) indicates a total of 256,790 students enrolled in Irish higher education. Table 4.2 details the distribution of these students across the HEI types.

Table 4.2 Distribution of Students in Irish HEIs

Source: HEA, 2023a

HEI Type	Number of HEIs	Total Students	% Students
IUA Universities	7	145,225	56%
Technological Universities	5	91,530	36%
Institutes of Education (IoEs)	6	20,035	8%
Total	18	256,790	100%

Globally, 235 million people were enrolled in tertiary education in 2020 (UNESCO, 2022); Ireland’s student population represents approximately 0.11 per cent of the global total and 1.39 per cent of the European Union’s 18.5 million tertiary students (European Commission, 2023). Given Ireland’s small share of the global student population, this study is not designed to produce generalisable results. Instead, the findings provide insights specific to the Irish higher education system and should be interpreted accordingly. The Irish higher education sector

comprises approximately 286,000 individuals, including 29,287 staff members (HEA, 2022). The staff population is distributed between academic staff (15,994) and administrative/support roles (13,293) (HEA, 2022, cited in O'Connor, 2023, n.p.). Understanding the demographic distribution within HEIs is crucial for analysing leadership and management dynamics during digital transformation initiatives. The leadership hierarchy in Irish HEIs typically follows a structured model, laid out in Table 4.3.

Table 4.3 Typical Irish HEI Leadership Hierarchy

Source: O'Connor, 2023

Ranking in HEI Hierarchy of Authority	Representative Title
1	(Member of) HEI Governing Authority
2	President
3	Vice-President
4	(Member of) Executive Committee
5	Dean
6	Head of Department / Director of Institute
7	(Member of) Non-Executive Committees

Executive leadership and HEI managership operate on distinct yet complementary levels (Bolden *et al.*, 2012). Leadership roles (such as presidents, vice-presidents, executive committee members, and governing authority members) focus on strategic direction and institutional vision (Shattock, 2013). In contrast, managerial positions, such as deans, heads of departments, and non-executive committee members, concentrate on operational execution and resource management (Floyd & Dimmock, 2011). While there are no publicly available data on the number of executive leadership and senior managership positions within Irish HEIs, an analysis of Irish HEI organisational charts available in the public domain allows for a reasonable estimation. On average, each HEI has about 50 leaders and senior managers. With 18 HEIs in the sector, the total leadership population is estimated to range between 900 and 1,200 individuals, accounting for inter-institutional variations in structure and size.

4.7.1 Sampling Methodology and Participant Recruitment

This study adopted a purposive criterion sampling approach (Palinkas *et al.*, 2016) to gather both quantitative and qualitative data from individuals actively engaged in managing and implementing digital transformation programmes within Irish higher education institutions. The target population consisted of senior leaders and managers accountable for digital transformation initiatives in publicly funded HEIs listed on the Higher Education Authority website. To ensure the accuracy of the population, information was triangulated using sources such as the Department of Further and Higher Education, Research, Innovation and Science, institutional websites, and organisational charts.

To guide participant selection from the Irish HEI population, the study employed a RACI (Responsible, Accountable, Consulted, Informed) matrix framework, a role-classification tool commonly used in organisational management studies. To further refine the population, Ball *et al.*'s (2011) Policy Actor typology was employed, where policy 'narrators' were aligned with 'Accountable' roles, and policy 'translators' mapped to 'Responsible' roles in the RACI matrix. This alignment ensured the selection of candidates likely to be of most value to the study.

4.7.2 Participant Recruitment and Demographics

Following Tier 2 ethical approval from Maynooth University's Social Research Ethics Sub-Committee in March 2022, the selection and recruitment process was initiated. The initial population of approximately 900 individuals in Irish HEI executive leadership and senior management was identified. To verify the accuracy and completeness of the list, the researcher conducted a triangulation process incorporating additional data sources, including records from DFHERIS, formal organisational charts, and individual HEI websites. This process ensured that the composition of the potential participant pool reflected the most current and reliable information available.

First, a RACI analysis was conducted. In line with the study's aims, participants in the 'Accountable' category were prioritised as primary candidates, and those in the 'Responsible' category were considered secondary candidates for recruitment. Individuals classified solely as 'Consulted' or 'Informed' were excluded from the eligible population, reducing the list to

about 100 candidates. A simplified, anonymised example of the RACI matrix is presented in Table 4.4.; the matrix used in the study is not reproduced to protect participant confidentiality.

Table 4.4 Simplified example of a RACI Matrix for Participant Selection and Prioritisation.

Source: Author's own work

Description	[Name of HEI]	Candidate 1	Candidate 2	Candidate 3	Candidate 4	Select?
Executing digital transformation plans	Responsible (R)	Y				Second priority candidate
Ultimate authority over strategy and planning	Accountable (A)		Y			Priority candidate
Expertise without direct involvement	Consulted (C)			Y		Do not select
Interested but not directly involved	Informed (I)				Y	Do not select

To further refine this sample, inclusion and exclusion criteria adapted from Ball *et al.*'s (2011) policy actor typology were applied. These criteria ensured that only individuals with significant leadership roles, relevant institutional affiliations, and the capacity to influence digital transformation initiatives were included in the sample. Applying the policy actor criteria reduced the eligible candidate pool from 100 to 54. The inclusion and exclusion criteria are detailed in Table 4.5.

Table 4.5 Inclusion and exclusion criteria for candidate respondents in Irish HEIs

Source: Adapted from Ball et al., 2011

Criteria	Inclusion	Exclusion
Context		
Leader or senior manager	Holds leadership or senior management positions in a HEI, such as president, vice president, dean, department head.	Does not hold leadership or senior management positions in a HEI, such as lower-level administrators, faculty members, or student.
HEI setting	Employed in an IUA university, TU, IoE as their primary workplace, either as senior administrators or academic leaders.	Not affiliated with an IUA university, TU, IoE or as their primary workplace, such as individuals from government, industry, or non-profit organisations.

Criteria	Inclusion	Exclusion
Context		
Institutional leadership competency	In position of authority and influence with regard to leading policy implementation, strategic planning, organisation business model management, or value proposition creation.	Low/no capability to influence policy, strategy, institutional business model management, or value proposition development.
Decision-making accountability (policy “narrators”; Ball et al., 2011; p. 626)	Holds decision-making authority within their senior position, with the ability to make strategic decisions for their HEI.	Does not have the authority to make strategic decisions for their respective HEI or do not hold decision-making authority within their senior leadership position.
Administrative responsibility (policy “translators”; Ball et al., 2011; p. 626)	Holds administrative responsibility within their senior leadership role, with the ability to execute institutional plans for their respective HEI.	Does not have the authority to execute institutional plans for their respective HEI or do not hold institutional responsibility within their senior leadership position.
Incumbency	Established in their current senior leadership role for a duration of 12 months or greater ⁶ .	Employed in their current senior leadership role for a duration of fewer than 12 months.
Engagement with research methods	Willing to participate in qualitative and/or quantitative components of the MMR study, which involved an online survey and a recorded semi-structured interview.	Unable or unwilling to participate using the research methods used in the study.
Availability	Available and willing to commit to the time required for data collection and follow-up, as outlined in the study's time horizon and procedures.	Unavailability or unwillingness to commit to the study requirements: Unavailable or unwilling to commit to the time required for data collection and follow-up, as outlined in the study's time horizon and procedures.
Informed consent	Willing to provide informed consent, indicating voluntary participation in	Unable or unwilling to provide informed consent.

⁶ During the research time horizon existing IoTs were merged into new Technological Universities. As a result of the institutional amalgamations, some respondents based in TUs were in-post for fewer than 12 months. The criterion was adjusted in cases where the respondent held an equivalent position in their previous ‘pre-merged’ IoT. In these cases, the duration of their prior tenure was added to their current tenure to provide an overall duration which reflected their qualification to participate in the study.

	Criteria	Inclusion	Exclusion
Context	the study and understanding of the study's purpose, procedures, risks, and benefits.		

Recruitment from the remaining 54 eligible candidates was conducted via personalised email invitations. Each invitation outlined the purpose of the study, the confidentiality and data protection measures in place, and participation requirements. Prospective participants were informed that the research involved two phases: an initial online survey followed by a semi-structured interview for a smaller subset of respondents. Of those invited, 22 individuals consented to participate in the survey phase, yielding a 40 per cent response rate. From this group of 22 respondents, 11 subsequently agreed to participate in follow-up semi-structured interviews. Participation in both phases was confirmed through signed informed consent forms (Appendix G). A summary of the participant selection process is provided in Table 4.6.

Table 4.6 Summary of Participant Selection via RACI Framework

Source: Author's own work

Sampling Summary	Number
Executive leadership & senior management in Irish HEIs	~900
Eligible based on RACI analysis	100
Eligible based on Ball <i>et al.</i> 's (2011) policy actor criteria	54
Survey respondents	22
Interview participants	11

The demographic profile of the survey respondents shows that 73 per cent were male and 27 per cent were female. Ages ranged from under 30 to over 46, with most participants belonging to the oldest age group. Table 4.7 presents the demographic breakdown of survey respondents.

Table 4.7 Phase 1 Survey Respondent Demographics (n=22)

Source: Author's own work

Characteristic	Category	Number
Gender	Female	6
	Male	16

Characteristic	Category	Number
Age	≤30 years	6
	31-45 years	7
	≥46 years	9
Institution Type	TUs	6
	IUA universities	5
	Institutes of Education	1

In parallel to selecting the Irish HEI sample, participants were recruited from international organisations such as the OECD (Education and Skills Directorate), the EU Commission (Directorate-General for Education, Youth, Sport and Culture), and the Higher Education Authority to take part in the semi-structured interview phase of the study. This strategy ensured that the study benefitted from the insights of policy actors in influential external bodies, who could provide an etic perspective (Pike, 1967) to broaden the analytical scope, challenge implicit assumptions, and enhance the validity and relevance of the research findings.

In total, three individuals from the Irish higher education governing body and an international organisation accepted the invitation to participate: a HEA programme manager (seconded to the IUA), a former HEA board member, and an OECD higher education researcher and policy advisor. As their roles were external to Irish HEI digital transformation management, they did not complete the initial survey but contributed unique, policy-focused perspectives during the interviews. Thus, the interview phase of the study consisted of 11 original survey respondents and three external experts. The demographic composition of the 14 interview participants is detailed in Table 4.8.

Table 4.8 Phase 2 Interview Participant Demographics (n=14)

Author's own work

Characteristic	Category	Number
Gender	Female	4
	Male	10
Age	≤30 years	4
	31-45 years	4
	≥46 years	6
Affiliation	TUs	5
	IUA universities	5
	IoEs	1
	Irish higher education agencies	2
	International organisations	1

With the research context, scope, and sample population defined, the subsequent stage of the research involved the development of a research design structured to address the study's research questions.

4.8 Delimitations

To frame the context and focus of the research design described in Section 4.9, it is important to clarify the key delimitations that define the scope of this study. Geographically, the study is limited to higher education institutions in Ireland. The research exclusively examines publicly funded higher education institutions, providing a context-specific analysis of digital transformation within Ireland's publicly funded higher education ecosystem. While the findings may have implications for other higher education systems, they are not intended to be generalisable and provide conclusions beyond the Irish higher education context. The temporal scope of the study is also defined by the timing of its fieldwork, which was conducted prior to the emergence of generative large language models (LLMs) in December 2022. This development, which has significant implications for digital transformation in higher education, occurred on the brink of concluding the data collection phase and therefore falls outside the temporal scope of the research. While this study acknowledges the disruptive potential of LLMs, their impact on Irish HEIs is not addressed within the data or findings. Finally, the study focuses specifically on the perspectives of senior managers responsible for implementing

digital transformation initiatives in Irish HEIs. The study does not explore the views of executive leadership, academic staff, administrative staff, students, or other stakeholders, as its aim is to understand how senior managers perceive to the challenges and opportunities of HEI digital transformation.

4.9 Research Design

Research designs are “procedures for collecting, analysing, interpreting, and reporting data” (Creswell & Clark, 2018, p. 58). According to Cohen *et al.* (2018), there are no standardised ‘design blueprints’ for mixed methods research, meaning that using MMR allows for flexibility when matching research questions to research methods, data gathering strategies, data analysis, and findings presentation.

This study employed a Sequential Explanatory Mixed Methods Research (SED-MMR) design, which integrates quantitative and qualitative methods in two distinct phases (Palinkas *et al.*, 2011, p. 46). The initial phase involved quantitative data collection through a survey, followed by qualitative data collection through semi-structured interviews. This approach ensures that the qualitative findings supplement and provide deeper insights into the quantitative results. Figure 4.3 visualises the study’s research procedures, based on Ivankova *et al.*’s method (2006).

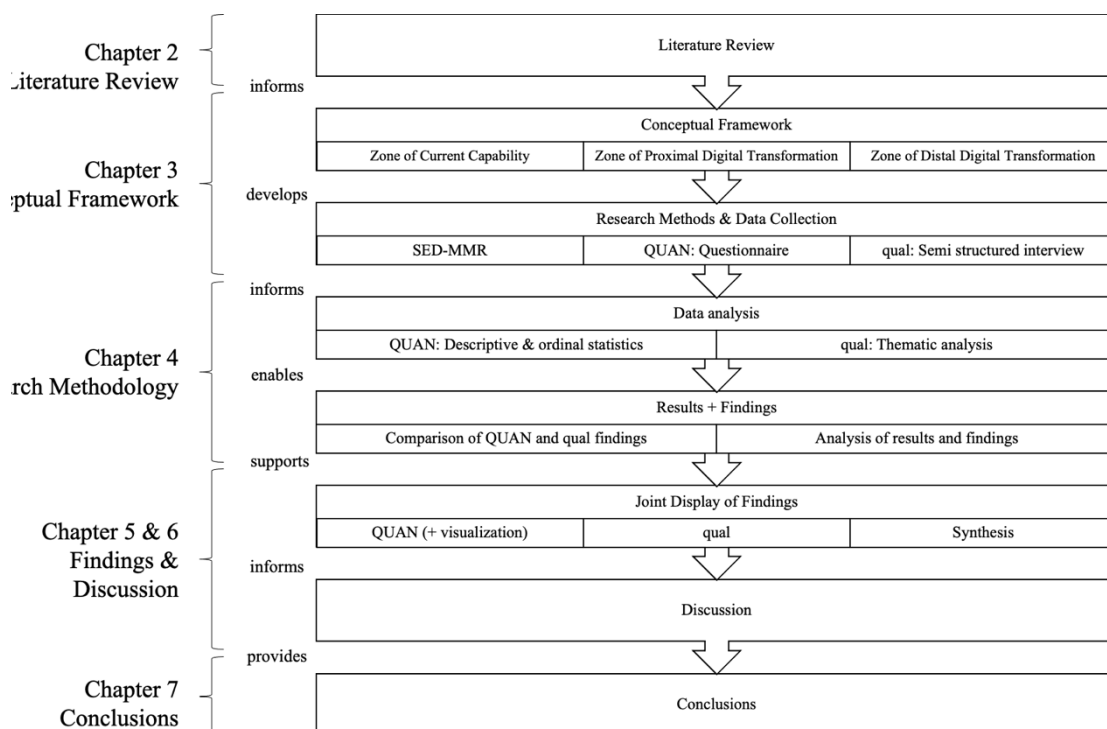


Figure 4.3 Research design for this study

Source: Author's own work, adapted from Ivankova et al., 2006

The findings from both phases are synthesised later in the study. In this regard, SED-MMR facilitates both ease of implementation and data triangulation (Teddlie & Tashakkori, 2009).

4.9.1 Phase 1 Survey Development

In mixed methods research, quantitative data play a critical role in addressing the research questions (Creswell & Plano Clark, 2018). Questionnaires and surveys are widely recognised as effective tools for rapidly collecting quantitative data (Tashakkori & Teddlie, 2010). In sequential mixed methods designs, questionnaires are commonly employed in the initial phase to gather baseline quantitative data from respondents (Creswell & Creswell, 2018). The questionnaire used in this study was designed to address ten topic areas (Table 4.9) and collect both nominal and ordinal data.

Table 4.9 Questionnaire structure distributed by topic

Source: Author's own work

Topic	No. of Questions	Relevance to RQs	Description
1. You and your institution	7	RQ1, 2, 3	This section covers respondents' demographic and professional information
2. Digital transformation drivers	17	RQ1	This section covers motivators for digital transformation for the respondents' HEI
3. Digital transformation barriers	20	RQ1, 2	This section covers barriers to digital transformation for the respondents' HEI.
4. HEI strategic planning and governance	4	RQ2	This section covers major focus areas for respondents' HEIs' digital transformation activities over the next two years.
5. Operationalising digital transformation	5	RQ2	This section covers how the respondents' HEIs direct and manage the use of digital resources in support of institutional strategic objectives.
6. Scope & Scale	4	RQ2, 3	This section covers the design framework, application, management,

Topic	No. of Questions	Relevance to RQs	Description
			and control of digitalisation in the respondents' HEIs.
7. Service Delivery	5	RQ3	This section covers the portfolio of services delivered by the respondents' HEIs.
8. Administrative services and processes	4	RQ3	This section covers the online services that the respondents' HEI provides for students
9. Staff support and professional development	4	RQ2	This section covers resources and infrastructure available to support academic, administrative, and other HEI staff
10. Technology-enabled institutional activities	4	RQ3	This section covers how digital transformation has affected the respondents' HEI over the last five years

Nominal data, such as respondent demographics, were gathered using multiple-choice questions. Ordinal data were captured using a five-level capability maturity curve adapted from the IT-CMF Body of Knowledge. Each question consisted of a stem and predefined anchor statements representing different levels of capability maturity, as illustrated in Figure 4.4.

How do you evaluate, prioritize and select strategic options?

Don't know	☒
Any process that exists to evaluate, prioritize and select strategic options is informal. Any decisions are taken as and when the need is perceived to arise.	☐
A basic process is beginning to emerge to evaluate, prioritize and select the business value of strategic options. This is based mostly on a medium-term time-frame and options are chosen by the IT leadership.	☐
Various modelling tools (e.g. scenario modelling, cost/benefit analysis) are used to assess the full life-cycle impact of the individual strategic options. Business strategy imperatives strongly influence this process.	☐
Options are evaluated based on an outline business case and challenged by all relevant stakeholders. Prioritization is based on IT and business goals. Selection is made by a dedicated group.	☐
Evaluation of strategic options is based on a comprehensive set of criteria, including impacts and inter-dependencies with the business ecosystem. Prioritization and selection of strategic options considers multiple time horizons.	☐

Add comment ▾

Save

Figure 4.4 Example of IT-CMF capability question, excerpted from the Strategic Planning (SP) question set
Source: Innovation Value Institute, 2023

The survey questions also included a ‘Don’t know’ option, which allowed respondents to indicate insufficient knowledge on a topic, reducing response bias (Bradburn *et al.*, 2004). An ‘Add Comment’ text box was provided, to enable respondents to elaborate on their responses. The capability maturity levels and their corresponding importance ratings are summarised in Table 4.10.

Table 4.10 Adapted IVI IT-CMF Capability Maturity Curve mapped to Importance
Source Innovation Value Institute (2023)

	IVI IT-CMF Capability Maturity Level	Descriptor	Importance Rating
High	5	Optimised	Very Important
	4	Advanced	Important
	3	Intermediate	Moderately Important
	2	Basic	Slightly Important
Low	1	Unmanaged	Not Important

While this scale bears superficial similarities to a Likert-like scale, it differs significantly in focus and application (Silva et al., 2014). Likert-like scales measure individual beliefs and sentiments, whereas capability maturity scales use anchor statements to measure organisational capability maturity (de Bruin *et al.*, 2005). Given this study's focus on organisational digital transformation, the capability maturity approach was deemed more appropriate (Wendler, 2012). This method enables the translation of respondents' perceptions into meaningful measurements of digital and organisational capability maturity. The use of IT-CMF capability anchor statements, with clearly defined maturity levels, provides evidence-based insights into organisations' digital transformation capabilities and managerial perspectives (Curley *et al.*, 2015).

4.9.2 Survey Validation

The survey validation involved rigorous review by academics and practitioners with expertise in digital transformation within complex adaptive organisations. Three colleagues from the Innovation Value Institute (IVI), comprising one research fellow and two senior research fellows (Table 4.11), participated in the pilot testing and validation process, which took place between February and March 2022.

Table 4.11 Pilot Reviewers' Expertise Profile. Reviewers participated in both survey and interview validation processes
Source: Author's own work

Contributor	Role in IVI	Qualification
Tester 1	Senior Research Fellow (Career)	PhD (Healthcare Informatics)
Tester 2	Senior Research Fellow (Career)	PhD (Data Governance)
Tester 3	Research Fellow (Postgrad)	Doctoral Candidate (Usability)

The pilot reviewers documented their experiences with the survey, providing constructive feedback, which informed improvements to its structure and flow. Their critiques helped clarify ambiguous questions, adjust closed-response wording, and improve question sequencing. After pilot testing, the finalised 74-question survey (see Appendix E) underwent a quality assurance review by three senior research fellows from the Innovation Value Institute. This review ensured the survey's accuracy, coherence, and comprehensiveness.

4.9.3 Phase 2 Semi-Structured Interview Development

The semi-structured interviews used in Phase 2 of this study “provide a balance between flexibility and structure” (Bernard, 2006, p. 212). The method is particularly effective with “people who are accustomed to efficient use of their time [such as] high-level bureaucrats” (p. 212). While the interview cohort will be discussed in detail later in this chapter, a brief overview is warranted. The participant group comprised eleven HEI managers responsible for digital transformation initiatives in their respective HEIs in Ireland, along with three participants specialising in global education policy, strategic leadership and governance, and national programme management within both the Irish and global higher education ecosystems.

The interview questions were adapted from open questions in the IT-CMF database of interview question items. Unlike the survey questions, which are quite technical, the interview questions were designed for easy engagement to elicit insights into how participants conceptualised their digital transformation managership in relation to the self, their place of practice, and with reference to a globalised and increasingly digitalising higher education ecosystem. The question topic areas were mapped to the three research questions (Table 4.12). The interview questions were sequenced in a logical and predictable manner so that the interview would have a defined beginning (introduction and warm-up with easy-to-answer

low-stakes questions), middle (questions exploring the key topics with the interviewee), and a demarcated conclusion to the interview. The rationale for adapting this instrument was twofold:

- 1) Its robustness and maturity had been established through extensive professional application;
- 2) The researcher's familiarity with the tool ensured effective deployment.

Table 4.12 Semi-structured interview guide

Source: Adapted from IVT's Digital Readiness Assessment (2019) interview guide

Research Theme	Topic	Description
Demographic data	About you, your role, and the concept of digital transformation	This section covers some low-stakes orientation questions, and understanding the context of how participants engage with digital technology in their HEI
Research Theme 1 (Related RQ1)	The influence of digital transformation on administration, operations, service delivery, and management practices in Irish HEIs.	What works very well in digital technology currently from an institutional perspective? What could work better? What trends or developments have you noticed that substantially influence the adoption of Digital Transformation in your institution?
Research Theme 4 (Related RQ1)	The impacts of digital transformation on organisational culture and management in Irish HEIs.	What would people say about how your ways of working remained constant, and how have they changed over the last 2 years? How has your operating (management) model remained constant, and how has it changed over the last two years?
Research Theme 2	Exogenous forces affecting digitalisation and	What are the most significant external pressures driving digital

Research Theme	Topic	Description
(Related RQ2)	organisational change in Irish HEIs.	transformation and changes in how you operate and are structured?
Research Theme 3 (Related RQ2)	Endogenous forces affecting digitalisation and organisational change in Irish HEIs.	What would people say are the most significant internal pressures driving digital transformation and changes in how you operate and are structured?
Research Theme 5 (Related RQ3)	Application of a capability maturity model to measure changes from digital transformation in Irish HEIs.	How does your HEI leadership measure success or performance improvement? What emerging changes might impact success measurement in the next 2-5 years?
Open Question	Concluding	This section is an opportunity for the respondent to highlight something about their institution and digitalisation not already included in the interview, and to wind down the session.

The interview sequence followed a deliberate progression: low-stakes opening questions established comfort, core thematic questions explored research priorities, and open-ended concluding questions invited reflections. This beginning-middle-end structure ensured predictable flow while allowing flexibility. For non-HEI participants, scripts retained the narrative arc but reframed questions to address sectoral perspectives. For example: “What are the most significant external pressures driving higher education digital transformation and changes in operational structures?” All scripts underwent sense-checking by three IVI research fellows (Table 4.11), mirroring the questionnaire validation process.

4.10 Data Collection and Validity

Data were collected in two phases. In Phase 1, the online survey was utilised to capture quantitative data between April and June 2022. In Phase 2, qualitative data were collected via semi-structured interviews conducted from July to November 2022. All interviews were

conducted and recorded using Microsoft Teams to address COVID-19-related health, safety, and logistical challenges

In mixed methods research, data validity ensures that the findings accurately reflect the phenomenon being studied. The case processing summary (Figure 4.5), undertaken in SPSS, confirms that all survey responses were complete and usable for analysis.

Case Processing Summary

		N	%
Cases	Valid	22	100.0
	Excluded ^a	0	.0
	Total	22	100.0

a. Listwise deletion based on all variables in the procedure.

Figure 4.5 Validity calculation for the survey data

Source: Author's own work

Although statistical significance testing is commonly used to assess correlations, this survey aimed to gather in-depth perspectives from a purposive sample of senior leaders on their experiences with digital transformation management in HEIs. To enhance the validity of the survey results, data triangulation was performed through follow-up semi-structured interviews, leveraging the strengths of the mixed methods approach.

4.10.1 Quantitative Data Analysis

The quantitative data were analysed using IBM SPSS Statistics and Microsoft Excel. The analysis began with a univariate approach to summarise the demographic characteristics of the survey respondents, including gender, age, and institutional affiliation. Following this, bivariate analysis was employed to examine relationships between pairs of variables in the nominal data through cross-tabulation. The ordinal data, reflecting organisational digital transformation capabilities, were analysed using the IT-CMF framework. This process provided insights into the capability maturity levels of digital transformation practices across institutions. The structured analysis allowed for the identification of patterns, relationships, and trends within the data. To ensure the reliability of the survey instrument, a Cronbach's Alpha test was conducted using SPSS. The test produced a Cronbach's Alpha coefficient of 0.851, indicating excellent reliability. This high reliability demonstrated consistency in the survey

instrument and ensured confidence in the observed patterns, even with the relatively small sample size of 22 respondents. Reliability testing confirmed that the survey questions were well-designed and that any trends or discrepancies in the data were not due to measurement inconsistencies. A case processing summary conducted in SPSS verified that all survey responses were complete and usable for analysis. This ensured that the study captured a comprehensive understanding of the research topic.

While statistical significance testing is often used to evaluate correlations between datasets, this survey was not intended for that purpose. Instead, it aimed to gather perspectives from an informed purposive sample regarding their lived experiences in managing digital transformation within Irish HEIs. The validity of the results was further supported by the exploratory nature of the analysis, which relied on rich descriptive statistics generated through IBM SPSS and Microsoft Excel.

4.10.2 Qualitative Data Analysis

Qualitative analysis is the search for trends, patterns, and connections in data (Bernard, 2006; Teddlie & Tashakkori, 2009). It is the “central step” (Flick, 2014, p. 3) in qualitative and mixed methods research, enabling the researcher to produce meaning from the data. In common with the mixed methods research design phase described earlier in this chapter, there is no ‘blueprint’ for qualitative data analysis. Among the most influential contributions to this field is Braun and Clarke’s (2006: 2020; 2021) reflexive thematic analysis (RTA) methodology, which has become widely adopted within the social sciences (Byrne, 2022). Despite its widespread application, Braun and Clarke themselves emphasise that there is no single “ideal approach” (2021, p. 38) to qualitative analysis. Byrne (2022) contextualises RTA by differentiating it from other forms of thematic analysis, including coding reliability, and codebook approaches. While the reflexive approach excels at generating rich descriptions (Byrne, 2022), it provides less structure for iteratively refining and integrating *a priori* codes. In contrast to RTA, this study applies a conceptual framework to address specific research questions. Therefore, Template Analysis (Brooks et al., 2015; King, 2012) was selected as the most appropriate approach. Template Analysis facilitates the systematic application of *a priori* codes while remaining open to the production of themes. The method emphasises the development of an initial coding template, which is iteratively refined as new themes are produced during data analysis (see Figure 4.6).

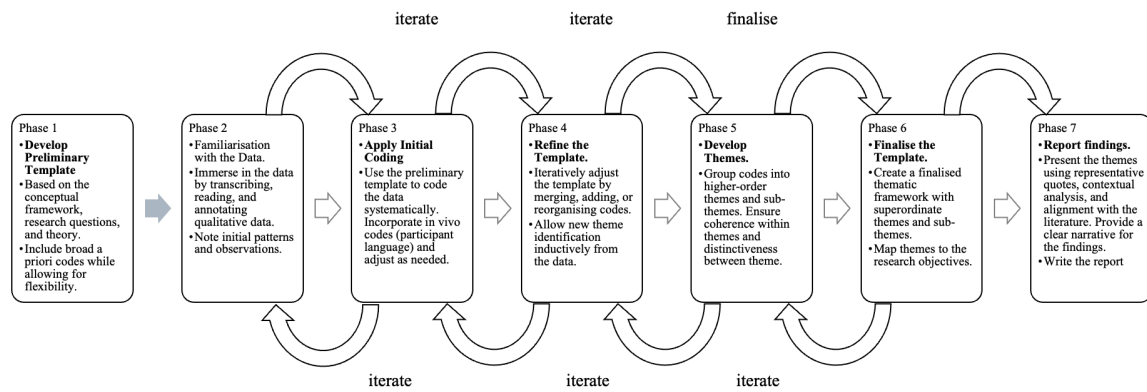


Figure 4.6 Phases of the Template Analysis process.

Source: Author's own work, adapted from Brooks et al., 2015; King, 2012

The semi-structured interviews in this study generated over 15 hours of recorded audio and video, nearly 80,000 words of transcribed text, with accompanying handwritten interview notes. A detailed account of the thematic analysis process is provided in Appendix H. Template Analysis was employed to systematically interpret qualitative interview data from 14 participants, including senior HEI managers and stakeholders in Irish higher education. The coding process began with the generation of an *a priori* coding template, which was iteratively refined throughout the analysis. Each transcript excerpt was assigned both a semantic code to capture explicit, surface-level meaning and a latent code to reflect underlying patterns, conceptual themes, or theoretical implications (see Appendix H, Table H.1).

Coding was managed using the MAXQDA software application, which facilitated both detailed *in vivo* coding and the identification of broader thematic patterns across the dataset. Through iterative clustering and constant comparison, semantic and latent codes were organised into candidate themes, which were then further refined using frequency analysis (Appendix H, Table H.2) and visualised with mind maps (Appendix H, Figure H.1). This process resulted in a prioritised thematic framework, mapping superordinate and secondary themes directly to this study's research questions (Appendix H, Table H.3). This approach ensured analytical rigour, transparency, and a close alignment between the evolving codebook, the conceptual framework, and the study's empirical data.

While the Template Analysis process used in this study is described as occurring in a sequential order, the workflow is not linear but recursive and iterative; it requires the researcher to revisit earlier phases of the process as needed. The coding template was considered provisional throughout, recognising that new codes and interpretations could always prompt further

refinements. The process was concluded only when all relevant data had been coded and integrated into the hierarchical framework of themes (Brooks *et al.*, 2015).

4.10.3 Data integration

A defining feature of mixed methods research, data integration allows for a more comprehensive understanding of the phenomenon under investigation by leveraging the strengths of both qualitative and quantitative research methods (Creswell & Plano Clark, 2017; Feters *et al.*, 2013; Oliveira *et al.*, 2021). In this study, data integration was conducted using the HEI-DT conceptual framework. The findings were systematically mapped to the conceptual framework's components (see Appendix D).

This was a direct output of the qualitative data analysis presented in Section 4.10.2, where themes and codes were identified and organised using Template Analysis. The process highlighted areas of alignment, including the identification of change forces, HEI readiness for digital transformation, enabling constraints, barriers to change, and other factors. Mapping the findings to the HEI-DT ensured that the integration of datasets was both coherent and aligned with the study's research objectives. The mapping process facilitated the identification of patterns and relationships between quantitative and qualitative data. It also provided insights into how institutional structures and organisational capabilities shape digital transformation efforts in Irish HEIs. These insights are explored in greater detail in Chapter 6, where the findings are situated within the broader theoretical context.

4.11 Conclusion

This chapter has detailed the research methodology, including the mixed-methods approach, data collection instruments, and analytical techniques used to investigate digital transformation in Irish HEIs. By combining quantitative and qualitative methods, the study captures both broad patterns and insights into organisational change processes. With the research design now established, the next chapter presents the key themes and insights emerging from the data, answering the research questions and providing an evidence base for subsequent analysis.

Part II

FINDINGS, INTERPRETATION, AND SYNTHESIS

PAGE INTENTIONALLY LEFT BLANK

Chapter 5 Results and Findings

5.1 Introduction

This chapter presents the key results and findings drawn from the analysis of the data gathered in this sequential explanatory design mixed-methods research study. It comprised an online survey and in-depth semi-structured interviews with participants from Irish higher education institutions. This chapter uses a joint display approach, wherein quantitative results are presented first, followed by corresponding qualitative findings, distributed by research question (Creswell & Plano Clark, 2017). Each research question is addressed through a set of themes that emerged during the data analysis.

The chapter is structured as follows:

- **Section 5.2** focuses on the external and internal change forces driving digital transformation, with themes such as catalyst events (e.g., COVID-19), globalisation and marketisation pressures, and regional and national factors.
- **Section 5.3** examines how operational capabilities and organisational culture influence the enactment of digital initiatives, exploring barriers to transformation, change management practices, and the impact of digital technology integration.
- **Section 5.4** investigates the impact of digital transformation, with a focus on leveraging digital technologies for strategic initiatives, leadership, capability development priorities, and new education service models.

Excerpts from interview transcripts are used to support and enrich the interpretation of the source data analysis. They have been anonymised and deidentified, without editorialising the meaning or diminishing the integrity of the source data.

5.2 Drivers of Digital Transformation in Irish Higher Education

Institutions (Research Question 1)

This section addresses the research question: “What change forces drive digital transformation in Irish HEIs, from the perspective of senior managers responsible for these initiatives?”.

5.2.1 Catalyst Events and Change Forces

The COVID-19 pandemic and the establishment of the technological universities were identified as key catalysts for digital transformation in Irish higher education. Respondents highlighted how the pandemic compelled the rapid adoption of online learning and digital technologies. Liam⁷ (Vice President for Integration, Birch Technological University) observed that the shift to remote working achieved progress that would have otherwise taken years using traditional methods. Eoin (Financial Controller, Wild Cherry Institute of Technology) noted that his HEI “moved very quickly”, adding that while some pre-pandemic practices would return, all programmes now include significant online elements. Similarly, Matthew (Professor and Research Institute Director, Sycamore University) credited strong infrastructure for enabling a smooth transition to online delivery. While these events accelerated digital transformation, pre-existing external forces also continue to shape the digital strategies of Irish HEIs.

⁷ For clarity and transparency in attribution, respondents are introduced using their pseudonymised first name, job title, and place of employment (e.g., “Liam (Vice President for Integration, Birch Technological University)”) upon first appearance. In subsequent references within the chapter, only their first name is used to maintain readability while preserving identification.

5.2.2 External Forces Influencing Digital Transformation

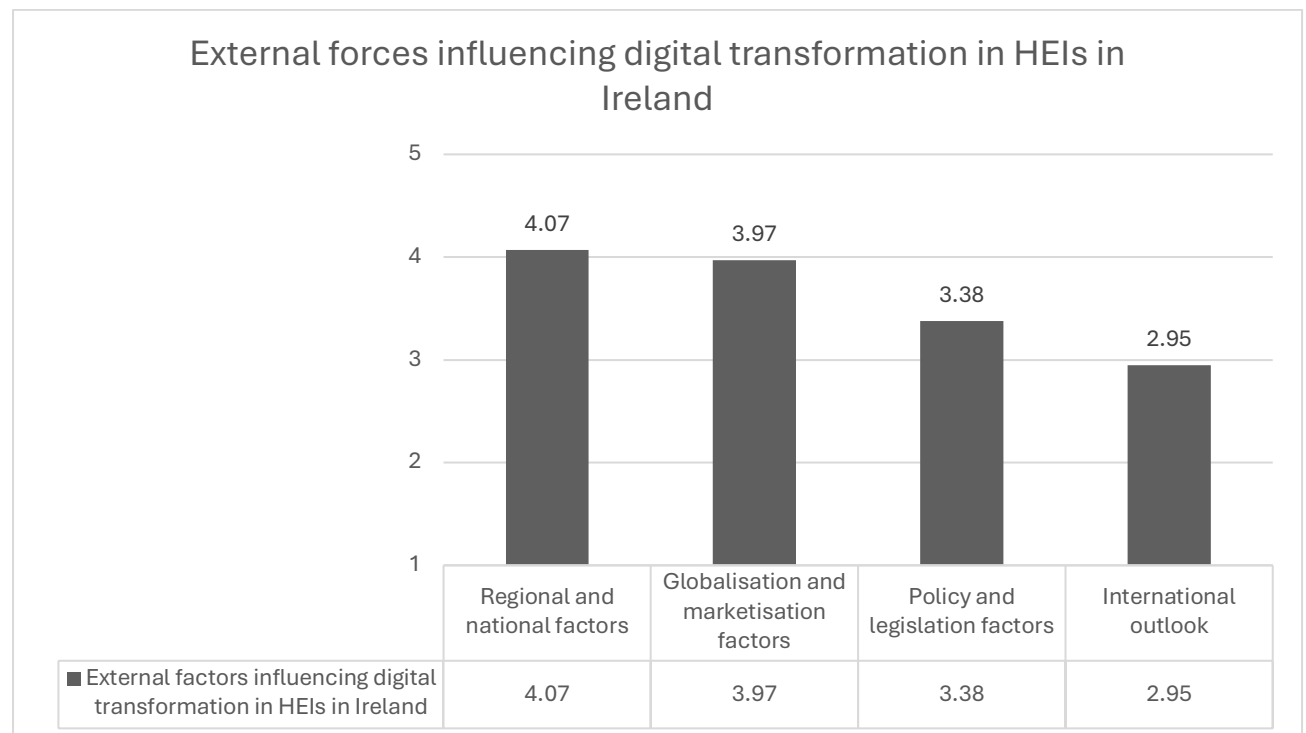


Chart 5.1 External forces influencing Irish HEI digital transformation

The survey data show that Irish HEI managers view “Regional and national factors” (4.07) and “Globalisation and marketisation pressures” (3.97) as the most influential external drivers for digital transformation, prioritising domestic factors in their strategies. In contrast, “Policy and legislation factors” (3.38), such as the *Technological Universities Act 2018*, are seen as less significant, indicating a potential misalignment between state policy intentions and their actual influence on HEIs.

The relatively low importance rating for “International outlook⁸” (2.95) is surprising when contrasted with the higher rating for globalisation and marketisation, but not unexpected when

⁸ “International outlook” typically refers to the efforts and initiatives undertaken by institutions to integrate an international, intercultural, or global dimension into their core functions of education and research (De Wit *et al.*, 2015; Knight, 2007; Zha, 2009). Examples include student mobility (e.g., Erasmus+), faculty mobility (e.g., Marie Skłodowska-Curie Actions), global citizenship courses/programmes, international partnerships and collaborations (e.g., global university alliances like Universitas 21), participation in international academic

evaluated in the context of Irish HEIs’ strategic focus on maintaining regional legitimacy. The discrepancy indicates a tension between HEI managers’ recognition of global competitive pressures and their prioritisation of local and national stakeholder engagement, emphasising the need to balance global ambitions with regional responsibilities. The following analysis explores key regional and national factors influencing digital transformation in Irish HEIs based on survey responses. While external forces such as globalisation and marketisation shape the broader context for digital transformation, regional and national factors play a more immediate and localised role in influencing how Irish HEIs adapt their strategies and respond to stakeholder needs.

5.2.3 Regional and National Factors Influencing Digital Transformation

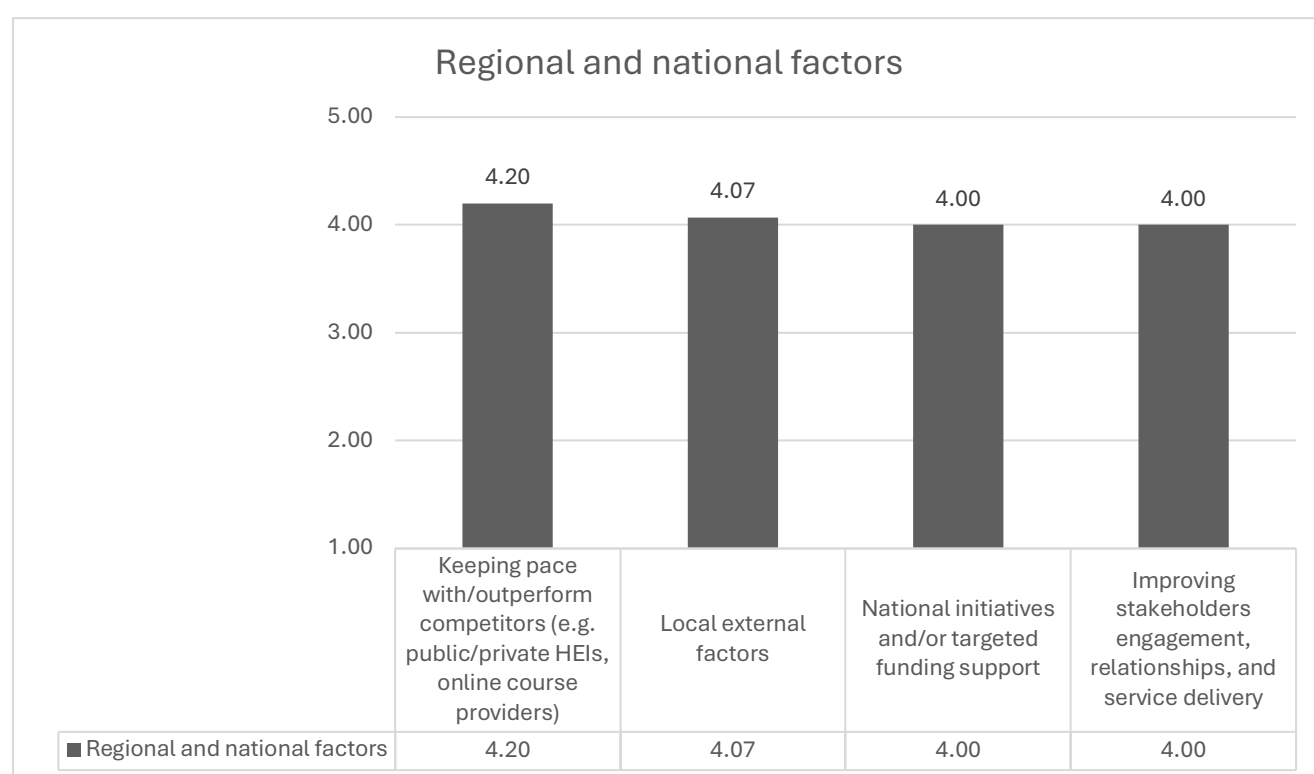


Chart 5.2 Local & regional factors influencing digital transformation

conferences, and participation in global university rankings (e.g., Times Higher Education, QS World University Rankings).

Chart 5.2 illustrates that Irish HEI managers prioritise integrating and competing within regional and national ecosystems. The data suggest that competitive pressures, local factors, and stakeholder needs are seen as interconnected and equally important. According to the interviewees, growth in student numbers, physical infrastructure, and research capacity are critical for long-term institutional sustainability. Referencing the competitive nature of the Irish higher education ecosystem. Fionn (Willow University Digital Projects Manager) stated that:

Willow University needs to grow its student numbers. While we have key ambitions about new buildings, growing our research, and achieving European recognition, I always say we still have to remember that [...] our bread and butter is the undergraduate student population.

To achieve their growth targets while maintaining focus on undergraduates, Willow University employs a differentiation strategy based on geographic reach. Fionn described it:

for the science programmes, our regional reach is the island of Ireland [...], for computers and technology, the reach tends to be the Dublin region [...], for the humanities and enterprise programmes, the reach is very local.

This strategy allows the university to target different student market segments while pursuing its broader growth objectives. Several interviewees, including Ronan (Vice President for Strategy, Hawthorn Technological University) and Liam, emphasised the importance of maintaining and strengthening regional connections for their HEIs, citing a 50-mile / 80-kilometre ‘sphere of influence’. Hawthorn Technological University is positioning itself as a regional hub. Ronan highlighted the “centrality of the university” to the future of their local city. He outlined his HEI’s vision:

Particularly in light of the city’s declining manufacturing base, our potential is to establish Hawthorn TU as a new kind of university, characterised by strong regional engagement, a commitment to lifelong learning, and a willingness to take risks and embrace change.

He questioned the ongoing need for a traditional campus configuration, noting that they are adjusting their infrastructure strategy to invest in “the accessibility of extending our university in the digital space” rather than a physical campus.

Liam acknowledged the importance of developing expertise in research-intensive industry sectors such as ICT, pharmaceuticals, FinTech⁹, MedTech¹⁰, and AgTech¹¹, rather than trying to be a generalist institution, whilst maintaining strong ties with stakeholders such as chambers of commerce and local industry:

For us, the challenge is actually to convince the stakeholders that they need us as leaders to envision a future for them, you know, rather than the traditional approach where our stakeholders typically come to us and say “I'd like 50 software developers, and we want a pipeline of data analysts and we need them by next week.”

He explained how his institution focused on developing industries by training graduates who stayed in the region, started companies, and drove innovation.

Both Ronan and Liam reported value in preserving their HEIs' regional presence and roots in the community, while realigning the scale and resources their institutions provide to better serve local stakeholders, and to contribute to regional development. While maintaining regional presence is perceived to be essential for long-term institutional legitimacy, HEIs must now also address globalisation and marketisation forces. These factors present both opportunities and challenges for universities as they strive to balance local commitments with

⁹ FinTech, or financial technology, refers to the innovative use of technology in the design and delivery of financial services. This includes developments in online banking, mobile payments, blockchain technology, and automated investment advice, all aimed at enhancing efficiency, accessibility, and consumer convenience in finance.

¹⁰ MedTech, or medical technology, encompasses a broad range of healthcare-related innovations that improve the delivery of medical services and patient care. This includes diagnostic equipment (such as MRI and CT scanners), wearable health monitoring devices, telemedicine platforms, and digital health solutions that support early diagnosis and personalised treatment.

¹¹ AgTech, or agricultural technology, involves the application of modern technological innovations to agriculture and farming practices. It covers advancements such as precision farming, automated machinery, smart irrigation systems, and data-driven crop management tools designed to boost productivity, sustainability, and efficiency in food production.

global competitiveness. The question of maintaining this balance sets the scene for examining the impacts of globalisation and marketisation on higher education institution in Ireland.

5.2.4 Globalisation and Marketisation

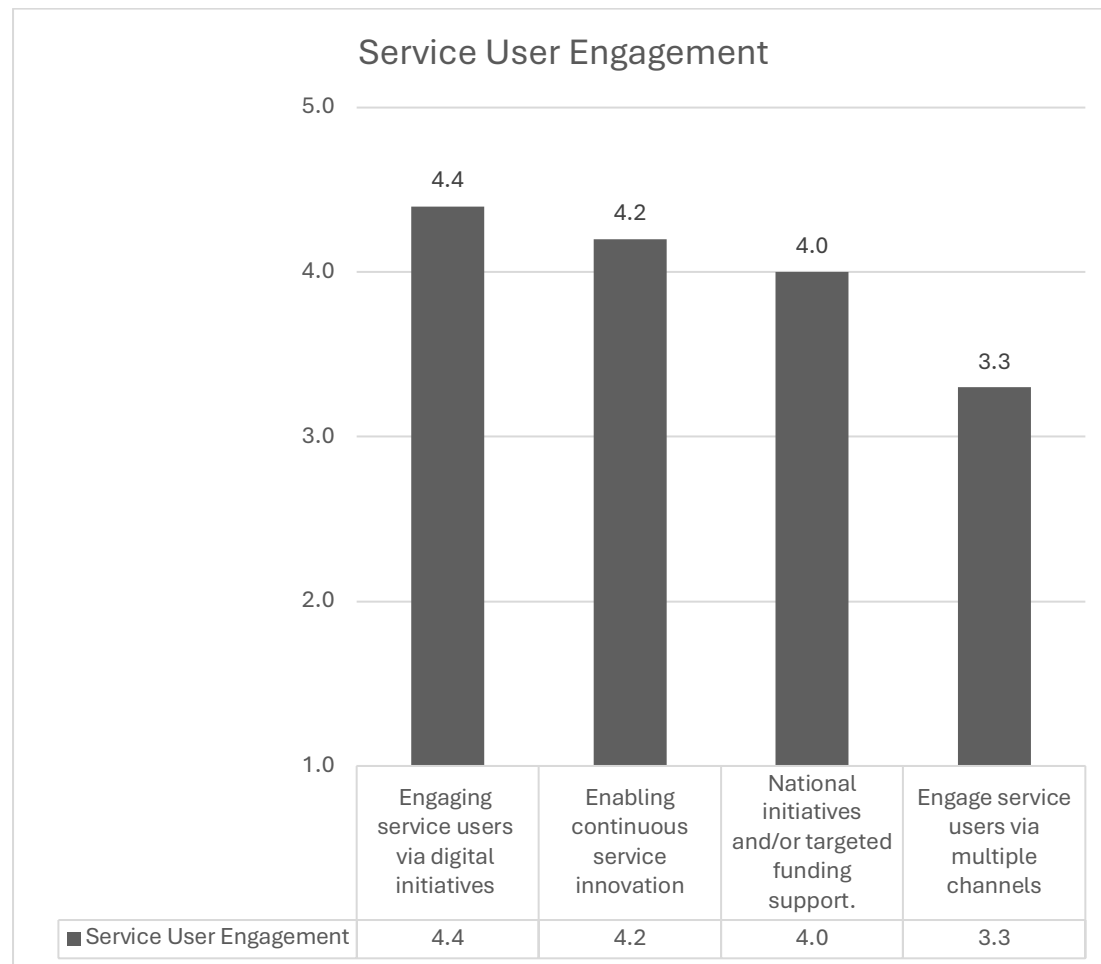


Chart 5.3 Globalisation and marketisation

The chart shows that Irish HEI managers prioritise competing within regional and national ecosystems, with “Keeping pace with/outperforming competitors” (4.20) as the highest-rated factor, followed closely by “Local external factors” (4.07). National funding support, stakeholder engagement, and continuous service innovation (all scoring around 4.0) are also key drivers, reflecting the importance of competition, local influence, and government initiatives. While digital engagement and innovation are highly prioritised, lower ratings for “Sources of funding and investment” (3.3) reveal a tension between advancing digital transformation and managing resource constraints in traditional education delivery.

The findings suggest a trend towards marketisation of higher education in Ireland. Three divergent and often conflicting discourses emerged from the participants' responses to the topic. Firstly, respondents within the technological universities noted the influence of market forces and the need for universities to diversify their business models beyond the traditional on-campus experience. Liam highlighted his HEI's "competitive position". He elaborated:

In relation to online education, for us it's [been] very good. However, it's been eroded because of what's happened since COVID. The other [HEIs] have been forced to go into elearning. Our unique selling point is reducing on an accelerated basis. The change has happened quicker than we anticipated. There's greater competition: it's more challenging, because others are now in that space.

Fionn advocated for a shift to a 'pay to play' ecosystem. He argues that "money going back into the system makes it a better place for every student. Everybody can leverage it better", reflecting a market-oriented approach that valorises financial investment as essential for improving educational opportunities and outcomes.

The dissonance between higher education's teleological and commercial dimensions are epitomised by Oisín's (Vice-President for Academic Affairs, Rowan Technological University) remark:

If my academic colleagues heard me describing our students as customers, I'd be shot¹². But fundamentally it's probably knowing who your customers are, that's my sense of it. But let's not forget the primary purpose of university is to educate people.

As a senior academic with extensive international experience, Matthew remarked that he was pragmatic about the situation: "students are paying customers. No one will deny the value or

¹² The expression "I'd be shot" is vernacular Hiberno-English. It exemplifies the utilisation of hyperbole to articulate the gravity of consequences associated with a decision or action. It signifies the anticipation of culturally meaningful repercussions for promoting transgressive views. This rhetorical strategy is characteristic of Irish colloquialisms, which frequently employ exaggeration and humour as mechanisms for conveying affective states, and reinforcing cultural and professional norms.

importance of generating income. That's very tangible evidence of success if you like to put it into monetary terms.” However, he observed that:

Ireland has no idea about what a market driven education system is. It's so light in comparison to what I'm used to. If you go down the market route, you're dancing with the devil because you're also buying into education as a commodity, and the neoliberal unbundling movement that comes with that, for better and worse.

Nevertheless, he observed that the civic value mission remains strong in Ireland’s HEIs when compared to other national higher education systems. He maintained that universities in marketised systems are constrained by the “narrow funding models that prioritise financial sustainability”, and that HEIs’ attempts to communicate their broader social, cultural, and intellectual contributions are sidelined in favour of quantifiable outcomes and financial returns.

Finally, James (Data & Institutional Research Officer, Juniper University) and Saoirse (Director of ICT, Horse Chestnut University) highlighted how participants at Irish Universities Association institutions are actively leveraging their HEIs’ traditional academic functions by evolving value propositions based on “research funding opportunities” (e.g., Horizon Europe, SFI grants, and industry collaborations) and “prestigious partnerships” (e.g., global university networks, cultural institutions, and industry alliances) in response to competitive pressures. Such strategies epitomise HEIs’ efforts to adapt to a globalised, market-driven environment where digital capabilities are increasingly seen as an essential component for competitiveness and relevance, according to Emily (Education Researcher, Organisation for Economic Cooperation and Development [OECD]). The findings reveal that all the interviewees perceived international competition enabled by globalisation as a significant change force affecting the equilibrium of the Irish higher education system. From a global perspective, Emily acknowledged the potential disruption engendered by the “flexibilisation of higher education” and “new providers entering the market”. She also noted the “overarching concern” other OECD member countries’ higher education system stakeholders have expressed about the future role of higher education. However, she considered:

traditional higher education was not yet in a crisis situation or facing a complete upheaval, particularly for undergraduate students. I don't perceive anything ongoing that isn't a continuation of what's been happening already. It touches on wider issues about the importance of teaching versus research and other academic contributions to society.

Taking an Irish national perspective, Cathal (Former Board Member, Higher Education Authority), argued that the Irish higher education system:

must look to a much broader and much more diverse approach, including introducing micro-credentials, but also including things like the capacity for people to carry credits for modules or programmes throughout their life. Currently the Irish system is altogether far too inflexible.

He expressed concern that the traditional Irish universities would lose their dominant position in the sector, supporting Emily's assertion that a variety of credible alternative providers including the newly established technological universities, private higher education providers, and corporate universities have become established. Liam exemplified this view, observing a demographic shift towards "lifelong learners, seeking out the specific courses they need from wherever provides it best", necessitating "responsive, interoperable infrastructure" across HEIs. Emily argued that, as in many other OECD member country HE systems, Irish higher education institutions seem unsure how to respond to this increasing changing demographic, "seemingly just sort of stuck between the competing agendas of governments, employers, and students." In particular, Emily highlighted the misalignment between student priorities and institutional/governmental expectations. While students make HEI selection decisions based on factors like peer influence, campus reputation, and the university experience, governments and employers focus on higher education's role in developing human capital and meeting labour market needs. Expanding on this point, Emily stated:

from our OECD work on providing labour market information, we've seen member governments have a role that they envisage higher education institutions playing. Then you have employers and businesses that are that are crying out for particular skills, you know? Students don't make decisions about where they go to university dependent on some vague idea that 'if I go into data science, I'll be rich'. They make decisions based on where their peers are going, and to some extent on the consumption value, reputation, and the institution campus experience. Governments, employers, or universities don't get that.

Sinéad (Senior Programme Manager, Higher Education Authority) questioned whether student needs were sufficiently represented within international and national higher education policies.

She identified a significant shift in student expectations since the pandemic era, noting that they are:

much more aware now of what is possible. They will not be fobbed off with excuses from HEIs like ‘we can’t do that’. I think as a sector we need to accept that students of all stripes are more savvy.

This heightened awareness, she argues, stems in part from students’ increased exposure to different learning modalities during the pandemic, which “accelerated” existing trends and “magnified” pre-existing issues. Acknowledging that while some students thrive in traditional in-person settings, she commented that others require more flexible arrangements. This diversity of needs, she argues, necessitates a more adaptable approach to higher education, moving away from rigid structures towards a more collaborative “partnership” between institutions and students. However, Sinéad also acknowledged the challenges in achieving this flexibility, citing limited resources and capacity among academic staff as potential barriers.

5.2.5 Government Policy and Legislation

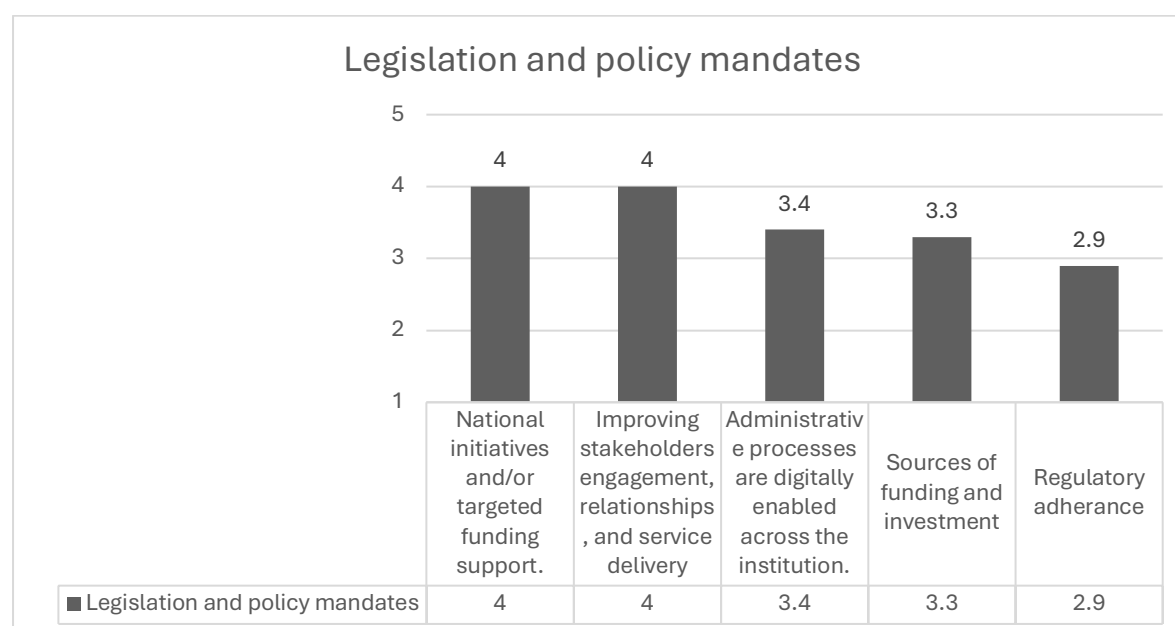


Chart 5.4 Legislation and policy factors

As shown in Chart 5.4, the survey results indicate that Irish HEI managers place significant importance on understanding the higher education policy landscape, with “Legislation and policy factors” and “National initiatives and/or targeted funding support” both scoring 4.0. This

suggests that Irish HEIs recognise the strategic advantage of securing external funding and aligning with national policy objectives, particularly in digital transformation. While “Improving stakeholder engagement, relationships, and service delivery” scores 4.0, indicating recognition of its value, it is perceived as less urgent compared to external directives and funding initiatives. This raises questions about the emphasis on internal needs versus external pressures during complex transformations like digitalisation, which impact various stakeholder groups. The score for “Administrative processes are digitally enabled across the institution” (3.4) highlights a focus on leveraging technology to enhance operational efficiency, though it is not a top priority. The relatively low score for “Sources of funding and investment” (2.9) is intriguing given the high importance placed on national initiatives and funding support. This may indicate that while securing external funding is critical, Irish HEIs are not overly concerned with diversifying funding sources beyond government support.

Overall, the data suggest that HEIs are balancing digital transformation with managing legislative and policy dimensions in an increasingly regulated education landscape. The findings indicate the influence of government policy on digital transformation in Irish HEIs. Emily noted the increasing focus from governments on how their universities perform non-traditional higher education activities in areas such as university-to-industry engagement. She anticipated that governments will try to influence higher education institutions to respond to emerging needs around personal digital literacy improvement and organisation digital transformation. She stated,

I think there always are evolutions in government policy that do impact on higher education institutions. Things like university-to-business cooperation, innovation, technology transfer, start-up, incubation and so on. It's likely that we'll see governments trying to influence HEIs to respond to those needs.

Matthew provided a contrasting perspective. He suggested that the four exogenous pressures (globalisation, commodification, technological advancements, and changing stakeholder expectations) are “relatively immature and less forceful” in Europe generally, excluding the UK, and particularly in Ireland. He noted the absence of a performance-based funding model, which he has experienced in other countries’ HE systems. However, other participants observed a rise in KPI measurement driven by their HEIs’ efforts to improve their global rankings. This development raised questions about the effectiveness of these metrics and highlighted concerns regarding potential unintended consequences. Cathal cautioned against

the risk of becoming overly dependent on increasingly granular KPIs. He warned that “relying on KPIs causes a descent into a bureaucratic process. When this happens, institutions disengage and take less risks.” James warned that “focusing too narrowly on KPIs risks managing to the measure”. However, Tomás suggested that the HEA’s initiative to reduce and standardise the nearly 60 KPIs currently in use could result in more consistent and meaningful performance metrics, which could enhance accountability, transparency, and collaboration across the sector.

The range of perspectives on KPI implementation highlights the complex challenges facing HEIs as they implement digital transformation. While standardised metrics offer potential benefits, they also carry risks if not appropriately used. This tension underscores the broader importance of digital transformation for HEIs in Ireland, as institutions seek to leverage technology not just for measurement, but for the improvement of their operations and educational offerings. However, realising these improvements is contingent upon addressing the significant capability challenges that HEIs face when engaging in digital transformation.

We now turn to examine how this environment, characterised by the limited influence of globalisation, commodification, technological advancements, and changing stakeholder expectations, shapes a unique set of endogenous factors influencing digital transformation in Irish HEIs.

5.2.6 Endogenous Factors Influencing Digital Transformation in Irish HEIs

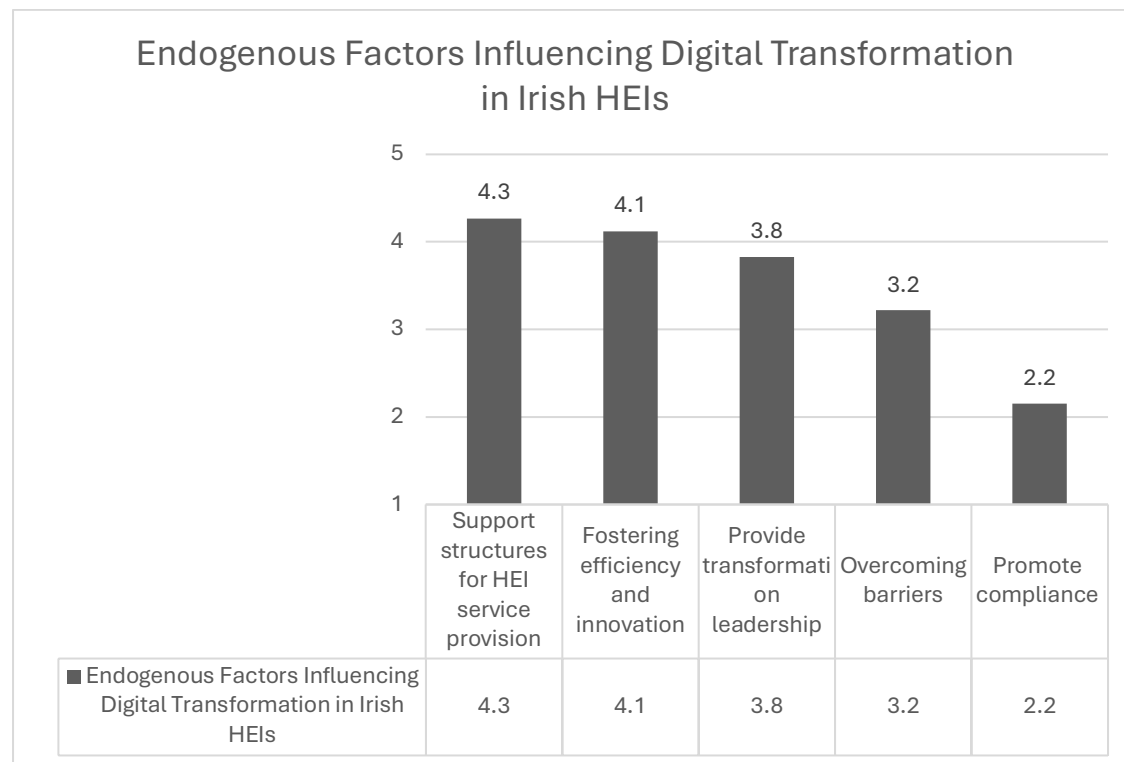


Chart 5.5 Endogenous Factors Influencing Digital Transformation in Irish HEIs

The survey data on endogenous factors influencing digital transformation in Irish higher education institutions reveal the critical role of internal drivers in shaping both the processes and outcomes of transformation. These drivers, particularly those related to enhancing service provision (4.3), fostering efficiency (4.1), overcoming barriers (3.2), and promoting compliance (2.2), proved especially critical during catalyst events such as the COVID-19 pandemic. Irish higher education institutions transitioned rapidly to digital tools and hybrid education models to maintain continuity of education and other activities, such as research, albeit not without substantive difficulties, as discussed in detail in Section 5.4.3. Technological universities, often constrained by limited resources and managing the consequences of structural changes imposed by the IoT-to-TU mergers, experienced unique challenges. Ronan noted that Hawthorn Technological University

viewed digital transformation as an opportunity to move towards kind of greater efficiency and leanness of operations, and possibly more centralised running of university processes.

However, respondents from IUA universities, notably Blackthorn University and Juniper University, highlighted the role of endogenous factors in attracting international students and building strategic partnerships. According to James (Juniper University),

our reputation for research excellence allows us to not only attract top-tier international talent but also collaborate with global partners on initiatives that address pressing environmental and societal challenges.

Having presented the findings related to the change forces driving digital transformation in Irish higher education institutions, it is necessary to understand how HEIs can respond to these drivers. Specifically, this leads to presenting the findings for the second research question: “How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?”

5.3 Operational and Cultural Influences on Digital Transformation in Irish Higher Education Institutions (Research Question 2)

Whilst the preceding section identified the variety and locus of forces and pressures influencing digital transformation within HEIs in Ireland, understanding how these dynamics are perceived, and how they influence the enactment of digital technology transformation requires an examination of the relationship between people, process, technology in the Irish higher education institution context.

5.3.1 Barriers to Digital Transformation

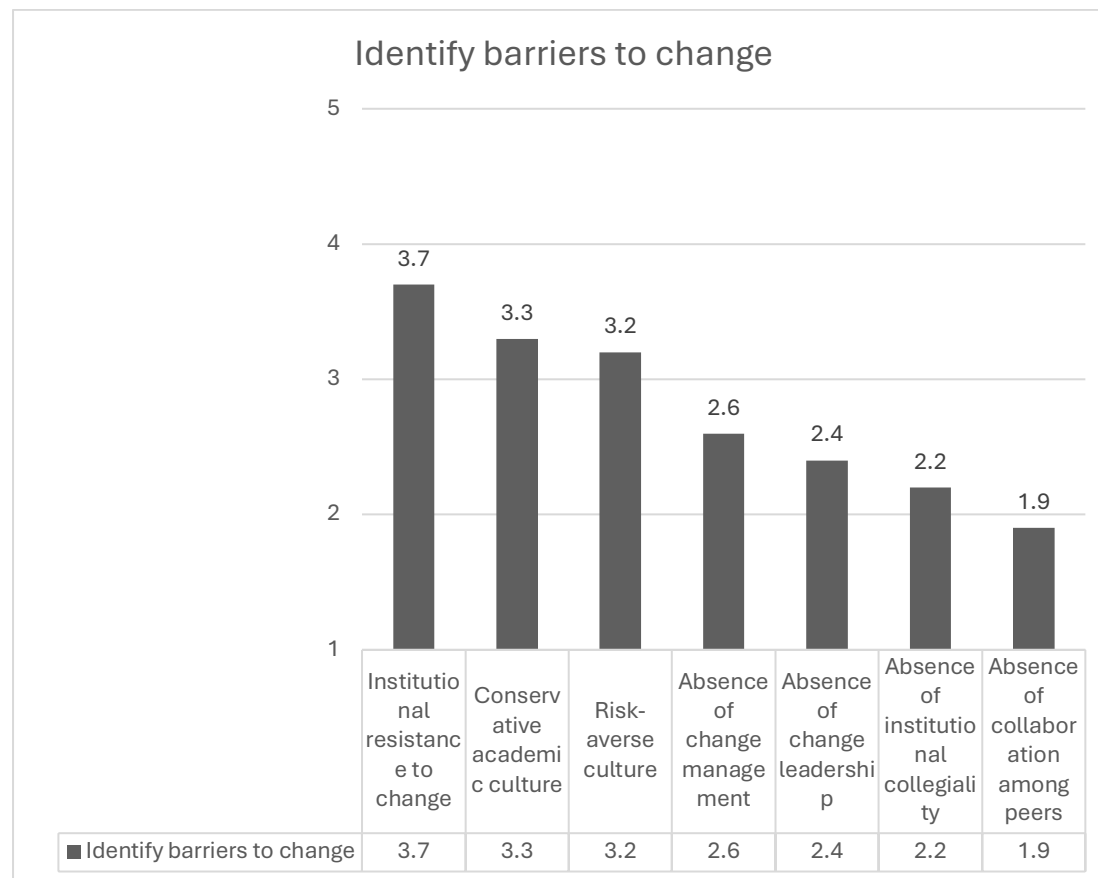


Chart 5.6 Identify barriers

The survey responses indicate that cultural barriers, such as institutional resistance to change (3.7), conservative academic culture (3.3), and a risk-averse mindset (3.2), significantly constrain digital transformation. Emily identified human capacity to adopt new practice as a major barrier across all OECD member country HE systems. Matthew concurred, noting:

Managing the ‘absorptive capacity’ of staff and students is a key challenge. Academic staff often struggle to adapt to rapid technological advancements, leaving HEIs underprepared for digital transformation.

Fionn observed that:

Adopting new technologies without any training is risky. You’re kind of learning by doing and learning with the next person. You only get as good as what the collective knows. You need [to] get somebody coming in.

Ann (Project Leader, Hazel Technological University) noted difficulties in addressing digital literacy and other skill gaps within her university workforce, observing that their staff “lacks the expertise to utilise digital tools.” According to Saoirse, HEI leadership has a responsibility to address “fragmented governance structures, and decision processes compound capability improvement challenges”. She emphasised that in her previous role outside of the HE sector, management was responsible for “fostering a coordinated and collaborative approach across various departments and units” as a critical factor for a “successful digital transformation.”

As a “former academic now in an administrative role”, Sinéad acknowledged that she personally benefited from the cultural capital associated with her academic career. She also noted the benefits of the social and economic value linked to her current position. She observed that, “from [her] current vantage, staff on the academic track are often completely oblivious as to why their contributions to university life are often overlooked”, which she asserted led to a sense of “unnamed frustration and resentment” in HEI academic staff.

Sinéad observed a “deeply troubling aspect of institutional culture” that became apparent after she assumed her new role. She noted that there was a “persistent, implicit discourse of denigration” directed towards academics and other HEI employees by administrative staff. This narrative, which framed academics as needing to be “managed” revealed a discomfiting and divisive ‘us versus them’ mentality, in her view. The normalisation of disrespect towards non-administrators served to perpetuate existing power asymmetries within Irish HEIs, reinforcing institutional inertia and resistance to change.

These barriers highlight the importance of effective change management strategies, which are explored in the following section.

5.3.2 Digital Transformation and Managing Organisational Change

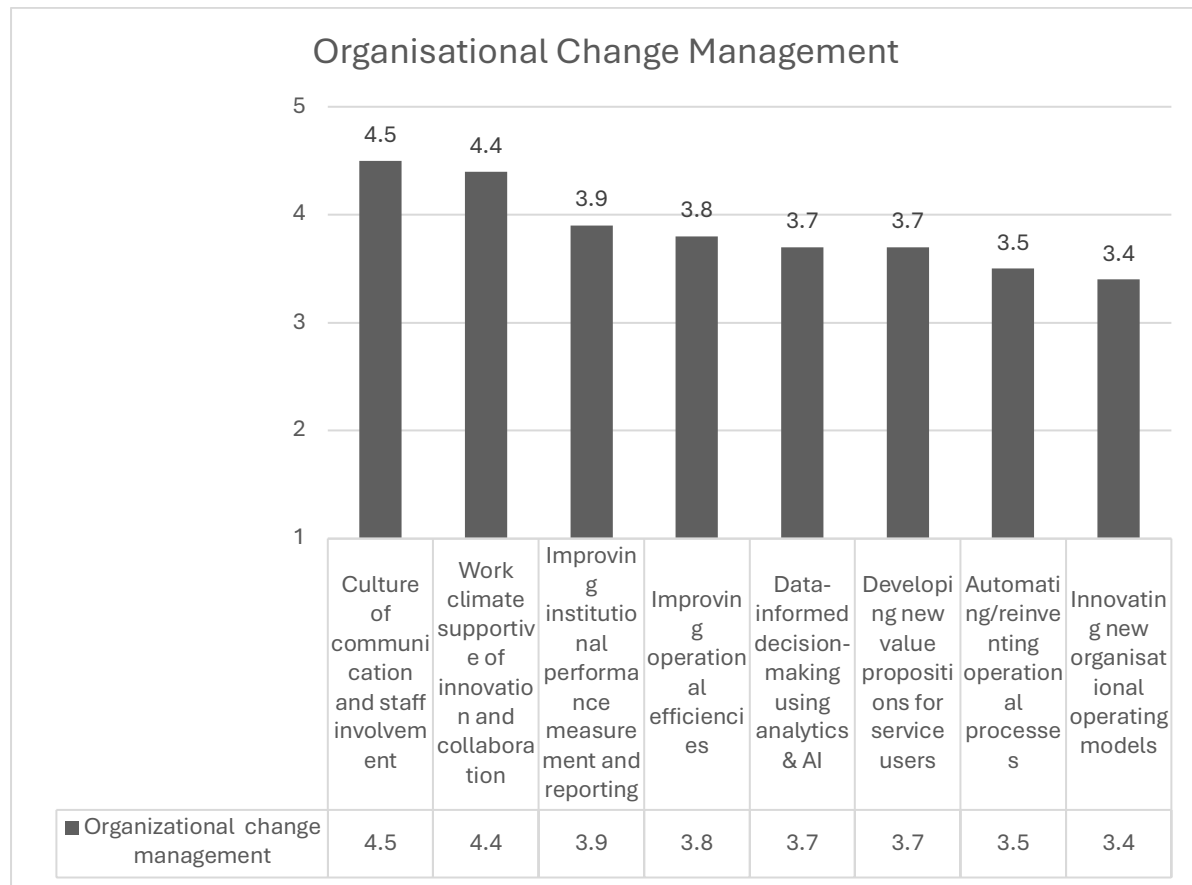


Chart 5.7 Organisational Change Management

The results (Chart 5. 7) emphasise the importance of fostering an inclusive organisational culture, with communication, staff involvement (4.5), and a supportive work climate (4.4) rated highest, while structural changes like automating processes (3.5) and innovating organisational models (3.4) received lower scores, reflecting caution toward radical transformation. Pádraig (Head of Faculty of Technology, Beech Technological University) highlighted his faculty's distinct role in leading ICT-driven transformations, supported by significant organisational investment and a strong communication strategy to engage stakeholders. However, poor change management was identified as a major barrier in Irish HEIs, with Oisín noting that while inter-departmental cooperation is improving, resistance to change persists, driven by personalities and institutional inertia. Efforts to build cohesion through participatory planning are ongoing, but overcoming resistance to change remains a key challenge. Similarly, most participants agreed managing the scale and pace of sectoral change was difficult. Whilst Oisín had observed increased inter-departmental cooperation, he noted “pockets of resistance remain

areas across the university.” Efforts to build cohesion through participatory planning and shared projects continue, but successful change remains challenging. Sinéad highlighted the lack of coordination among HEIs, remarking: “Why is each institution doing that? Why are we not coming together to working on these things?” Ann noted that the amount of concurrent change caused by the merger of IoTs to TUs, and the need to manage pandemic-driven digitalisation:

created uncertainty and resistance to change, especially with unfamiliar digital tools and teaching methodologies. People learned out of necessity, but it was often a reactive process. Colleagues stepped up with informal peer support rather than structured university help.

Ronan observed that:

effective change management using clear communication, stakeholder inclusion, and a clear vision is crucial, [with] meaningful staff development as an important success factor.

Fionn identified institutional cultural impediments to innovation adoption, noting that personnel often exhibit cautious responses to change, motivated by apprehensions regarding increased workload or potential role destabilisation. He gave examples of the types of resistance he had encountered, such as staff members refusing to engage with technology (“it’s not me, it just doesn’t work!”), and “catastrophising” hypothetical risks with a low likelihood of occurrence. He stated that overcoming “the resistant mindset” requires top-down endorsement from the university executive leadership to “signal institutional prioritisation of innovation.” However, Ronan emphasised that it was management’s responsibility to address resistance to change, which he perceived as “a barrier in defence against change, which I see as being in response to low organisational capability”. He continued:

it is common among many stakeholders within HEIs. Faculty, staff, and even students, can be resistant to adopting new practices, preferring to stick to the familiar methods and processes.

Sinéad criticised HEIs for their individualistic approach to change management, highlighting a lack of collaboration in addressing shared challenges. She noted that HEIs often react to technological threats narrowly rather than holistically, particularly regarding academic

integrity. Sinéad emphasised the need to view these challenges as opportunities but observed that funding constraints often leave HEIs reacting to technology rather than shaping it. Having established an understanding of the barriers to change, it is logical to now turn our attention to examining the impact of integrating digital technologies into HEIs.

5.3.3 Organisation Improvement Initiative Prioritisation



Chart 5.8 Organisation Improvement Initiative Prioritisation

Survey respondents identified “Scaling digitalisation of institutional business processes” (4.5) as the top priority, emphasising the need for competitiveness and efficiency, as well as goals like improving service delivery (3.9) and internal communication (3.8). While developing new organisational models (3.4) is a lower priority, Ronan described this transition as a “quiet revolution” aimed at greater efficiency, noting that entirely new models are not yet central to transformation efforts. Liam highlighted the practical focus on consolidating and automating

systems like payroll and academic calendars to streamline processes and validate transformation strategies. Furthermore, the emphasis on tangible outcomes and demonstrating value was echoed by Saoirse’s observations that her HEI is “researching digital operating models that alignment and optimise the university’s overall business model”. She continued that in her view:

digital transformation delivers the strategy and vision of the university... leveraging both newer thinking and technology and digital and so forth is a part of it. But I think probably a more important part is the business-IT alignment—for instance providing a flexible enterprise architecture and what that brings to the table.

Eoin stressed the need for digital transformation to enhance the student experience, while Emily noted that, from her knowledge of OECD research, that higher education systems in member countries view digital technologies as tools to streamline administrative processes, enhancing the efficiency of HEI administrative tasks such as enrolment and student communication.

5.3.4 Accessible Education Provision

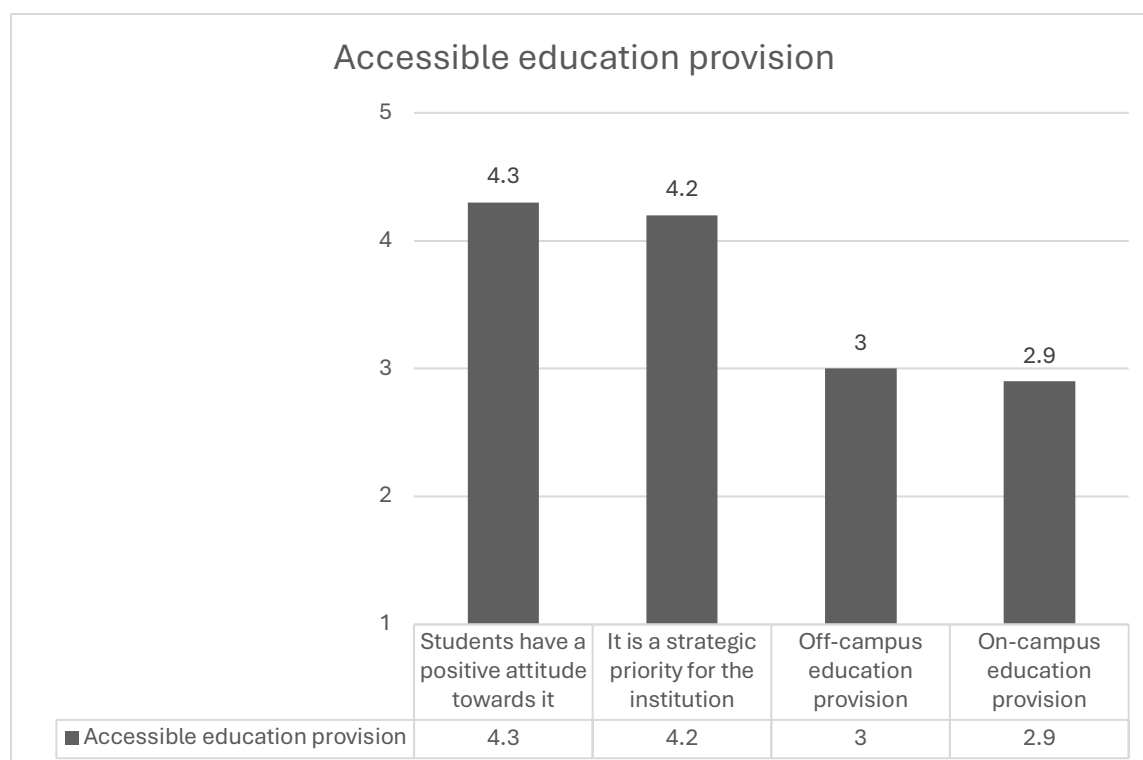


Chart 5.9 Accessible Education Provision

Survey results show that Irish HEIs prioritise accessible education service provision, with a focus on fostering positive student attitudes (4.3) and aligning services with strategic goals (4.2). Off-campus digital education (3.0) slightly surpasses on-campus offerings (2.9), highlighting the growing importance of flexible, technology-driven learning, though senior managers face challenges balancing student satisfaction with organisational adaptation. The interviews revealed a strong awareness of sustaining student satisfaction levels in the light of changing student demographics and diverse target audience needs. Sinéad emphasised the importance of flexibility and personalisation in both education delivery and student support, recognising that:

one size does not fit all and this particularly speaks to, the changing and more diverse needs of our students. Models of education delivery and student support need to evolve to be more flexible, accessible, and personalised to accommodate students' diverse needs and preferences.

Eoin highlighted the importance of hybrid learning in challenging traditional attendance norms, while Matthew noted that younger undergraduates often need more support and struggle with online learning compared to postgraduates. Cathal saw digital tools as key to reaching non-traditional learners, but interviews revealed challenges in adopting these tools to enhance the student experience. Ronan argued that Ireland's HE sector lags behind Europe in using digital technologies for workplace learning and lifelong education. Oisín emphasised his HEI's capability to develop education programmes that address emerging education needs for their target audience stating:

We are more responsive. It comes from a history of having to be sensitive to our students and stakeholders. The need for hybrid models also caters to adults with other commitments who cannot always attend in-person classes. We're probably ahead in the lifelong learning domain. We've done a lot of really powerful work in what the area of what's called link provision, where you engage with other providers and recognise other providers are doing.

According to Emily, evidence from OECD research indicated that moving face-to-face instruction online “has not yielded the benefits of digitalisation, such as reduced costs and improved student outcomes promised by edtech vendors.” However, Ann mentioned that in Hazel Technological University, since the pandemic there has been increasing focus on better

use of data including learning analytics to “improve learning design and realise the benefits of digitalisation” She observed that:

*[they are] beginning to see an increase in student engagement, but it’s early days yet.
Our first cohort will graduate this year.*

In particular, she noted that the shift towards decentralising learning, adopting a person-centred—as opposed to a student-centred—approach, and emphasising opportunities afforded by lifelong learning initiatives was facilitating the inclusion of diverse groups. These included working professionals and individuals seeking flexible, blended, or online learning opportunities, while also extending access to those who might previously have been excluded from higher education due to their geographical distance from campus or the competing demands of study and other responsibilities.

This approach also fostered stronger connections with local communities, aligning with the university's commitment to inclusivity and regional identity.

5.3.5 Education Delivery Priorities

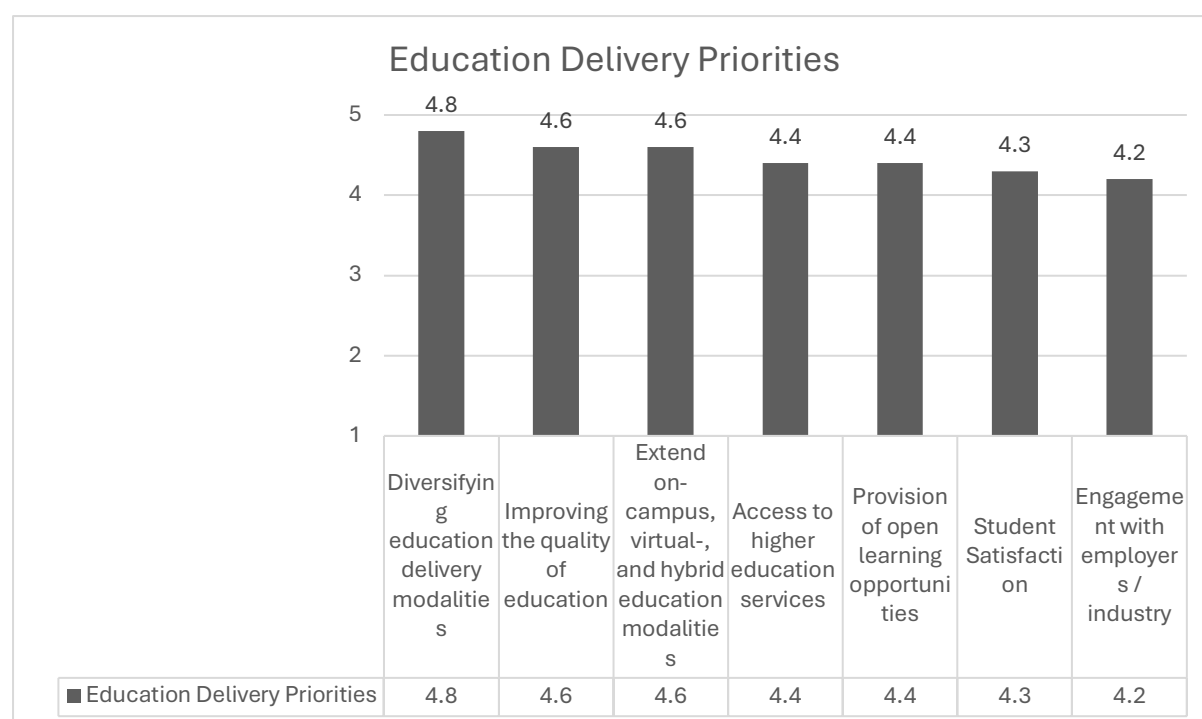


Chart 5.10 Education Delivery Priorities

The data suggest Irish HEI managership prioritise diverse and flexible delivery modalities, reflecting a commitment to adapting to evolving student needs and modern learning preferences. This is evident in the high ratings given to diversifying education delivery methods (4.8) and expanding on-campus, virtual, and hybrid learning options (4.6). In addition to this focus on flexibility, HEI managers also place a strong emphasis on quality improvement (4.6) and student satisfaction (4.3), indicating a dedication to ensuring positive learning outcomes and overall student experience. Furthermore, broadening access to higher education services (4.4) and providing open learning opportunities (4.4) are also key priorities, suggesting a focus on inclusivity and expanding educational reach. While engagement with employers and industry (4.2) is considered important, it receives a slightly lower priority compared to the other factors, indicating that the primary focus is on pedagogical innovation and student-centred approaches to learning. While HEI managers prioritise these innovative delivery models, interviews reveal challenges in translating these priorities into effective practice. Some HEIs struggled to adapt their teaching methods for online environments. As Ronan noted, staff primarily attempted to replicate face-to-face teaching in an online format, which he observed “doesn't work well”. Sinéad cautioned against viewing online and classroom learning as completely separate delivery modalities, advocating for a more integrated approach in the future:

the blend will be more extensive going forward as staff realise some of the skills they picked up [during the pandemic] are useful, particularly for communicating with students.

A further challenge lies in the strategic approach to leveraging emerging digital technologies. Most interviewees were reluctant to discuss – or professed no knowledge of – technological innovations like AI. However, Sinéad observed a tendency within the Irish higher education system to avoid addressing “threats posed by technologies.” She noted the influence of “edtech visions,” rather than HEIs defining their own strategies.

5.3.6 Impact of Digital Technology Integration

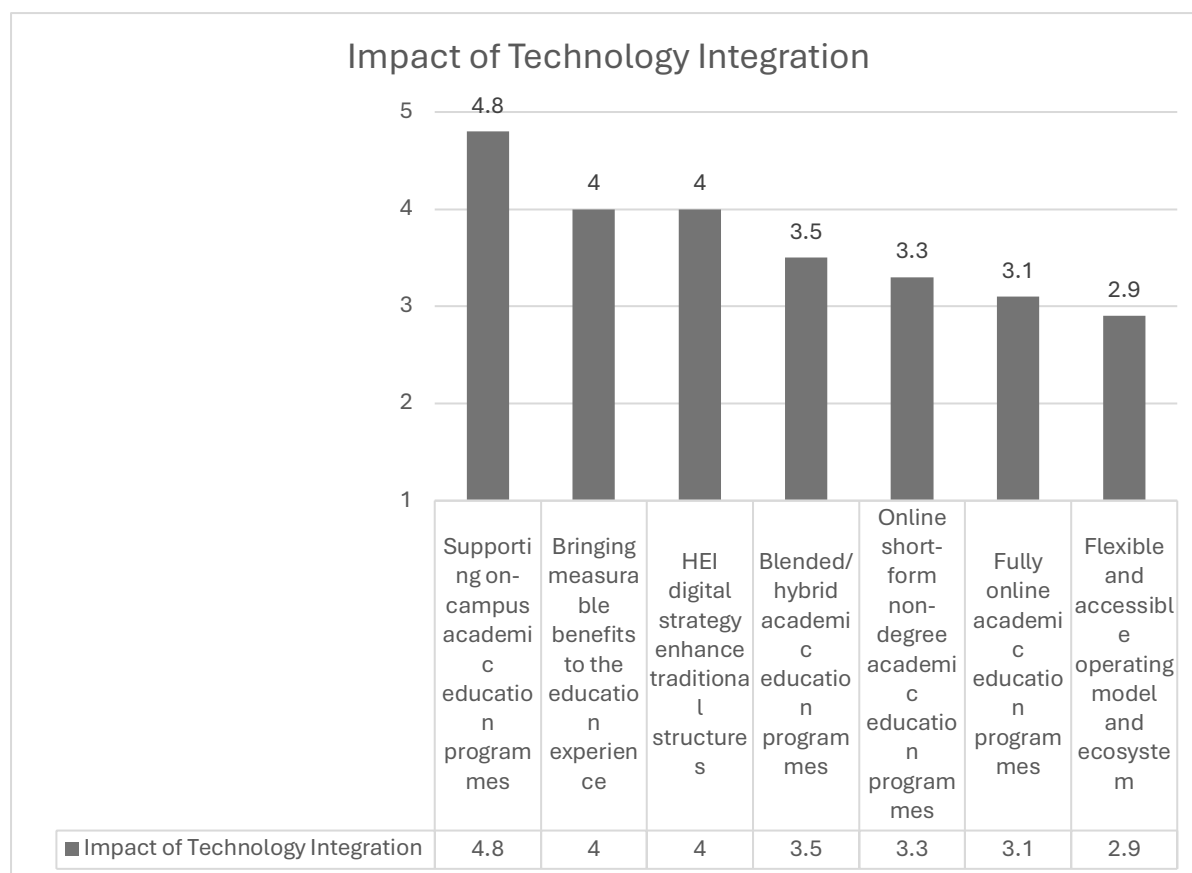


Chart 5.11 Impact of Digital Technology Integration

The analysis of senior managements' perception of the impact of digital technology integration on education programme provision reveals a very strong preference for traditional on-campus learning, suggesting that HEIs retain a traditional mindset. The survey data indicate that digital technologies are highly valued for their ability to enhance traditional on-campus academic programmes (4.8), demonstrating a belief in the complementary role of technology in face-to-face education. This suggests a strong attachment to conventional teaching methods, with challenges such as infrastructure, policies, and staff workload hindering the development of a more flexible educational ecosystem. However, the interviews revealed a strong awareness of the need to sustain student satisfaction levels in the light of changing student demographics and diverse target audience needs. Sinéad emphasised the importance of flexibility and personalisation in both education delivery and student support, recognising that:

one size does not fit all and this particularly speaks to the changing and more diverse needs of our students. Models of education delivery and student support need to evolve to be more flexible, accessible, and personalised to accommodate students' diverse needs and preferences.

Ronan argued that Ireland's HE sector lags behind Europe in using digital technologies for workplace learning and lifelong education. Oisín emphasised his HEI's capability to develop education programmes that address emerging education needs for their target stating:

we are more responsive, [...] it comes from a history of having to be sensitive to our students and stakeholders. The need for hybrid models also caters to adults with other commitments who cannot always attend in-person classes.

Having presented the finding related to the operational and cultural influences on digital transformation in Irish higher education institutions, it is necessary to understand how HEIs can respond to these influences. Specifically, this leads to the presentation of the findings for the third research question concerning the impact of digital transformation.

5.4 The Impact of Digital Transformation on Higher Education Institutions in Ireland (Research Question 3)

This section addresses the research question: "What is the impact of digital transformation on Higher Education Institutions in Ireland?". It explores the following themes connected to this question: the importance of digital transformation for HEIs in Ireland, digital transformation strategy, HEI leadership in digital transformation, capability management responsibilities, capability development priorities, capability challenges, measuring perceived benefits of capability maturity improvement, and new education service models.

5.4.1 Importance of Digital Transformation for HEIs in Ireland

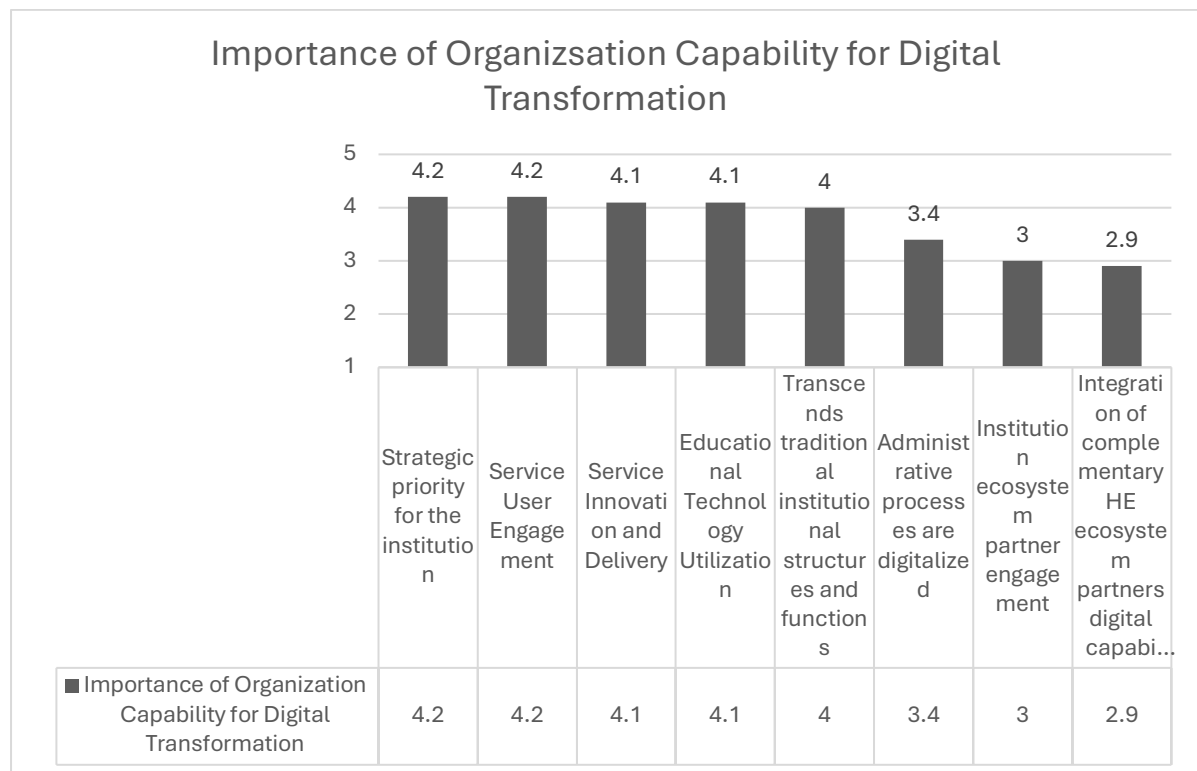


Chart 5.12 Importance of Organisational Capability for Digital Transformation

The survey data indicate that digital transformation is a strategic priority (4.2) for HEIs, critical for engaging students and stakeholders, and focused on developing innovative digital services (4.1) and digitalising administrative processes (4.0). However, lower ratings for partner engagement (3.0) and integration (2.9), as well as interview insights, suggest ambivalence and reluctance among HEI managers to pursue bold digital initiatives. Eoin from Wild Cherry University described “a slow move towards digitalisation” without any real “burning platform” or urgency to accelerate the process. Part of this reticence seems to stem from a desire to maintain control. As Sinéad pointed out, universities:

want to own that digital transformation process and define it themselves, rather than having it imposed externally [...] There is a resistance to drastic disruption of established models and practices.

Cathal observed that while HEIs are eager to digitalise, they resist changes that might disrupt traditional hierarchies or institutional identities, especially with the emergence of the TUs. He expressed concerns about government controls over staff numbers, remuneration, and

conditions, which he believes “held back” HEIs. Furthermore, he questioned whether such restrictions limit HEIs’ ability to expand lifelong learning and diversify course offerings to increase revenue. Cathal recalled that during his time at the Higher Education Authority, the Department of Public Expenditure and Reform (DPER) “strongly resisted proposals for supplemental pay” for lecturers engaged in additional duties, such as developing and implementing innovative education programmes outside of their core lecturing and research duties. He argued that the “dampening hand of the Department of Public Expenditure and Reform” may be inadvertently stifling growth in the higher education sector. This stance seems at odds with DPER’s stated policy, which acknowledges the crucial role of higher education institutions in developing human capital and serving as research and development incubators for Ireland’s knowledge economy. The contrast between DPER’s ostensible support and its potentially restrictive actions suggests a disconnect between policy and practice in advancing the higher education sector’s agenda.

5.4.2 Digital Transformation Strategy

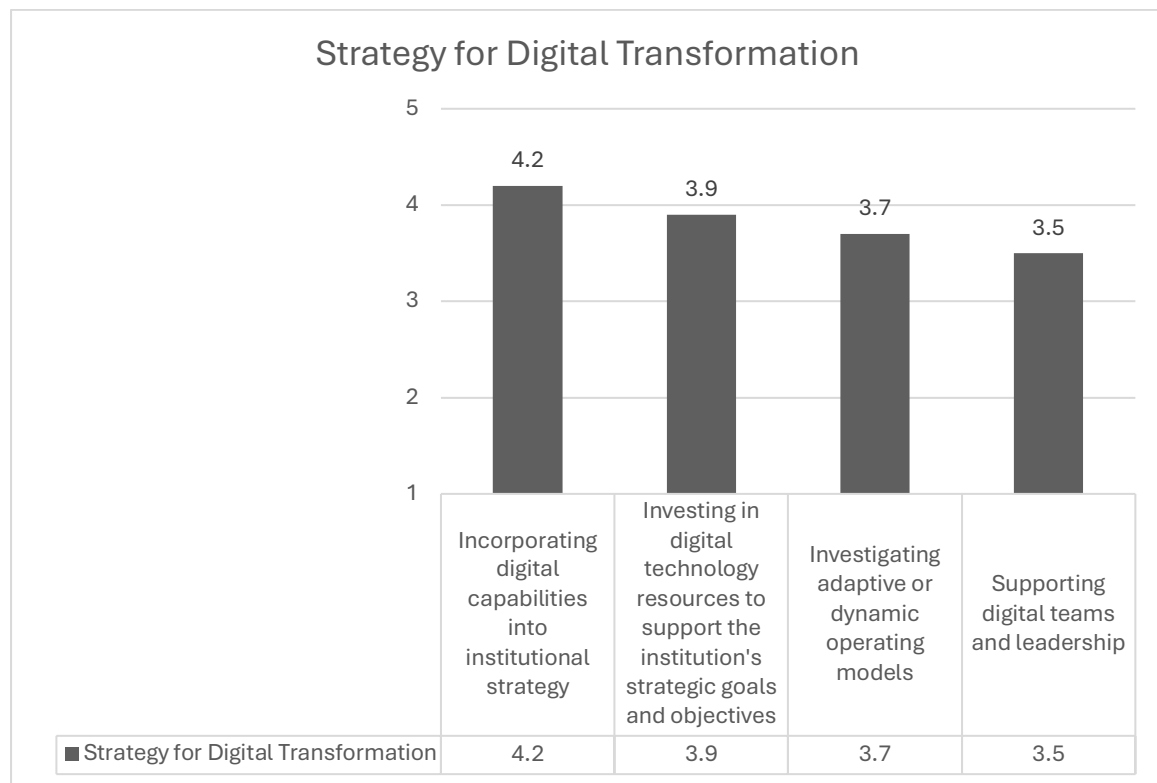


Chart 5.13 Strategy for Digital Transformation

The survey data show that HEIs recognise the importance of incorporating digital capabilities into organisational (4.3) and investing in digital technology resources to support institutional strategic goals and objectives (3.9) as priority digital transformation outcomes. However, lower scores for adapting dynamic operating models (3.7) and supporting digital teams and leadership (3.5) suggest institutional inertia within Irish HEIs that constrains operational adaptation and impedes the transfer of technology into processual and cultural domains. This may limit their capability to leverage digital technologies to adapt their operations and leadership styles. Participants from all HEIs confirmed that the COVID-19 pandemic prompted a reassessment of strategic plans, with many institutions shifting their focus to digital transformation. Ronan noted that pre-pandemic metrics were no longer achievable, explaining:

Instead, the key driver became to accelerate and prioritise digital transformation efforts [...] to position the university in a beneficial way at the conclusion of the pandemic.

Matthew emphasised the long-term importance of digital transformation, noting that it would become a core component of Sycamore University's broader strategy. He also critiqued how the term “digital transformation” was used superficially in some contexts, remarking:

It's a bit like aerosol. It's sprayed around and everyone seems to think that this is really important. But actually, what is it?

He explained that he distinguishes between major (‘big ‘T’’) and incremental (‘little ‘t’’) transformations. He considered that current initiatives to design the academic short-form micro-credentials are a potential ‘big ‘T’ transformation’ that could challenge traditional third level education models:

The biggest transformation that I'm involved in, not just teaching and learning, but actually recognition at the European level for skills and qualifications is micro-credentialing. I'm very heavily involved in micro-credentialing, having served on the expert group. That's an example of transformation.

He stated that the micro-credentials initiative qualifies as “legitimate” ‘Big ‘T’ digital transformation because it has the potential to create outcomes that “HEIs likely want to achieve rather than just hosting recorded lectures on a learning management system, or Zoom”. Eoin, James, and Liam expressed the view that for their HEIs it represented a modest planned change, while others, including Ann, Oisín, Saoirse, Ronan, and Sinéad, considered it to be extensive and ongoing. From her perspective as a HEA senior programme manager, Sinéad observed that the scale of digital transformation envisioned by some HEIs was extensive. She “welcomed the opportunity” for:

a complete rethinking of how we do our entire university business in the area of teaching and learning. Not just tinkering around the edges, but radically re-envisioning multiple aspects. It means transforming our digital infrastructure from the ground up. Fundamentally rethinking what the very concept of a ‘campus’ means and looks like, redefining what it means for students to feel engaged and have a true sense of belonging, even if not physically present.

Ronan stated that for his HEI, digital transformation was about:

overhauling our whole approach to teaching and learning itself: the pedagogies, delivery models, everything. We're still a long way from getting there, but this is the conversation we absolutely need to be having. It's a complete rethinking and transformation of everything we do. Not incremental adjustments, but blowing up and reimagining our conventional thinking and operations in this space from scratch. That's the level of transformation required.

Rowan Technological University's reliance on digital technology during the pandemic has influenced its 2025-2030 strategic plan, which is expected to include a dedicated digital pillar supported by detailed operational plans, though these may remain out of the public domain.

5.4.3 Digital Transformation and HEI Leadership

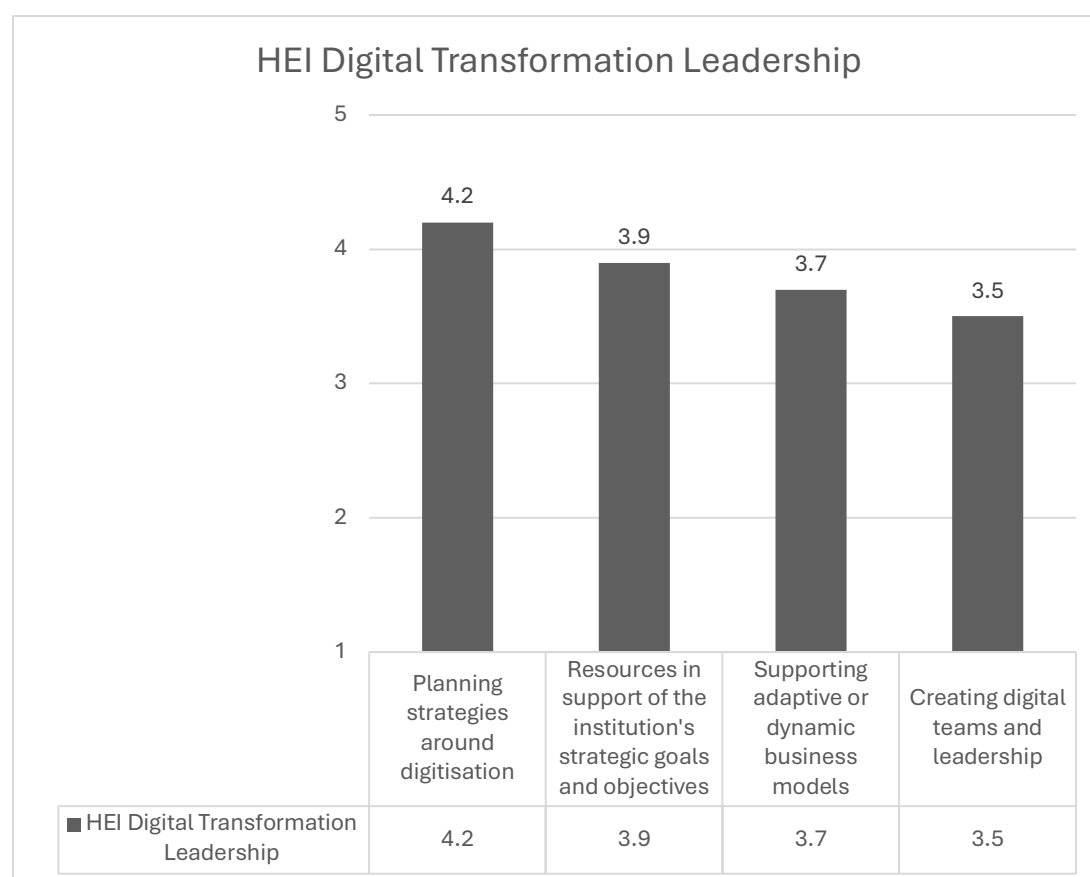


Chart 5.14 Provide transformation leadership

The survey data show that HEI managers rated planning strategies around digitisation (4.2) as the highest-priority activity for HEI executive leadership. Participants reported that Irish HEIs are also actively investing resources (3.9) to support these efforts, while a focus on adopting adaptive business models (3.7) highlights the importance of flexibility in responding to evolving market dynamics and leveraging digital technologies. However, Sinéad observed that whilst the Irish higher education system has seen some developments, most changes have often been “small and undetected”. She remarked that “there have been some good developments over the last number of years in areas that we've done quite well.” She credited the Irish government’s national digital infrastructure roadmap¹³ (Department of Communications, Energy & Natural Resources, 2013) implemented between 2015-2020 as “a significant factor”, noting:

the fact that Irish higher education and teaching and learning didn't completely collapse during the pandemic is a testament to some of the work that has been taking place over the last 10 years. Our infrastructure stood up, albeit a bit wobbly and shaky, but we survived.

Whilst digital infrastructure has improved, both Sinéad and Matthew noted that fundamental reorientation in HEI executive leadership’s commitment to changing organisational strategy. Sinéad warned of a “culture of complacency”, while Matthew criticised:

the lack of vision from senior leaders [...] and university management teams, Project deadlines slip by, and work is not done, and there is no consequence. I think there's been a narrowing of focus to just keeping going, that's related to the lack of funding.

In the post-pandemic era, Cathal critiqued HEIs for imposing pre-pandemic norms, while Fionn emphasised a directional leadership approach at Willow University. Similarly, Matthew highlighted concerns about internal appointments at Sycamore University, stressing the need for fresh ideas and diverse perspectives. He also noted a disconnect between Irish HEIs’ commitment to digital transformation and its implementation, contrasting this with the “slick

¹³ The *National Digital Strategy for Ireland* (2013), set out a roadmap for the development of digital infrastructure and services in the country. It aimed to position Ireland as a leader in digital infrastructure and services, promoting economic growth, enhancing public services, and improving citizens’ overall quality of life.

and strategic” communication strategies associated with digital transformation programmes he observed in the UK and Australian higher education systems. In contrast, Juniper University emerged as a successful example. James highlighted the institution’s “healthy innovation appetite within its specialisations,” along with an “institutional ethos supporting boundary-pushing initiatives.” He attributed much of the university’s progress to the president’s active promotion of pioneering projects, which helped inspire broader organisational buy-in. According to James, this approach “provided clarity and cohesion amidst disagreement by setting out a clear five-year plan.” Additionally, continuous engagement and the sharing of successful use cases “gradually won over sceptics and fostered enthusiasm” across the university. In most cases however, the findings suggest that Irish HEI managers perceive contemporary HEI executive leadership as falling short in meeting the demands and responsibilities of modern higher education. Specifically, leadership is seen as lacking the vision, strategic foresight, and innovative thinking required to drive meaningful digital transformation. This discourse of underperformance highlights a broader critique of executive leadership, which is viewed as a significant barrier to institutional change. These perceptions raise serious concerns about the capacity of HEI leadership to effectively address the challenges and capitalise on the opportunities afforded by digital transformation.

5.4.4 Capability Challenges

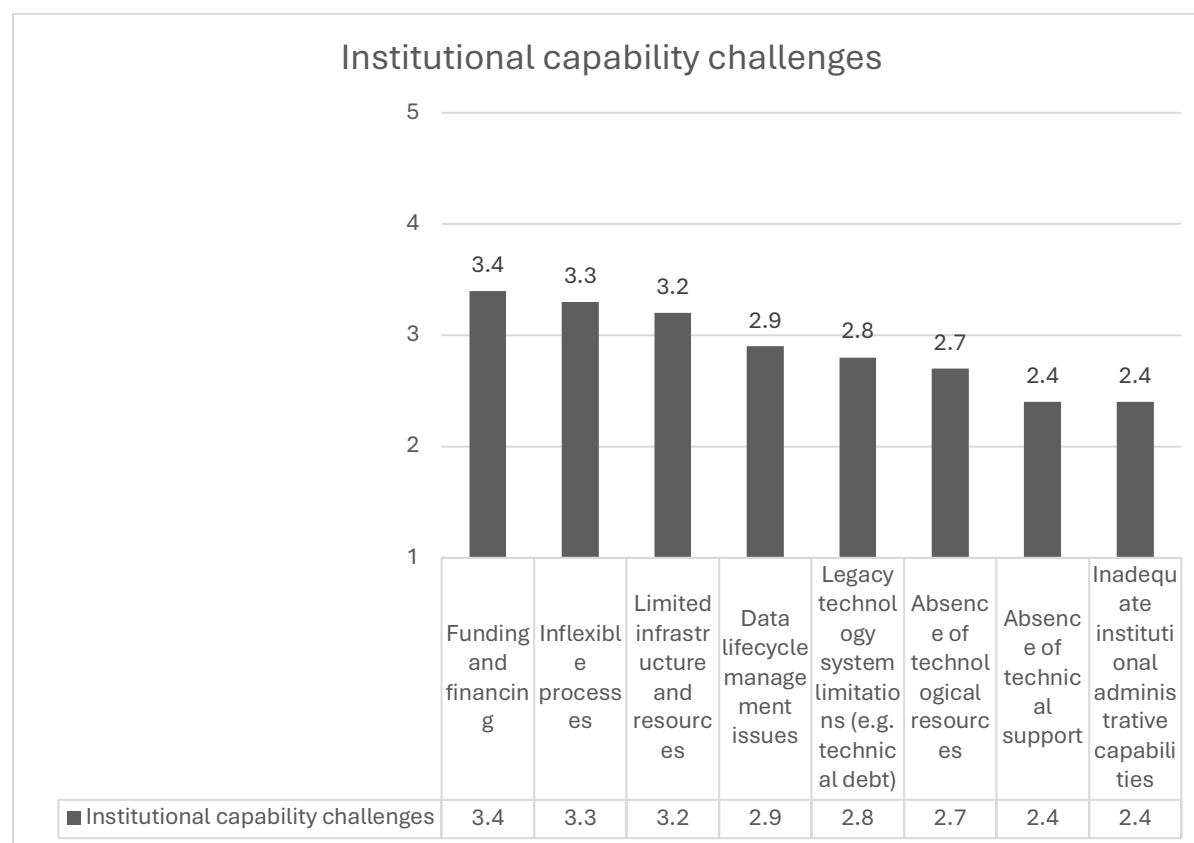


Chart 5.15 Institutional capability challenges

The survey data identify key organisational capability challenges for Irish HEIs, with funding and financing (3.4) as the biggest obstacle, followed by inflexible processes (3.3) and constrained infrastructure and resources (3.2), all of which hinder digital transformation efforts. Additionally, a lack of technological resources (2.7) underscores significant gaps in the assets and expertise required for successful digital initiatives. Finally, inadequate institutional administrative capabilities (2.4) indicate that some HEIs may have limited competency to manage and coordinate digital transformation projects. This finding highlights the complex nature of digital transformation, which often requires significant coordination across various stakeholders and departments. The interview participants' comments corroborated the survey findings, emphasising the urgent need to enhance Irish HEIs' organisational capability and readiness for digital transformation. Saoirse acknowledged higher education institution's ambitious digital transformation goals, but highlighted the challenges posed by being "saddled with legacy systems and technical debt". This situation, she noted, forces HEIs to take "two steps backwards to go one step forward."

Matthew expressed a similar sentiment:

I wish I could wave a magic wand and get ourselves to an even keel, to where we're not stepping backwards to fix legacy systems so that we can start to leverage the fantastic tools that are out there.

Oisín at Rowan Technological University cited specific legacy systems challenges, including outdated student databases, aging hardware infrastructure, and the proliferation of unsanctioned websites and systems due to expectations of autonomy within his HEI. He asserted that addressing these core IT issues was a prerequisite for enabling digital transformation. Financial barriers to capability improvement were emphasised by Liam, who stated that “lack of investment is an issue, with budgets flat or reduced for years.” He argued that “chronic underfunding limits HEIs’ ability to invest in transformative changes, and threatens our competitiveness.” Cathal echoed his view:

it's very hard to see the [Irish] government coming up with the very significant investment that would be required... given that they seem reluctant to provide the level of funding required for just the current provision of higher education. So until that issue of funding the system is dealt with, in fairness to the universities it's hard to see how they can develop much more than at present.

Sinéad situated the challenges in the European context, comparing the Irish HE system to other nations’ models. She named several major funding initiatives in other European countries, most notably referencing the Netherlands’ €560 million investment for digital transformation¹⁴, contrasting it with the €5 million allocated to Irish universities for the National Forum digital transformation initiative. Sinéad warned, “we’ve been holding our own so far on the European stage, but without some big thinking and without investment, there is a danger of us falling behind.”

Ronan, Liam, Sinéad, and Cathal highlighted inadequate skills and resources as key challenges to improving Irish HEI capabilities. Ronan called for a strategic sectoral review, involving strategy assessments, stakeholder engagement, and phased implementation aligned with best

¹⁴ The Acceleration Plan [Versnellingsplan], (2020).

practices. Liam emphasised the need for operational excellence and a strong user experience for stakeholders, warning that failure to deliver could harm universities' reputations and core missions. Cathal linked capability gaps to resource inequalities, disproportionately affecting disadvantaged students through reduced access, unreliable support, and limited academic options—challenges that digital technologies could help address. These observations underscore the critical importance of accurately assessing and measuring capability maturity, as well as progress towards realising value and benefits for stakeholders.

5.4.5 Perceived Benefits of Capability Maturity Improvement

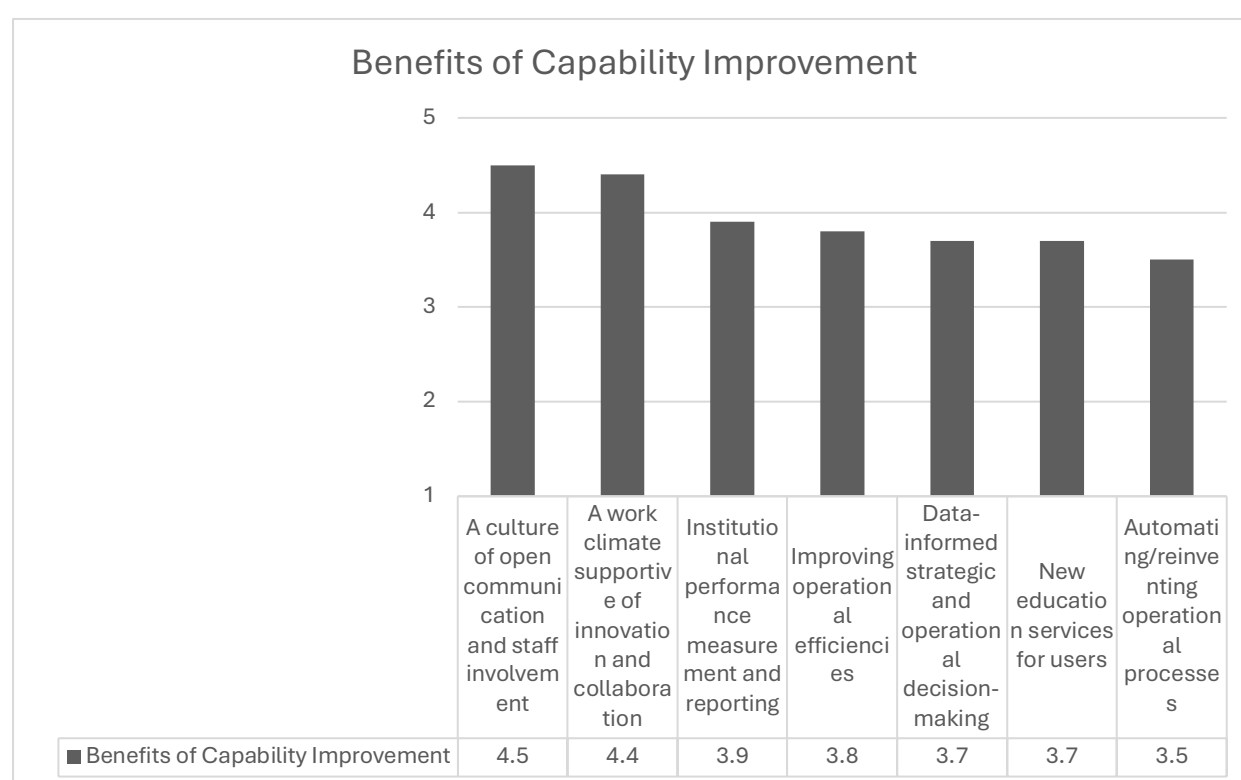


Chart 5.16 Benefits of Capability Improvement through Digital Transformation

The survey data indicate that higher education institutions prioritise fostering an open and innovative organisational culture, with open communication and staff involvement (4.5) and a work climate supportive of innovation and collaboration (4.4) rated highest. Governance and operational improvements, such as institutional performance measurement (3.9) and improving operational efficiencies (3.8), are also valued. However, strategic and service innovation capabilities (3.7) and structural changes like automating processes (3.5) are given lower priority. Ronan, from Hawthorn Technological University, emphasised how digital

technologies can transform traditional campuses, enabling flexible learning and addressing physical limitations, particularly during the pandemic. Cathal emphasised the potential of digital transformation to foster collaboration among HEIs, reduce duplication, achieve efficiencies, and shift power dynamics with edtech vendors by promoting a pedagogy-driven vision. He also noted that digital transformation could enhance HEIs' ability to develop innovative digital education services aligned with institutional goals. The potential for education service innovation emerges as a key area where improved digital capabilities could have significant value for HEIs.

To explore this further, attention is now turned to the factors and new modalities of education service that are emerging in higher education.

5.4.6 Education Service Innovation

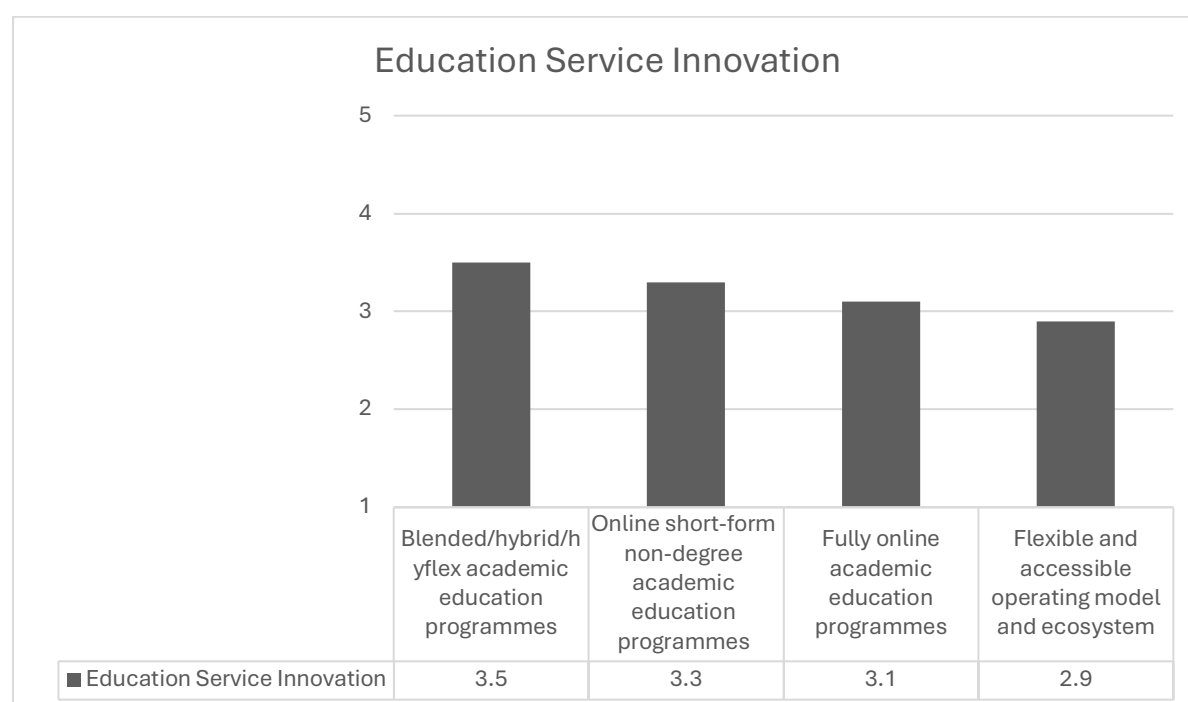


Chart 5.17 Education Service Innovation

The survey data highlight a significant demand for short-form, digitally mediated programmes like microcredentials, with “blended/hybrid/hyflex academic programmes” (3.5) rated highest, reflecting HEIs' focus on flexible learning models. Online short-form programmes (3.3) and fully online degree programmes (3.1) are also gaining interest, though the latter is less prioritised compared to blended and short-form options. While “flexible and accessible

operating models” scored lower (2.9), they are recognised as essential enablers for implementing digitally mediated education services. Interviewees frequently emphasised the potential of new service models, such as academic microcredentials, to meet evolving educational demands. Surprisingly, the data show that respondents from traditional universities rated higher importance for these categories than respondents from technological universities.

As well as Matthew’s contribution to their development discussed earlier in this chapter, James emphasised how such initiatives have increased opportunities for mobility and access to across the European higher education landscape, envisioning greater cross-institutional movement facilitated by:

European university alliances aimed at enabling more seamless credit transferability across countries [for] a more united European university system beyond the traditional Erasmus-type programmes.

He anticipates that micro-credentials and “dynamically stackable learning” will become a major trend that higher education systems will need to accommodate. Matthew concluded that “time will tell whether microcredentialing will challenge or transform the 20th century model” or will complement and coexist with traditional higher education service modalities.

The data show that respondents from traditional universities prioritised executive education as an area for growth, though it remains underdeveloped in many HEIs. James observed that while traditional universities have historically prioritised the ‘campus experience’, the needs of part-time students—many of whom are working adults or career changers—demand more flexible and innovative approaches. He highlighted the potential of digital platforms to address these needs, stating:

Digital platforms are hugely important, particularly for that cohort of people who want to return to education without having to go onto the campus at all.

However, he also acknowledges that structural barriers, such as government-imposed restrictions, limit HEIs’ ability to innovate in this space. Cathal recalled that during his time at the Higher Education Authority, the Department of Public Expenditure and Reform (DPER) “strongly resisted proposals for supplemental pay” for lecturers engaged in additional duties,

such as developing and implementing innovative education programmes outside of their core lecturing and research duties.

5.5 Conclusion

The results and findings have illuminated the drivers, barriers, and impacts of digital transformation in Irish HEIs. The data reveal the relationship between external change forces, internal constraints, and institutional capabilities, and digital transformation outcomes. For example, the data suggest that TUs prioritise digitalisation for regional engagement whilst traditional universities are favouring growth through digitalised executive education, and other flexible learning models, such as microcredentials. These findings set the stage for a deeper discussion of their implications. In what follows, the conceptual tools applied in this study will guide the discussion regarding how findings of this study relate to existing literature. The next chapter critically interprets the findings, exploring their broader significance and offering insights into the transformative potential of digital technologies in higher education.

Chapter 6 Discussion

The aim of this study was to understand the process of digital transformation within higher education institutions in Ireland from a senior managership perspective. The study was guided by three key research questions:

1. What change forces drive digital transformation in Higher Education Institutions in Ireland, from the perspective of senior managers responsible for these initiatives?
2. How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?
3. What is the impact of digital transformation on Higher Education Institutions in Ireland?

This chapter analyses and discusses the study's findings by situating them within the literature. The HEI-DT conceptual framework offers a lens for interpretation. (Figure 6.1).

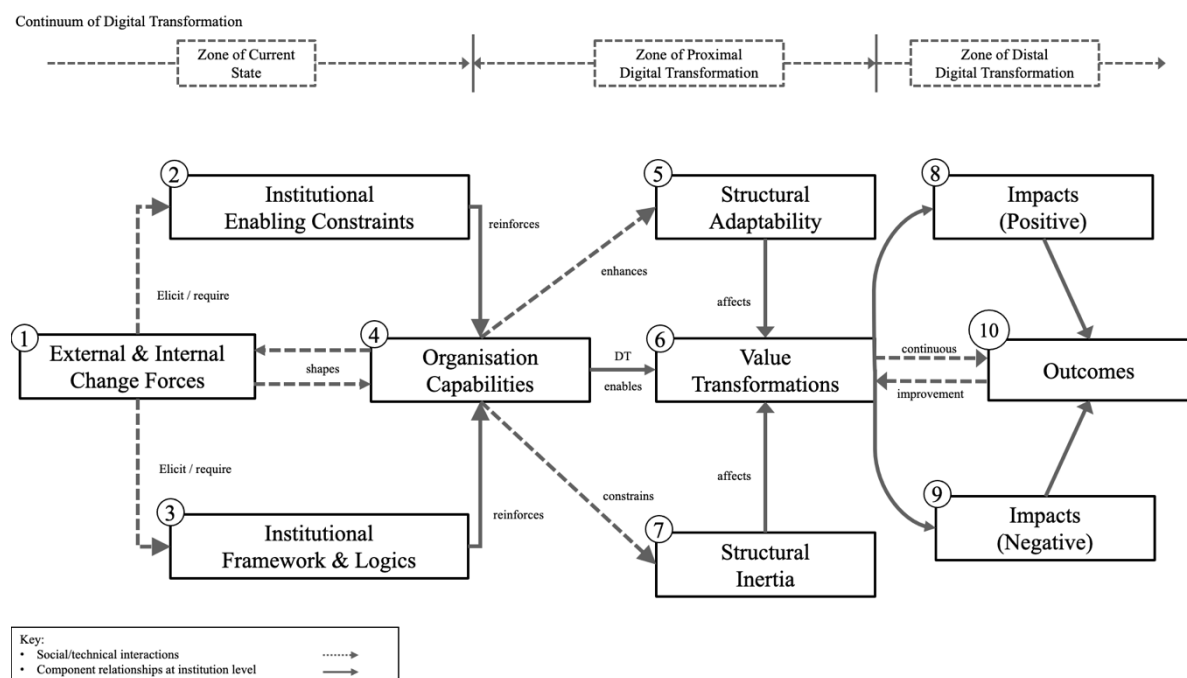


Figure 6.1 Component-level view of the HEI-DT conceptual framework

Source: Author's own work

The HEI-DT framework provides a flexible and modular structure for examining the dynamics of Irish HEI digital transformation. Its design allows for a focus on the components most

relevant to a given research engagement. In this chapter, the framework informs the themes produced from the findings. However, not all ten components of the HEI-DT framework are covered in detail. Instead, the HEI-DT components that are most pertinent to addressing the research questions and findings are emphasised in this discussion. These include External and Internal Change Forces (Box 1), Institutional Enabling Constraints (Box 2), and Structural Adaptability (Box 5). Strategic gaps, siloed decision-making, and cultural resistance to change are identified as key barriers, while governance and leadership practices often prioritise symbolic compliance over meaningful transformation. The discussion also addresses broader framework components, such as Value Transformations (Box 6) and Positive and Negative Impacts (Boxes 8 and 9), in relation to public value creation, regional engagement, and the risks of performativity. As described in Chapter 4, the findings were mapped to the HEI-DT conceptual framework components (see Appendix D). The mapping highlights the alignment between these barriers, opportunities, and the framework's institutional and organisational components.

6.1.1 Chapter Roadmap

This chapter has three sections. The first section examines how internal and external change forces set the context for digital transformation in Irish HEIs. The second section explores implementing digital transformation. It addresses HEI enabling constraints, operational and cultural barriers to change, and regionality. The third section addresses the impact of digital transformation on long-term institutional sustainability, including challenges such as resource constraints, marketisation, and maintaining public value. Finally, the chapter sets the stage for the Conclusions chapter, where contributions to knowledge and the broader implications for policy, practice, and theory are laid out; limitations of the study are outlined, and future research directions are discussed.

6.2 Dynamics of Digital Transformation in Irish Higher Education Institutions (Research Question 1)

This section addresses the research question: “What change forces drive digital transformation in Higher Education Institutions in Ireland, from the perspective of senior managers responsible for these initiatives? It focuses on the External and Internal Change Forces component (Figure 6.1, Box 1) of the HEI-DT conceptual framework, which is explored

through this research question. In this context, the dynamics of digital transformation are derived from Vaill's (1996) change model (see Section 2.2.2). It refers to the complex, interdependent, and often asymmetrical interactions between exogenous and endogenous forces that influence how change unfolds in Irish HEIs. These dynamics reflect the “permanent white water” (Vaill, 1996, p. 8) of the non-linear and multi-dimensional nature of organisational transformation. Planned and emergent changes operate concurrently, creating a constantly evolving organisational reality. The remaining ZCS components (Institutional Enabling Constraints, and Institutional Infrastructure & Logics) will be explored further in the following section, owing to their close thematic links to other components in the ZPDT.

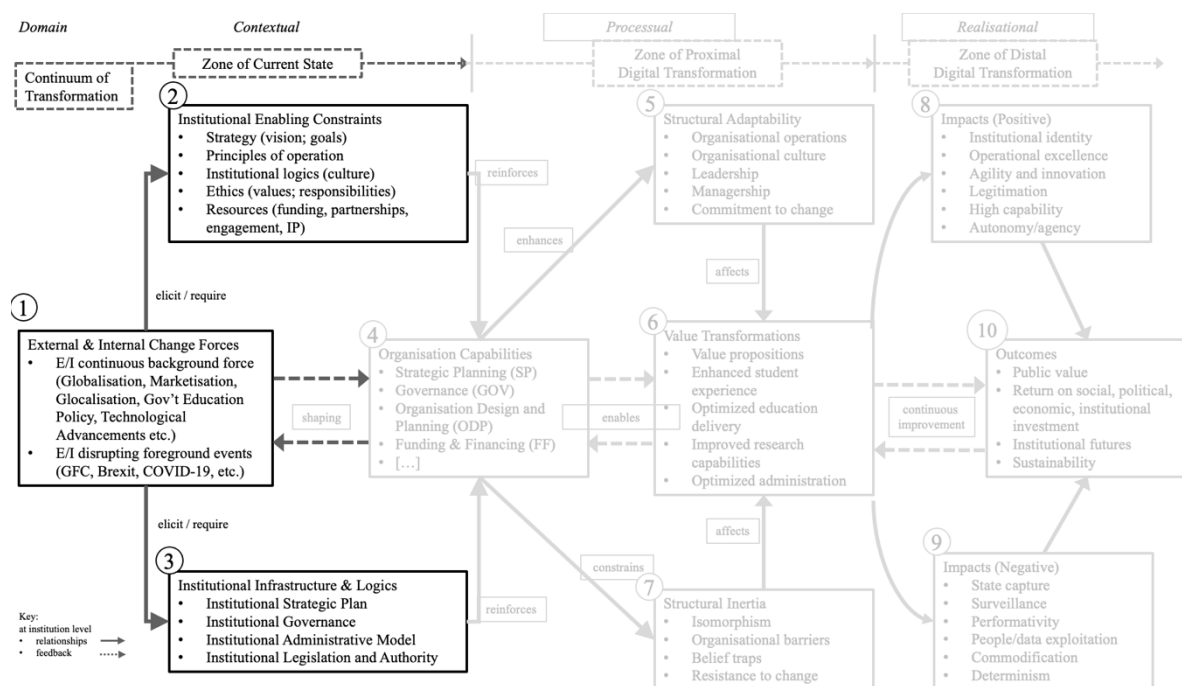


Figure 6.2 Higher Education Institution Digital Transformation Conceptual Framework: Zone of Current State

Source: Author's own work

The findings indicate that digital transformation in Irish HEIs is driven by both planned change types (e.g., ongoing modernisation and institutional mergers) and emergent change types (e.g., responses to COVID-19). While the types of change occurring in the Irish higher education ecosystem align with the theoretical paradigms outlined in the literature review (see Section 2.2.2), the findings reveal significant differences in how these changes unfold in practice compared to how they are described in the literature. This study reveals that multiple change types often operate simultaneously within Irish HEIs. This suggests a more complex and dynamic reality than previously theorised.

6.2.1 Types of Change Observed in Irish HEIs

Three distinct change types, based on Gerschewski's (2016) framework (see Section 2.2.3) were observed operating concurrently within Irish HEIs, while a fourth type (Endogenous Gradual Change) was notable in its absence. Consequently, the findings diverge from the literature in two important ways. First, the concurrent operation of multiple change types contradicts traditional organisational change literature, which typically conceptualises change as occurring through singular, linear processes (Kotter, 1996; Lewin, 1947; Van de Ven & Poole, 1995). Even when scholars acknowledge multiple change types, as in O'Mullane's (2021) analysis of Irish HEI responses to the Athena SWAN gender equality charter, they typically argue for the dominance of a single change type rather than concurrent forms of change. Second, the absence of Type III change (endogenous sudden change) indicates that rapid digital transformation in Irish HEIs was exclusively driven by external forces rather than internal initiatives. While the COVID-19 pandemic was a significant catalyst, other forces also played a role, including globalisation, government mandates such as IoT-to-TU mergers, and funding reforms. This finding challenges assumptions about institutional autonomy in digital transformation and suggests that substantive organisational change in Irish HEIs requires external catalysis.

The findings for this study show that Irish HEI digital transformation is shaped by the interoperation of four influences:

1. Crisis mode reactions requiring rapid digital adaptation
2. Government policy mandates necessitating technological infrastructure development
3. Internal strategic initiatives aimed at planned digitalisation
4. A notable inability to self-initiate organisation change, including digital transformation

These findings extend beyond existing scholarship on change within the Irish HE ecosystem, which has identified crisis mode adaptations (Mercille & Murphy, 2015) and state policy-mandated change (O'Shea & O'Hara, 2020) as key change drivers. The more sophisticated change scenario identified in this study suggests that initiating digital transformation initiatives requires HEIs to develop organisational capabilities to manage multiple, simultaneous change processes, whilst recognising the limitations of internal institutional agency to initiate change. This is a significant departure from traditional change management approaches in higher

education. Consequently, it is important to examine how specific change types have shaped the Irish HE digital transformation ecosystem.

6.2.2 Exogenous Gradual Change

The IoT-to-TU mergers in the Irish higher education system represent a prime example of Type II exogenous gradual change, where a significant organisational transformation occurs over an extended period within a structured and controlled policy environment. This process aligns with Ireland's broader initiative to develop a unified tertiary education system, integrating higher education and further education and training (FET) into a more coordinated framework (Hazelkorn *et al.*, 2018), aligned with national socio-economic objectives (DES, 2011; DFHERIS, 2022a). Milestones include the establishment of the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) in 2020; the creation of technological universities through the merger of institutes of technology; and the enhancement of progression pathways, supported by the National Framework of Qualifications (NFQ) (HEA, 2022; SOLAS, 2020). In addition, governance and funding reforms, such as the Higher Education Authority (HEA) Act 2022, have reinforced oversight mechanisms, while partnerships between HEIs and industry have aimed to align education provision with workforce needs (HEA, 2022; OECD, 2022). However, this process has also raised challenges, particularly in balancing institutional autonomy with system coherence, addressing resource allocations, and fostering cultural integration across sectors (Hazelkorn *et al.*, 2018; OECD, 2023). As such, the transition to a unified tertiary system represents a complex and ongoing restructuring effort with implications for institutional practices, governance, and broader policy goals.

While the gradual nature of the transformation allowed for systematic planning, the challenges encountered—particularly around cultural integration and staff resistance to change—align closely with Fedor *et al.*'s (2006) and Martin *et al.*'s (2005) findings on managing organisational change.

6.2.2.1 Commitment to Change and Change Favourableness

Fedor *et al.* (2006) highlight the important role of leadership in managing commitment to change and commitment to the organisation. In the IoT-to-TU mergers case, the perception of a lack of buy-in from executive leadership in some IoTs, and the emergence of resistance to

change among staff, driven by “personalities and institutional inertia” (see Section 5.3.2), reflect the challenges of aligning leadership and workforce perceptions of change favourableness. Fedor *et al.*’s findings suggest that when change is perceived as unfavourable, resistance to change is likely to intensify, undermining both commitment to the organisation and the efficacy of the change initiative, and reinforcing Kotter’s narrative of change failure (see Section 2.2.2). For example, prioritising the consolidation of administrative systems during the IoT-to-TU mergers, while necessary, may have inadvertently signalled to staff and students that system performance and accountability were valued over their concerns about the changes occurring in the merger process. According to Fedor *et al.* (2006), such an approach underlines the risks of neglecting the human element of change. A more balanced strategy that addressed both the systemic and cultural impacts of the mergers might have mitigated some of the resistance to change observed by study participants.

6.2.2.2 Psychological Climate and Employee Adjustment

Martin *et al.* (2005) emphasise the importance of psychological climate—employees’ perceptions of their work environment—as a key coping resource during organisational change. Their study showed that a positive psychological climate fosters favourable perceptions of change initiatives and better adjustment outcomes. In the context of the IoT-to-TU mergers, the absence of a strong focus on the human and cultural dimensions of integration likely weakened the psychological climate. Furthermore, poor digital literacy among staff may have exacerbated these challenges by increasing feelings of stress, uncertainty, and a lack of control during the transition. Employees who struggled to adapt to the new IT infrastructure or lacked confidence in using digital systems likely perceived the changes as overwhelming, which could have further undermined the psychological climate, fuelling resistance to the change. This aligns with Martin *et al.*’s observation that when employees perceive a lack of support or control during change, stress and dissatisfaction increase, leading to poorer adjustment outcomes. Both Fedor *et al.* (2006) and Martin *et al.* (2005) stress the importance of balancing technical/systemic priorities with human and cultural considerations during large-scale change initiatives. According to Fedor *et al.*, organisations that focus solely on technical outcomes risk alienating employees, as the human and emotional costs of change are not adequately addressed.

The IoT-to-TU mergers’ case reveals the inherent tension between technical, processual, and human factors in change processes, an often overlooked dynamic in organisational change.

While the goal of system efficiency and standardisation through administrative consolidation is a logical managerialist objective, the relative inattention to the cultural and operational impacts of digital transformation can potentially undermine the long-term efficacy of such initiatives. As such, the findings of this study have implications that extend beyond Irish HEI digital transformation, making a contribution to the wider literature on higher education change. This suggests that a managerialist approach may be insufficient for navigating the complexities of digital change in HEIs. This study argues that neglecting the human element can lead to unintended consequences, potentially jeopardising the goals the change was intended to achieve. This highlights the need for a more holistic approach to change management that considers the human, cultural, technical, and administrative aspects of change.

6.2.3 Exogenous Sudden Change

In addition to gradual socio-economic, political, and policy shifts resulting from globalisation being drivers for digital transformation (Altbach, 2015; Knight, 2013; Marginson, 2011; Slaughter & Rhoades, 2004), external events such as the COVID-19 pandemic and the IoT-to-TU mergers acted as systemic catalysts, accelerating HEI digital technology adoption at an unprecedented rate of change. However, the findings of this study also show that rapid change has exposed and exacerbated long-standing vulnerabilities within the Irish higher education system. These vulnerabilities stem from nearly two decades of neoliberal-influenced austerity policies enacted through managerialist institutional regimes (Ball, 2019; Clarke *et al.*, 2018; Lynch, 2014). Participants reported (see Section 5.2.1) critical deficiencies in digital literacy among staff, students, and other HEI stakeholders, reflecting the international experience (Bozkurt *et al.*, 2020; Crawford *et al.*, 2020) of poor HEI organisational digital readiness. They explicitly rejected the notion that Irish HEIs effectively managed the transition to remote working (see Section 5.2.1), echoing Hodges *et al.*'s (2020) differentiation between planned online education and emergency remote teaching, highlighting how the latter “lacks the rigorous planning, preparation, and support of typical online education” (n.p.) reflecting the Irish HE system's reaction to the pandemic.

The study found that, in the absence of formal organisational infrastructure and guidance, Irish HEI staff rapidly adapted by establishing and subsequently relying on informal peer networks of practice, individual initiative, and improvisation to develop digital skills for remote work.

This ad hoc approach demonstrates how reactive technology adoption leaves organisations unprepared for large-scale digital transformation (Brunetti et al., 2020). These findings challenge pre-pandemic assumptions about Irish HEIs' capability to transition to online delivery, revealing significant gaps in digital readiness across the ecosystem.

6.2.3.1 The COVID-19 Pandemic as a Type 1 Change Case

The findings indicate that the COVID-19 pandemic, a Type I exogenous sudden change (Gerschewski, 2016), was a powerful accelerant for digital transformation within the Irish HE sector. Most participants noted that digital technologies were a critical enabler for organisational continuity through online education delivery and remote working during the various pandemic lockdowns. They predicted that, despite general enthusiasm for an end-of-pandemic return to campus as the primary locus for education, a substantial percentage of digitally mediated education would remain integral to HEIs' post-pandemic activities. This pandemic-induced transformation is an example of punctuated equilibrium change, where organisations experience brief, radical transformations triggered by external forces amidst periods of stability (Pettigrew, 1997).

These events are often portrayed as positive drivers of technological adoption, reflecting the doctrine of the 'technological sublime' (Marx, 1964; Nye, 1994). This imbues technology with a sense of inevitability, charisma, and progress while obscuring the complexities and contradictions of technological determinism (Ames, 2015). By presenting such crises as COVID-19 and the 2008 Global Financial Crisis as moments of transformation, a deterministic discourse emerges, positing technological progress as inevitable, and inherently beneficial. This narrative is engineered to preclude critical engagement with the underlying socio-political and economic structures that shape and constrain these processes (Selwyn, 2020; Williamson, 2018). The discourse of inevitability rooted in the technological sublime parallels historical patterns of 'magical thinking' (Nye, 1996). Contemporary novel technologies, such as the railway network in the 19th century, or electrification in the 20th century, were idealised as solutions to systemic challenges, despite the uneven distribution of benefits, and the technologies' tendency to maintain existing socio-economic inequalities, conserving dominant institutional and political structures (Marx, 1964; Nye, 1996). Similarly, the rapid adoption of digital technologies during COVID-19 and the IoT-to-TU mergers is characterised as a modernisation of higher education in Ireland (DFHERIS, 2022b; 2023a). However, these interventions often fail to address entrenched issues such as resource constraints, managerialist

logics, and austerity policies, instead masking these vulnerabilities under the guise of ‘progress’ (Buckley *et al.*, 2021; Clarke *et al.*, 2018). This framing also suppresses critical debate by presenting technological adoption as a simple, apolitical process, reinforcing the neoliberal worldview that prioritises technological solutions while sidelining meaningful structural reform (Rudd, 2013; Selwyn, 2013).

6.2.4 Endogenous Gradual Change

There has been a “quiet revolution” (see Section 5.3.3) in Irish HEI digitalisation, beginning over two decades ago with the incremental shift from paper-based administrative systems to digital processes, characterised as a Type IV endogenous gradual change (Gerschewski, 2016). Rof *et al.*’s 2020 study concurs with this interpretation, describing digital transformation as an evolutionary process that affects all dimensions of an HEI’s business model. In the Irish context, the gradual transformation of HEIs has been accelerated by external factors. Similarly, Tungpantong *et al.* (2022) conceptualise digital transformation as a systemic, multi-dimensional process, corresponding to Irish HEIs’ efforts to digitise business processes and adopt centralised solutions aimed at streamlining operations. The findings suggest that such incremental, endogenous change is essential for ensuring that digitalisation aligns with institutional priorities while addressing resource and capability constraints.

Interestingly, the findings suggest that Irish HEIs exemplify how gradual transformation enables organisations to balance new technologies’ integration with existing structures, avoiding the disruptive shocks often associated with rapid, exogenous change. However, the study revealed evidence of marked disparities in technological capabilities across HEIs. One possible cause for this finding is that such examples of emergent change are likely to occur within each individual HEI’s context, rather than as a systemically coordinated effort, resulting in uneven implementation of digital transformation initiatives and varying levels of technological readiness across institutions.

The presence of legacy systems and technical debt within Irish HEIs (see Section 5.4.4) presents significant challenges to the implementation of digital transformation initiatives. This mirrors the tensions identified by Rof *et al.* (2020), who note that inertia, resistance to change, and resource constraints can impede digital transformation efforts. In the Irish context, outdated systems divert resources away from strategic advancements, forcing HEIs to allocate time and funding to address existing technological limitations. These views articulated by study

participants support Rof *et al.*'s argument that overcoming such barriers requires professionalisation, investment in new technologies, and targeted training to build institutional digital readiness. Furthermore, Tungpantong *et al.* (2022) emphasise the critical role of robust IT infrastructure and data management in enabling digital transformation. Irish HEIs' struggles with uncoordinated IT investment practices found in this study (see Section 5.4.2) reflect the gaps in technological capabilities described in Tungpantong *et al.*'s study. Participants in HEI technology managership roles argued that addressing these systemic issues requires the adoption of capability maturity frameworks, such as IT-CMF (see Section 6.4), to guide strategic planning. The findings emphasise the need for a systematic and well-resourced approach to modernise systems and overcome technological impediments, an imperative that aligns with the broader literature on digital transformation in higher education (Vial, 2019). While incremental progress has allowed for the steady integration of digital technologies, significant barriers—such as legacy systems, decentralised practices, and cultural resistance—must still be addressed. These challenges are not unique to Irish HEIs but reflect broader, systemic issues in global higher education ecosystems (Aditya *et al.*, 2022).

6.2.5 Endogenous Sudden Change (Not Observed)

The absence of endogenous sudden change (Type III) is a significant finding. Unlike exogenous change forces, which initiated both sudden and gradual types of organisation change, no evidence was found of internally initiated rapid change within Irish HEIs. This suggests a reliance on external forces, such as government policy mandates, targeted funding initiatives, or external catalyst events to activate the process. The absence of Type III change challenges assumptions about institutional autonomy and innovation in Irish HEIs. Neo-institutional theory highlights how coercive and mimetic pressures often dominate HEIs, limiting their capacity for self-directed change (DiMaggio & Powell, 1983). The findings suggest that Irish HEIs may lack the organisational capability and executive leadership agency required to initiate rapid, internally driven organisational change. As Cathal¹⁵ (former board

¹⁵ As with the previous chapter, for clarity and transparency in attribution, respondents are introduced using their pseudonymised first name and title (e.g., “Cathal, (former board member, Higher Education Authority)”) upon first appearance. In subsequent references within the chapter, only their first name is used to maintain readability while preserving identification.

member, Higher Education Authority) observed, bureaucratic inertia often constrains HEIs' ability to act independently, a situation compounded by the 'state funding trap' explicated below. With a low capability maturity in this domain, HEIs risk being perpetually shaped by forces beyond their control, undermining their long-term sustainability.

These forces highlight a recurring theme: the influence of external change forces and institutional dynamics in determining the pace and direction of HEI digital transformation. While internal initiatives for rapid transformation are largely absent, external events and policy agendas exert significant influence on digitalisation in HEIs in Ireland. This phenomenon is associated with institutional isomorphism (DiMaggio & Powell, 1983). The following section explores how coercive isomorphic forces shape Irish HEIs' digital transformation strategies, further contextualising their reliance on change forces for retaining legitimacy and negotiating uncertainty for organisational equilibrium.

6.2.6 Institutional isomorphism

Senior managers in Irish HEIs identify digital transformation as being shaped by a combination of external and internal change forces. Institutional isomorphism provides a useful lens for understanding the external pressures influencing these processes. Specifically, coercive pressures, such as government policies and funding structures (e.g., the IoT-to-TU mergers, driven by the state's push for a unified tertiary system), significantly impact HEIs' digital transformation strategies. These pressures compel institutions to adopt technologies and practices aligned with the state's agenda, sometimes at the expense of institution-specific needs. For instance, Cathal observed that the "dampening hand of DPER" (see Section 5.4.1) restricted innovation by limiting staff remuneration for developing digital initiatives. While valuable for understanding these external constraints, institutional isomorphism does not fully reflect the complex interaction of forces shaping digital transformation. The findings suggest that limited internal capacity for rapid change, coupled with isomorphic pressures, plays a crucial role in HEIs' reliance on external drivers. This reliance on external forces for initiating change necessitates a deeper exploration of how HEIs develop the organisational capabilities and strategies required to implement digital transformation effectively.

The discussion in this section clarified how exogenous and endogenous forces dynamically interact to create the conditions for change in Irish HEIs. However, the process is not without its challenges. The next section explores the strategic, operational, and cultural barriers that

HEIs must navigate for digital transformation initiative implementation. It also provides a preliminary view of the enabling constraints identified in the Zone of Current State that Irish HEIs use to develop organisational readiness to change to respond effectively to these forces. This necessitates a shift in focus from understanding the change forces in operation to examining how HEIs develop the organisational capabilities, adaptability, and strategies required to implement digital transformation. The following section explores these processes, focusing on how HEIs engage with structural changes and value transformations to overcome institutional inertia and achieve their goals.

6.3 Dimensions of Digital Transformation in Irish HEIs (Research Question 2)

This section of the discussion addresses the question, “How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?” It focuses on the dimensions of change within the Zone of Proximal Digital Transformation (Figure 6.3), as outlined in the HEI-DT framework. Specifically, this section examines how operational capabilities and cultural factors, together with the structural forces explored in the previous section, influence digital transformation in Irish HEIs. The section also explores key barriers—including resistance to change, institutional conservatism, and chronic underfunding—that shape these institutions’ ability to adapt and innovate. By analysing these dynamics, this discussion highlights both the challenges and enabling factors that determine the effectiveness of digital transformation initiatives in the Irish higher education sector.

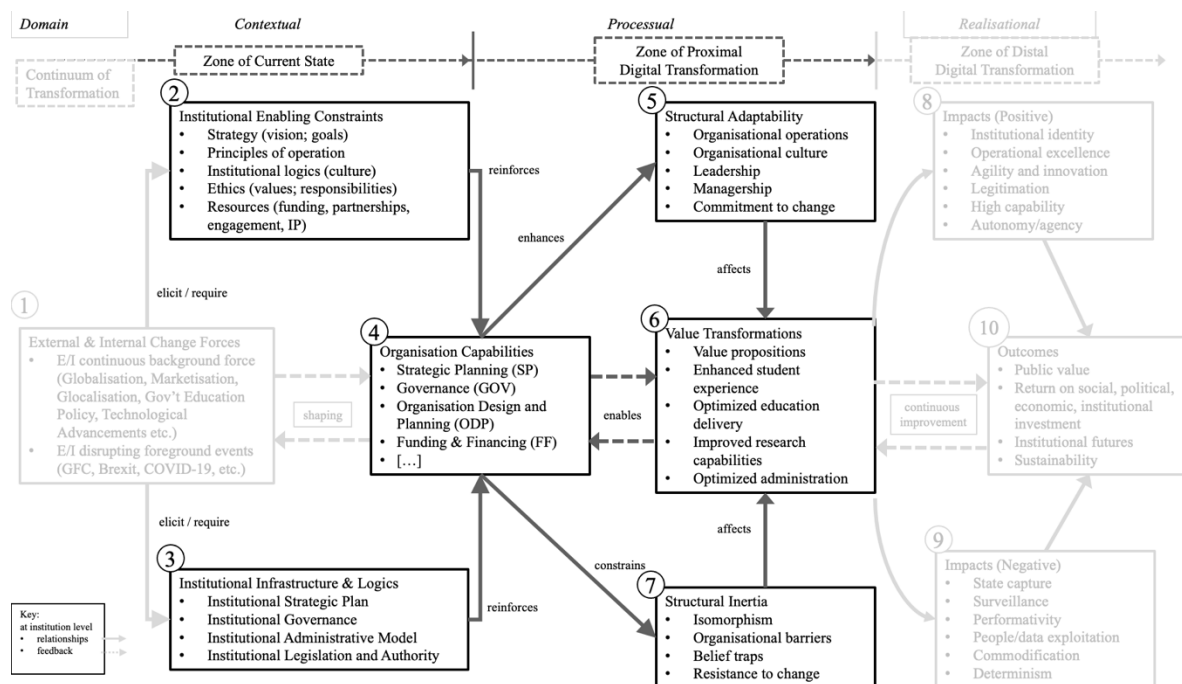


Figure 6.3 Higher Education Institution Digital Transformation Conceptual Framework: Zone of Proximal Digital Transformation (with input ZCS components highlighted)

Source: Author's own work

6.3.1 Surface Level of Digital Transformation in Irish Higher Education Institutions

First, analysing HEIs in Ireland through the HEI-DT framework's 'Enabling Constraints' and 'Institutional Infrastructure & Logics' components (Figure 6.3, Boxes 2 & 3), indicates that at the "surface level" (Heracleous & Bartunek, 2021, p. 210) there are significant impediments to digital transformation in the Irish higher education ecosystem. The findings reveal that the public higher education sector in Ireland is underfunded, and resource-constrained in general. HEIs in Ireland demonstrate low capability maturity across strategy, operations, organisational design, and service delivery, combined with an inability to fully leverage digital technologies (see Section 5.4.4). As a result, HEIs struggle to realise expected value or innovation from digitalisation, mirroring the broader trend where over two-thirds of large-scale technology deployments fail to meet their objectives (see Section 2.2.2). Some foundational organisational capabilities for digital transformation exist, such as the ability to effectively utilise resources, systems, and structures to react to catalyst events such as the COVID-19 pandemic. The basic building blocks are in place, but not fully developed or effectively aligned to support cohesive and strategic digital transformation initiatives. For example, digital projects manager Fionn

highlighted that Willow University's five-year digital strategy is "reactive" (see Section 5.3.2) rather than strategically aligned with the institution's overall mission, reflecting a lack of integration between digital initiatives and broader goals. Governance structures in Irish HEIs are fragmented, with slow, bureaucratic decision-making processes that reduce agility and responsiveness. As Liam (Vice President for Integration, Birch Technological University) noted, delays in decision-making often result in missed opportunities (see Section 5.2.1). Irish HEIs often struggle with organisational coordination, operating in silos that hinder innovation and collaboration. Matthew (Professor and Research Institute Director, Sycamore University) highlighted the lack of coordination between IT services, academic units, and administration, which prevents effective implementation of large-scale digital initiatives. This finding broadly supports the work of other studies in this area, such as Hess *et al.* (2016) and Tsoukas & Chia (2002), which emphasise that low organisational capability maturity reduces opportunities for meaningful, long-term transformation. Institutional logics, including shared norms, values, and institutional culture, also play a significant role in shaping digital transformation efforts. Resistance to change, particularly from executive leadership and academic staff, was identified as a significant challenge. It undermines efforts to build consensus and embed digital transformation within institutional priorities. Resource allocation, another critical factor, was described as disjointed and inefficient, with administrative processes limiting the coordination and implementation of large-scale digital initiatives (Kezar & Eckel, 2002). These limitations highlight the need for more cohesive and strategic resource management to support transformation.

Within the HEI-DT framework's Zone of Proximal Digital Transformation, structural adaptability emerges as a key determinant of success. However, the findings indicate that rigid institutional structures frequently inhibit the flexibility needed to implement transformative initiatives. This lack of structural adaptability creates significant barriers to change.

6.3.2 The Structural Inertia of Resistance to Change

This section examines the significant 'deep' operational and cultural barriers encountered during digital transformation initiatives within Irish higher education institutions, with a particular focus on the resistance to change exhibited by executive leadership and academic staff. While traditional explanations of organisational change resistance often focus on institutional inertia (DiMaggio & Powell, 1983), the unique challenges posed by digitalisation

necessitate a more holistic understanding of the phenomenon. From a ‘change as structuration’ perspective (Giddens, 1984; Heracleous & Bartunek, 2021), resistance to digital transformation can be understood as a disjuncture between surface-level initiatives and deeper, enduring structures within the institution. These deep structures—encompassing shared meanings (signification), power dynamics (domination), and norms (legitimation)—shape how digital change is experienced and contested. The boundary-spanning nature of digital technologies, particularly with the integration of digital tools into education provision and research (Beetham & Sharpe, 2018; Whitchurch, 2008b), coupled with the rapid pace of technological change (Christensen *et al.*, 2018), disrupts these deep structures, directly affecting professional identity and autonomy within academia (Altbach, 2016). Resistance to change, therefore, is not merely a surface-level reaction but also a manifestation of tensions between longstanding institutional values and the demands of digitalisation and organisational change.

6.3.3 Reasons for Resistance to Change

In addition to the operational resource constraints described above, the findings highlight the impact of human and cultural factors on HEI digital transformation in Ireland. Resistance to change was the most important organisational barrier identified in both the survey results and interview findings, a phenomenon that is widely recognised in the organisational change literature (Kotter & Schlesinger, 2008; Ford *et al.*, 2008). This finding aligns with Gkrimpizi *et al.*’s (2023; 2024) findings that resistance to change represents the most significant cultural impediment to higher education digital transformation initiatives, manifesting particularly strongly in traditional academic institutions (Gregory & Lodge, 2015). Tomás (CIO, Blackthorn University), emphasised the importance of the “human and cultural dimensions of change management” in the context of digital transformation efforts. This observation aligns with the experiences reported by most HEI manager interviewees, who identified anxiety among academic staff as a significant contributor to resistance to change. The correlation between resistance to change and anxiety among faculty members is well-documented in the literature on digital transformation in higher education (Schneckenberg, 2009). Faculty members often express concerns about their roles becoming devalued or redundant with the introduction of new technologies (Drueke *et al.*, 2021). This dynamic reflects broader patterns in higher education, where managerialist governance regimes privilege efficiency and control over academic autonomy (Lynch, 2014; Selwyn, 2016).

Lack of engagement from university executive leadership was identified as another factor contributing to resistance to change. Matthew criticised the “narrowing of focus, to just keeping going” among HEI leadership. He attributed this mindset to concerns about the high cost of implementing new technologies. These results corroborate the findings of a substantive part of the literature, which emphasises the importance of leadership support and commitment to change for digital transformation in higher education (Cifuentes *et al.*, 2011; Marshall, 2010). The operational and cultural barriers identified in resistance to change, such as anxiety among academic staff and leadership disengagement, cannot be fully understood without examining the broader systemic dynamics at play. These include the manner in which professional identity and bureaucratic inertia shape and reinforce resistance. As the findings reveal, resistance to change is often rooted in deeper tensions between administrative and academic domains, where power asymmetries perpetuate institutional inertia.

6.3.4 Institutional Conservatism

An alternative interpretation suggests that HEIs’ inherent institutional conservatism, identified in the survey results and remarked upon by several participants in interview, may be a considerable barrier to digital transformation. García-Morales *et al.* (2021), who take a technological determinist stance, argue that low technology adoption is a consequence of HEIs being “staffed with people who lack innate technological capabilities” (p. 1). However, Reich and Ito (2017) and Selwyn (2016) refute this view, arguing that academics pragmatically “domesticate new technologies into existing routines” (Reich & Ito, 2017, n.p.), including pedagogical praxis. This framing implies that the slow pace of digital transformation in HEIs stems not from academics’ preference for maintaining established educational praxis, but rather from systemic factors such as institutional structures, workload intensification, and limited support for meaningful technological integration. Consequently, Tyack and Cuban’s (1995) memorable observation that “when computer meets classroom, classroom wins” (p. 126) remains relevant today. Their work showed that technology often reinforces rather than transforms traditional teaching approaches. At an institutional level, technology frequently increases rather than reduces workload (Selwyn, 2016).

As discussed earlier in this chapter, most participants in the study noted resistance to change within their HEIs despite their efforts to foster commitment to transformation. Notably, the findings highlight HEI executive leadership as an unexpected source of resistance to change.

Institutional conservatism often inhibits digital transformation in Irish HEIs, with performative change practices (Ball, 2012; Deem, 1998) playing a key role. Ball (2012) argues that such performative practices prioritise superficial compliance with external expectations—such as adopting the language of innovation—over substantive, structural shifts. Similarly, Deem (1998) observes that managerialism in higher education often reinforces existing hierarchies, limiting the transformative potential of digitalisation initiatives.

For example, Saoirse’s (Director of ICT, Horse Chestnut University) observation of “small and undetected changes” despite substantive digital transformation efforts (see Section 5.4.3), highlights the symbolic compliance that characterises many initiatives. This approach, which seems to be a response to the HEA’s emphasis on gathering institutional metrics, privileges change rhetoric over change action (Lorenz, 2012). It reflects a broader trend of performative change in Irish HEIs, where metrics-driven accountability undermines the broader mission of higher education as a public good (Shore & Wright, 2015). Participants’ criticism of the HEA’s over-reliance on KPIs, which they argued prioritises appearances over outcomes and stifles institutional innovation, aligns with concerns raised by James and Cathal. James pointed out that such an approach encourages “managing to the measure” (see Section 5.2.5), while Cathal highlighted how an overemphasis on KPI-driven leadership fosters bureaucracy and promotes institutional conservatism. These perspectives reinforce the argument that metrics-driven accountability in Irish higher education often prioritises symbolic compliance and performative change over substantive transformation.

Institutional conservatism creates structural inertia that limits meaningful transformation. It is often reinforced by leadership practices that prioritise preserving existing hierarchies over addressing strategic and operational challenges. Leadership resistance to change, therefore, emerges as a mechanism through which institutional conservatism is sustained. The following section explores how executive leadership behaviours including agenda control and rhetorical collegiality contribute to resistance to change, undermining digital transformation efforts.

6.3.5 Sources of Leadership Resistance to Change

The literature identifies covert power dynamics as a key factor in HEI executive leadership resistance to change. O’Connor *et al.* (2019) describe HEI leadership’s use of “stealth power” (p. 723) enacted through rhetorical collegiality, agenda control, in-group loyalty, and gendered power to maintain existing hierarchies while appearing to embrace change. This aligns with

this study's findings: participants observed leadership practices that prioritise 'low-level' change over committed digitalisation efforts. For example, Sinéad and Cathal observed that executive leadership in various Irish HEIs and at the system level expressed a desire to centralise control of digital transformation initiatives. This desire for centralised control, however, creates a tension with the findings highlighting the importance of staff involvement, open communication, and a supportive work climate for successful implementation. This creates a disconnect between the top-down control favoured by executive leadership and the need for bottom-up engagement and collaboration from HEI managers and staff. Furthermore, every HEI strategic plan reviewed for this study explicitly champions digital transformation, emphasising its importance for the future of each individual HEI, and the sector generally. This commonly held discourse of transformation contrasts sharply with the reality of centralised decision-making and limited staff involvement reported by Sinéad and Cathal. This discrepancy between the espoused commitment to collaborative transformation and the observed top-down intent to control the process suggests the possibility of rhetorical collegiality (O'Connor *et al.*, 2019, p. 736). In this context, the pervasive rhetoric of digital transformation may serve to create the illusion of collective decision-making while ensuring that decisions ultimately align with executive leadership's preferences.

O'Connor *et al.*'s concept of domination through agenda-setting, described as "a systemic power that works by altering the range of options available to actors" (2019, p. 732, citing Lawrence, 2008, p. 177), is reflected in the findings. Matthew contends that, in his view, the "poor communication strategies" (see Section 5.4.3) employed by Irish HEIs represent a subtle means by which executive leadership maintains the balance of power. He argues that limiting the flow of information reduces opportunities for dissent or challenge to leadership authority. Interestingly, Matthew contrasts the practices in Irish HEIs with the "slick [...] strategic" (see Section 5.4.3) communication strategies he observed working in the UK and Australian HE systems. Drawing on O'Reilly and Reed's (2010) concept of leaderism, it can be argued that, despite differences in style, both strategies fulfil a common purpose: maintaining control over institutional agendas while reinforcing existing hierarchies. Leaderism, as described by O'Reilly and Reed, operates as a social and organisational technology that legitimises leadership authority, even as it adapts to different cultural contexts. Matthew's comparison underscores how the leaderist discourses in Irish, UK, and Australian HE systems, whether overtly polished or deliberately opaque, sustain resistance to meaningful structural change. These practices reinforce existing power dynamics and institutional conservatism, highlighting

how leadership discourses, as O'Reilly and Reed suggest, are deployed to suppress dissent while maintaining the illusion of transformational change.

The findings also suggest that HEI executive leadership resistance to change can function as a mechanism of power preservation through undermining accountability. For example, Matthew's observation that "deadlines slip by, and work is not done, and there is no consequence" (see Section 5.4.3) highlights how intentional inertia protects existing hierarchies, shields senior leaders from scrutiny, and fosters a sense of in-group loyalty among leadership. This aligns with O'Connor *et al.*'s (2019) analysis of leadership practices that undermine governance processes through reciprocal protection, where senior leaders shield one another from consequences. Such practices perpetuate what Sinéad described as a "culture of complacency" (see Section 5.4.3). These strategies encourage in-group members to align 'loyally' with leadership expectations, doing "what the powerful want them to do" (O'Connor *et al.*, 2019, p. 733), without necessarily recognising the coercive nature of this influence. The findings underscore how such practices prioritise the preservation of existing power structures. Therefore, it could be argued that a combination of cultural and operational factors shapes executive leadership resistance to digital transformation observed in Irish HEIs..

The coercive, mimetic, and normative isomorphic pressures exerted by the enactment of state accountability frameworks (such as the SPF) create an environment in which practice is often oriented more toward symbolic compliance than meaningful transformation (O'Shea & O'Hara, 2020). This phenomenon appears to both reflect existing HEI hierarchical structures and respond to isomorphic pressures. Resistance to change, embedded within these structures, allows leadership to maintain influence over institutional agendas while simultaneously projecting an image of progress. This structural and cultural context suggests that leadership practices in Irish HEIs, echoing patterns seen in other higher education systems, prioritise maintaining existing power structures.

In the context of digital transformation, these power asymmetries can influence how technologies are implemented and adopted. The findings suggest that in Irish HEIs, executive leadership often frames digital transformation as a threat to authority and control. At the same time, academics view it as a threat to their autonomy and professional identity. This reflects Winter's (2009) observation that managerialist initiatives are often imposed without meaningful consultation with academics, further reinforcing the hierarchical divide between leadership and other HEI stakeholders. These power asymmetries not only shape how digital

transformation is framed by leadership but also significantly influence how it is experienced and resisted by academic staff. While leadership often perceives digital transformation as a means of consolidating authority, academics view it through the lens of its impact on their autonomy, workload, and professional identity. This tension is central to understanding the resistance from academic staff, as explored in the next section.

6.3.6 Academic Staff Resistance to Change

This study suggests there is a significant degree of resistance to change from academic staff within Irish HEIs. This seems to stem less from an inherent opposition to technology, but from concerns about the erosion of traditional academic values, increased workloads, and the perceived devaluation of academic expertise (Courtney, 2013) within a pre-existing managerialist governance regime. Lynch (2014) and Selwyn (2016) argue that digital technologies often reinforce managerialist control, hierarchies, and diminished academic agency. The study provides details on how this operates within Irish HEIs, where it is reflected in participants' observations of a "persistent, implicit discourse of denigration" (see Section 5.3.1) by administrative staff toward academic colleagues. Furthermore, participants reported that academics often perceive their non-academic contributions to HEI discourse go 'unheeded' within the bureaucratic discourse of HEIs in Ireland. Participants noted that administrative staff implicitly undermine academics, framing them as needing "management", illustrating how symbolic violence (Bourdieu, 1990) manifests in everyday institutional discourse. Such practices, as noted in the literature, intensify tensions between academic and administrative spheres, fostering resistance to change (Lynch, 2014).

This study also sheds light on how digital transformation can exacerbate existing power asymmetries within HEIs, further fuelling academic staff resistance to change. Managerialism, with its focus on efficiency and standardised procedures, already privileges administrative authority over academic agency (Slaughter & Leslie, 1997; Winter, 2009). Digital transformation can further centralise control over technological infrastructure and data, effectively silencing academic voices in key decision-making processes related to digital strategy and implementation. This perceived loss of control and autonomy contributes to a sense of disempowerment among academic staff and can manifest in various forms of resistance to change, ranging from subtle non-compliance to more overt forms of protest and collective action or "pockets of resistance" (see Section 5.3.2).

While resistance to change is deeply embedded in the organisational and cultural structures of Irish HEIs, external material factors such as funding constraints further exacerbate institutional inertia. Chronic underfunding creates additional pressures on executive leadership commitment to change. It encourages short-term fiscal prudence at the expense of long-term strategic investment. This structural context reinforces institutional conservatism and reduces leaders' capacity to support digital transformation initiatives. Recognition of these constraints underpin the subsequent interpretation of academic staff resistance to change, framing digital transformation as a process that can entrench, rather than disrupt, existing hierarchical arrangements. This interpretation is also shaped by the researcher's positionality, informed by professional experience in navigating managerialist governance regimes. Such a perspective supports a critique of how digital transformation initiatives may diminish academic agency while consolidating administrative control. The application of Bourdieu's (1990) concept of symbolic violence to instances of the marginalisation of academics illustrates the embeddedness of power asymmetries within everyday organisational practices. Reflexive engagement with the findings ensured that the analysis remained attentive to participants' perspectives, avoiding overly deterministic characterisations of the relationship between digital transformation and academic resistance to change. Ultimately, cultural and structural resistance to change, compounded by persistent underinvestment, constrains the development of the capabilities required for effective transformation.

The following section examines how funding constraints further amplify these barriers to change.

6.3.7 Funding Constraints as an Operational Barrier to Change

The findings reveal that participants perceive chronic underfunding as the most significant material barrier to meaningful digital transformation, a perspective that resonates with existing literature on the financial challenges facing European HEIs (Clarke *et al.*, 2015; Estermann & Kupriyanova, 2019). However, this study also introduces new critiques that challenge prevailing frameworks and offer a more contextual understanding of the funding landscape in Irish higher education.

Higher education in Ireland has been continuously underfunded and resource-constrained for nearly two decades. Clarke *et al.* (2015) reported a 38 per cent reduction in Irish HE funding between 2008 and 2015. According to DFHERIS (2023a), the Irish state has “re-invested” (p.

2) €1.1 billion in higher education since 2016, leaving a €307 million shortfall—a 22 per cent deficit¹⁶—compared to “international peers” (p. 2). All participants in the study highlighted the precarity caused by inadequate funding and resourcing as the primary impediment to Irish HE innovation, competitiveness, and sustainability. Participants emphasised that resource limitations restrict their capacity to implement digital transformation initiatives, reinforcing the well-established link between financial constraints and institutional inertia in European HEIs (Estermann & Kupriyanova, 2019, p. 33).

Furthermore, the findings corroborate the evidence from the literature that financial constraints often lead to fragmented, short-term approaches to digital transformation (Vicente *et al.*, 2020). Participants described an uncoordinated approach to technology adoption, often driven by vendor influence (see Section 5.3.2) rather than a unified institutional strategy. This resonates with Schneckenberg's (2009) observation that resource limitations hinder systemic change within universities, leading to ad-hoc technology integration rather than a holistic rethinking of pedagogy and practice. One participant noted that constrained budgets often compel HEIs to adopt generic, off-the-shelf solutions rather than collaboratively negotiating tailored platforms that address their specific needs. This fragmented approach, driven by short-term financial considerations, undermines the potential for transformative change envisioned by proponents of digital innovation. However, the findings challenge the prevailing narrative that increased state funding alone is sufficient to address the digital transformation challenges currently encountered by Irish HEIs. Drawing on Brooks' (2000) concept of the ‘state funding trap’, this study's findings suggest that public subsidies can have unintended negative consequences. Participants described how the HEA's Recurrent Grant Allocation Model (RGAM) has a ‘crowding out’ effect (Brooks, 2000, p. 453) on opportunities for HEIs to diversify their revenue streams and explore alternative funding models.

Bearing the state funding trap in mind, the long-term systemic underfunding of Irish HEIs compels them to explore alternative funding models, often leading to increased marketisation.

¹⁶ The percentage deficit is calculated as follows:

$(307 \div (1,100 + 307)) \times 100 = 21.8\%$, rounded to 22%.

The €307 million shortfall is compared to the total funding requirement of €1.407 billion (€1.1 billion re-invested + €307 million shortfall), resulting in a 22% funding gap.

For example, the findings show that the traditional universities are increasingly investing in professional education service provision (Willow University's Executive Education Institute (EEI) is discussed in detail in Section 6.4.4). This shift raises critical questions about the long-term sustainability of the Irish higher education sector's civic benefit missions, and realisation of public value.

The relationships between chronic underfunding, resource constraints, and marketisation reveal a complex and often contradictory funding landscape in Irish higher education. While participants emphasised the detrimental impact of inadequate state funding on their capacity for meaningful digital transformation and systemic innovation, they also pointed to the unintended consequences of over-reliance on public subsidies, such as the 'state funding trap' (Brooks, 2000). As institutions increasingly adopt marketisation strategies (such as expanding professional education services to diversify revenue streams), questions arise about the compatibility of these approaches with higher education's civic missions and its broader contribution to the public good. This interplay between underinvestment, marketisation, and institutional sustainability frames the subsequent discussion of how these forces shape the long-term trajectory of Irish higher education.

6.3.8 Effect of Underinvestment and Marketisation on Irish Higher Education Sustainability

The findings challenge the literature's assumptions about HEI digital transformation and marketisation in several ways. The limitations of digital transformation are illustrated by Liam's observation of diminished competitive advantage at Birch Technological University. He noted that the rapid adoption of e-learning across HEIs during COVID-19 eroded his institution's unique selling point in online education (see Section 5.2.4). While the literature often frames digital transformation as a driver of innovation and efficiency (Benavides *et al.*, 2020; Castro Benavides *et al.*, 2022), this example underscores that digital transformation does not universally enhance institutional capability and can, in some cases, intensify competition and reduce strategic advantages (Reich, 2020; Reich & Ito, 2017; Selwyn, 2022).

The findings also question the widespread acceptance of marketisation in higher education by exposing its inherent tensions and unintended consequences. Participants critiqued the commodification of education, with Oisín (among others) highlighting the conflict between treating students as customers and preserving the traditional public mission of HEIs (see

Section 5.2.4). Similarly, Matthew warned that market-driven models risk reducing education to a transacted commodity, aligning with concerns about the neoliberal influences inherent in marketisation (see Section 5.2.4). While the financial necessity of marketisation is acknowledged (Marginson, 2016), participants such as Fionn and Emily emphasised its role in addressing funding gaps and aligning HEIs with labour market demands (see Section 5.2.4). Fionn advocated for reinvesting market-generated funds to improve the system, while Emily noted government and employer pressures for universities to meet workforce needs (see Section 5.2.4). However, Liam highlighted that marketisation can erode strategic differentiators, such as online education, when peer HEIs engage in mimetic isomorphism, adopting and replicating similar offerings until the advantage is diluted. These findings suggest that while marketisation offers financial opportunities, it also introduces significant risks. It disrupts institutional strategies, exacerbates competition, and challenges the traditional academic mission, underscoring the need for a more critical and balanced approach to its implementation.

The HEI-DT conceptual framework ZPDT (Figure 6.3) provides a useful lens for analysing these constraints and their impact on the Irish HEI digital transformation process. As discussed earlier in this chapter, several factors contribute to the current state, including chronic underfunding in Irish HEIs, which severely restricts their ability to invest in capability improvement, consequently limiting the potential for effectively leveraging digital technologies. This is further underscored by resource dependence, which is particularly striking when contrasted with the substantial investments made in digital transformation by other European HE systems, such as the Netherlands' *Verschnellingplan*. In parallel, organisational and cultural barriers, including resistance to change among HEI executive leadership and academic staff, institutional power dynamics, and the systematic devaluation of academic work, function as potent forms of structural inertia.

Such structural inertia, perpetuated by institutional myths and belief traps, unwillingness to acknowledge failure, and the derogation of academic expertise, poses substantial obstacles to effective digital transformation. The discrepancy between HEIs' espoused digital transformation ambitions, as promoted in their formal institutional strategic plans, and the limited changes observed in practice is notable. This suggests that Irish HEIs are grappling with the competing pressures of maintaining institutional legitimacy while simultaneously managing a variety of change forces. The prevalence of performative change compared to the

persistence of resistance to substantive transformation can be interpreted as forms of symbolic violence, where managerialism and institutional bureaucracy constrain the transformative potential within Irish HEIs. These factors significantly limit the potential for value transformations (Figure 6.4), which involve developing value propositions, educational outcomes, and optimised organisational capabilities enabled by digital transformation.

The conceptual framework highlights the necessary interactions between organisational capabilities, structural forces, and transformative processes required to effect HEI digital transformation. The barriers identified in the findings pose significant challenges to Irish HEIs' long-term institutional sustainability. Nevertheless, the findings suggest that HEI managership view digital technologies as essential for long-term systemic sustainability. The results indicate that it will require Irish HEIs to adopt a more collaborative, incremental, and strategic approach to digital transformation. This approach should prioritise organisational capability improvements to enhance educational outcomes, rather than focusing on superficial, performative metrics. By aligning digital transformation efforts with the values and identities of academic professionals and engaging in open dialogue to build trust and shared vision, HEI executive teams can move beyond leaderism to foster a more conducive environment for change.

While marketisation offers financial opportunities, it also presents risks that challenge HEIs' ability to align digitalisation initiatives with their organisational strategic goals. These tensions highlight the need for a more integrated and mission-driven approach to transformation. The following section addresses the strategic importance of digital transformation and its potential to reconcile competing priorities within Irish HEIs.

6.3.9 Institutional Enabling Constraints

Despite the systemic constraints outlined earlier, the Irish higher education (HE) sector demonstrates several enabling factors that drive progress, innovation, and transformation. These factors highlight the strengths, adaptability, and capacity of Irish HEIs to navigate the dynamics of change, particularly in the context of digital transformation. The resilience demonstrated by Irish HEIs during the COVID-19 pandemic exemplifies their ability to adapt to external shocks. As highlighted in the literature, such disruptive events often act as accelerators for organisational change. Within the Irish context, both technological universities

and traditional universities adapted rapidly, ensuring educational continuity of service through digital tool adoption and online learning (Marinoni *et al.*, 2020; UNESCO, 2022).

This finding challenges the literature's framing of HEIs as inherently slow to adopt new technologies (Selwyn, 2016; García-Morales *et al.*, 2021). The pandemic revealed that Irish HEIs, when faced with external pressures, can act with speed and efficiency, suggesting that institutional conservatism is context-dependent rather than inherent. This aligns with the broader discourse on punctuated equilibrium change (Weick & Quinn, 1999), reinforcing the idea that external shocks can force rapid transformations in otherwise stable systems. However, the study also revealed critical gaps in institutional digital readiness, such as inadequate organisational infrastructure and reliance on informal peer networks for skill development. These findings echo the identification of systemic barriers to digital transformation, including resource constraints and cultural inertia (Aditya *et al.*, 2022; Brunetti *et al.*, 2020); in the literature. Addressing these issues will require HEIs to develop systematic and well-resourced approaches to modernisation, as emphasised by Tungpantong *et al.* (2022) and Vial (2019).

These findings align with the literature's discourse on digitalisation as a driver of organisational change (see Section 2.2.1). However, they also challenge the literature's focus on the challenges of digital adoption, such as resistance to change and resource constraints (see Section 2.2.1). The study reveals that Irish HEIs have leveraged digital tools effectively to overcome barriers and drive transformation, particularly in the TU sector, which prioritises inclusivity and accessibility.

While the Zone of Proximal Digital Transformation examines how Irish HEIs experience and respond to structural and cultural challenges associated with digital transformation, these efforts do not occur in isolation. The outcomes of these processes—whether fully realised, partially achieved, or constrained—carry significant implications for institutional sustainability, public value creation, and the broader higher education ecosystem. The following section explores the impacts of these processes, considering both the opportunities and limitations faced by HEIs in their attempts to adapt to and engage with digital transformation.

6.4 Destinations of Digital Transformation in Irish HEIs (Research Question 3)

This section addresses the third research question: “What is the impact of digital transformation on Higher Education Institutions in Ireland? It explores the destinations of digital transformation, focusing on the long-term outcomes and impacts of transformation efforts in Irish HEIs. The discussion examines how the dynamics within the system shape the transformation process. Exogenous pressures, such as globalisation and marketisation, play a key role. Endogenous influences, like institutional policies and leadership, are also important. It examines how Irish HEIs balance global and local demands through glocalisation. The discussion transitions to a discourse on HEI value realisation in a managerialist regime. It further explores the evolving spatial dynamics of higher education in Ireland, concluding with a discussion on the strategic significance of digital transformation for long-term institutional sustainability. Throughout, the narrative highlights Irish HEIs’ strategies for leveraging digital transformation to promote regional development in response to global change forces. Addressing the third research question, therefore, focuses on the long-term impacts and outcomes of digital transformation within the Zone of Distal Digital Transformation (Figure 6.4).

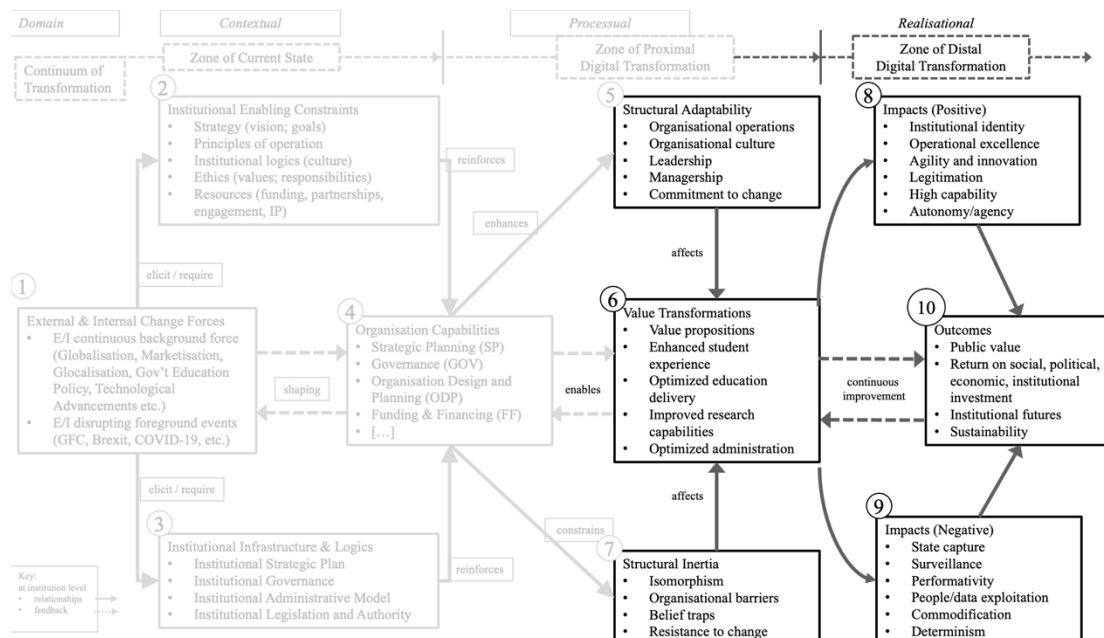


Figure 6.4 Higher Education Institution Digital Transformation Conceptual Framework: Zone of Distal Digital Transformation

Source: Author's own work

Understanding how Irish HEIs use digital transformation to respond to globalisation and marketisation is especially important given the risks of operating in a resource-dependent and financially constrained public funding system. (Clarke *et al.*, 2018; Estermann & Kupriyanova, 2019; Mercille & Murphy, 2015). This study's findings indicate that Irish HEIs are pursuing digital technology-based efficiencies across their institutional processes and functions to address this challenge by taking out system and process complexity, which reduces cost, epitomised by Director of ICT Saoirse's strategy for Horse Chestnut University to use IT-CMF to manage technology in a 'business-like' manner. Irish HEIs emphasise administrative efficacy and cost management as pathways to achieving long-term sustainability and institutional legitimacy. However, this study reveals that their approach extends beyond internal efficiencies. Irish HEIs strategically leverage digital transformation not only to improve operations but also to address external priorities tied to their geographic and regional contexts.

One of the most significant findings of this study is the strategic importance that Irish HEIs place on the spatial-temporal dimension of digital transformation. This concept refers to the alignment of HEIs' digital strategies with evolving regional needs over time. The findings strongly suggest that in Ireland, HEI digital transformation is inextricably linked to regional engagement. Having endured long-term financial and other resourcing challenges, Irish HEIs have responded by building upon a well-established tradition of regional collaboration (Highman, 2019; Ó Buachalla, 1988). This approach differentiates them within the globalised higher education ecosystem, as they are more locally focused, engaging in sub-regional regeneration projects and addressing local socio-economic issues, albeit in different ways. The findings indicate that the TUs emphasise widening access to education and promoting regional development initiatives. In contrast, the traditional universities, especially those situated in urban areas such as Cork, Dublin, Galway, and Limerick, are increasingly leveraging digital technologies to enhance their regional engagement by offering new education services, such as professional development programmes and microcredentials. These HEIs address evolving workforce development priorities and align with national human capital policies. Such initiatives allow them to extend their reach within their regions while maintaining competitiveness in a globalised higher education ecosystem.

6.4.1 A Tradition of Regional Engagement

It could be argued that one of the most significant findings from this study is that digital transformation in Irish HEIs diverges from the predominant narrative of globalised higher education. The findings suggest that HEIs in Ireland appear to use digital technologies to modernise a well-established, regionally focused model. Their aims include leveraging digital capabilities to deliver local benefits and realise regional value, maintaining institutional legitimacy by supporting regional requirements, balancing the needs of multiple stakeholders, and creating a sustainable operational model that mitigates known resource dependencies.

Regionality is deeply embedded in the traditions of the Irish higher education system. Scholars such as Clancy (2015), Highman (2019), Ó Buachalla (1988), and Walsh (2014) highlight how the historical evolution, cultural context, and socio-economic and political dynamics of Irish HEIs have cultivated a strong sense of place and a commitment to addressing regional needs. This is further reinforced by the growing emphasis on HEIs as engines of regional economic development and social innovation (Etzkowitz & Leydesdorff, 2000; Pinheiro *et al.*, 2012). However, regionality operates within the broader context of globalisation. In this regard, the findings align with Robertson's (2005) concept of 'glocalisation', where Irish HEIs balance global pressures with local needs. For example, Hawthorn Technological University's emphasis on applied research and digital accessibility exemplifies how TUs use digital technologies to foster regional economic renewal while maintaining a global outlook. This dual focus highlights the unique positioning of Irish HEIs as both regional anchors and global participants. However, there is an inherent tension between the reality of how Irish HEIs operate within a geospatially determined hinterland in contrast to the state's ambitions to implement strategy-driven and centralised approaches to Irish higher education policy (HEA, 2023a; Pucciarelli & Kaplan, 2016). Digital transformation adds complexity, as it enables Irish HEIs to leverage digital technologies to support long-term institutional sustainability with a degree of relative independence.

For example, Liam emphasised the importance of evolving the campus experience to provide stakeholders with access to the entire university network. James (Juniper University) noted how demands from local stakeholders underscored HEIs' contribution to leading regional development. Former HEA board member Cathal concurred, stating that from his system-level

vantage point, Irish HEIs were increasingly focused on local partnerships, graduate retention, and building regional innovation ecosystems.

It can be argued that by emphasising their regional embeddedness and responsiveness to local needs, Irish HEIs (particularly the TUs) may be seeking to differentiate themselves within an increasingly crowded and competitive higher education market (Pucciarelli & Kaplan, 2016; Seeber *et al.*, 2016). This accords with Goddard *et al.*'s (2016) and Hazelkorn's (2015) conception of the 'civic university', which highlights the strategic importance of regional differentiation for HEIs, as they seek to attract students, faculty, and resources in a globalised environment. However, while the literature on regional engagement often emphasises its benefits for institutional relevance and resource diversification (Benneworth & Jongbloed, 2010), this study's findings note the constraints it introduces. In the case of the TU sector, dependence on regional partnerships limits their ability to pursue global ambitions, creating a tension between local and international priorities when HEIs lack the resources to invest in both. This suggests that while HEIs understand the benefits realised by regionality, it also represents a form of 'Structural Inertia', potentially limiting HEI international engagement in favour of maintaining stability within their established regional networks.

6.4.2 Regionality and Glocalisation in HEIs in Ireland

While globalisation and marketisation emerge as the primary drivers for digital transformation in Irish HEIs, the study revealed an unexpected and critical insight: participants identified the implementation of targeted higher education services at the regional and local level as the most important driver for change. This finding contrasts those of recent studies, which generally argue that digital transformation in HEIs is primarily shaped by international competition, global market forces, and worldwide educational technology trends (Bond *et al.*, 2018). For example, Marinoni *et al.*'s 2020 global survey found that most HEI digital transformation strategies are driven by internationalisation pressures and technological developments. Similarly, Brooks and McCormack (2020) found that global technology adoption patterns, international market dynamics, and student migration were the primary catalysts for change in higher education systems.

The findings from this study indicate that Irish HEIs remain deeply embedded in their local landscape, despite operating within a globalised higher education ecosystem. As a result, local and regional priorities exert a considerable influence on how these institutions approach digital

transformation. Regional engagement is a defining feature of Irish HEIs' *raison d'être*, though there are variances in how it is reified. Hawthorn Technological University exemplifies the TU model through its strategy to act as a regional development hub. Responding to the city's post-industrial decline, it leverages digital technologies for innovation, collaborates with local industries, and delivers targeted skills programmes to address workforce gaps and industrial inertia. Prioritising digital over physical infrastructure has extended its regional reach and enhanced accessibility, aligning provision with stakeholder expectations and regional development priorities (see Section 5.2.4). In contrast, Juniper University's concentration on its international environmental futures research agenda (see Section 5.2.6) reflects a more globally oriented niche strategy. Together, these cases illustrate Robertson's (2005) 'glocalisation', in which HEIs negotiate the tension between global pressures and local imperatives.

While globalisation may set the overarching direction of change, regionality plays a critical role in shaping the specific digital transformation strategies within the Irish higher education system. This study's findings align closely with a discourse of divergence within HEI systems (Van Damme, 2002). Divergence theory posits that exogenous forces create heterogeneity and actually drive differentiation in higher education systems. This occurs as HEIs develop responses to distinctive regional characteristics and local needs (Van Damme, 2002). While Irish HEIs do indeed engage with the global HEI ecosystem, they demonstrate a strong tendency toward prioritising regionality.

However, this study reveals an even more complex arrangement within the Irish HE ecosystem, characterised by what Robertson (1995) describes as the "messy reality [of] institutional plurality, multidimensionality and complexity" (p. 221). The findings indicate that Irish HEIs, influenced by their historical roles and institutional missions, are leveraging digital transformation in diverse ways to address their specific strategic priorities and meet stakeholder expectations.

6.4.3 Technological Universities' Regional Engagement

The data indicate that TUs prioritise regional engagement as a core strategy, aligning closely with their tradition of supporting development in their respective hinterlands. This is evident in their strong emphasis on fostering applied research, workforce development, and local innovation ecosystems. According to Marginson and Rhoades (2002), higher education

institutions must negotiate global, national, and local pressures, with TUs prioritising regional engagement to differentiate themselves within the increasingly competitive higher education landscape. This focus is evident in the actions of Irish TUs, which emphasise applied research, workforce development, and regional partnerships. For example, Hawthorn Technological University has strategically aligned its digital transformation efforts with regional economic regeneration. As Ronan, Vice President of Strategy at Hawthorn TU, explained, the institution aims to transition its region from traditional manufacturing to “high-value knowledge-intensive industries” (see Section 5.2.4). This reflects a broader trend in which TUs leverage digital transformation to create public value through regional partnerships, addressing local workforce needs and fostering innovation ecosystems (Gornitzka & Larsen, 2004; Hazelkorn, 2015).

Examples of HEI regional engagement from Rowan Technological University, Hazel Technological University and Hawthorn Technological University illustrate the variety of ways that Irish TUs leverage digital technologies for regional engagement to generate public value. Rowan Technological University’s focus on meeting regional employers’ needs through its educational services enables what Oisin describes as “link provision” (see Section 5.3.4), the university’s collaborative relationships and transfer arrangements with other education/training providers in the region. This contributes to the utilitarian dimension of public value realisation by supporting regional workforce development. Hazel Technological University’s “inclusive person-centred approach” comprises engaging with the broader regional community to develop regional specialisms and expertise in the AgTech and food science industries.

Hawthorn Technological University’s credibility as an academic hub for its region enables engagement with a variety of regional stakeholders. According to Ronan, Hawthorn Technological University’s Vice President for Strategy, in order to achieve its strategic objective of creating a “vision” (see Section 5.3.2) for its region. The HEI must support regional economic regeneration, to transform their region from an industrially inert 20th-century manufacturing base to high-value knowledge-intensive industries. These examples demonstrate that Value Transformation is a key outcome in the HEI-DT framework, achieved through digitally enabled regional engagement and responsiveness to local needs.

Significantly, TUs’ applied research is tailored to regional needs, distinguishing themselves from the prestige-driven research focus of traditional universities. This applied approach aligns with the findings of Altbach *et al.* (2021), who argue that regional engagement often necessitates research that addresses practical, localised challenges. For instance, Hazel

Technological University focuses on developing AgTech and food science industries within its region, reinforcing its commitment to regional specialisation and economic development.

6.4.4 Traditional Universities' Service Diversification

The professional tertiary education sector has grown in response to industry demand for university-level workforce training (Altbach *et al.*, 2019). The findings from this study indicate that traditional universities in Ireland are diversifying into professional education and 'prestige' research projects. Both themes recur in the narratives of study participants from traditional universities when articulating their interpretation of digital transformation and regional strategy. For example, data from Willow University's Executive Education Institute¹⁷ (EEI) highlights how non-degree, academically accredited short-form programmes can serve as profitable business units within public sector universities. The EEI provides professional education services to a variety of professionals, including employees in Irish indigenous firms and multinational corporations operating in Ireland. The initiative has achieved significant growth in the five years since it was established. Anonymised institutional data show that EEI registrations have grown to account for over 25 per cent of the student registrations for the publicly funded component of Willow University's student enrolments. Within the remit of its mission, the EEI demonstrates the NPM principle of aligning public institutions with market logics.

It achieves this through two primary strategies:

1. **Maximising operational efficiency:** By targeting professional adult learners, the academy utilises platforms like Moodle, Microsoft Teams, and customer relationship management (CRM) systems to enhance the student experience.
2. **Responding to market demand:** Through modular course delivery options, it caters to the consumption preferences of its target demographic, ensuring accessibility and flexibility.

¹⁷ 'Executive Education Institute' is a pseudonym. Data for this case study were collected from institutional reports and grey literature. There were subsequently anonymised to protect the identity of the participating HEI and study participants. For further information, please contact the researcher.

Furthermore, it reflects a strategic shift within traditional HEIs toward a broader focus on global competitiveness and institutional reputation, emblematic of the growing influence of market-driven imperatives in higher education. Biesta's concept of 'learnification' (2013) highlights how education is increasingly framed in terms of individual learning processes. The EEI's use of CRM systems positions education as a product tailored to individual learners' preferences, redefining it as a transactional exchange. This aligns with neoliberal logics of efficiency and commodification.

Marginson's (2013) status competition theory frames traditional universities' strategies as mechanisms for enhancing institutional legitimacy and prestige. He argues that this strategy privileges established HEIs with the cultural capital and material resources to align with market demands, while marginalising those unable to compete on these terms. Furthermore, the emphasis on prestigious research projects and the commodification of professional education as a profitable business unit suggests a narrowing of higher education's mission to one dominated by economic and reputational goals. Thus, while service diversification may appear to be a pragmatic response to contemporary pressures, it reflects a deeper shift in the role and purpose of universities that increasingly aligns with neoliberal ideologies and the imperatives of competition.

While the analysis of the two approaches reveals distinct institutional strategies, understanding how Irish HEIs negotiate the relationship between global, national, and local pressures requires a lens that explicates the multi-scalar nature of digital transformation. The 'glonacal agency heuristic' proposed by Marginson and Rhoades (2002) demonstrates how HEIs exercise both individual and collective agency when navigating the demands of global, national, and local contexts. According to the authors, HEIs actively navigate these demands by making strategic choices at the institutional level and developing collective responses at the system level. This creates patterns of behaviour that mediate global pressures and local realities. This argument is supported by Williamson's (2015) multi-scalar approach, which emphasises HEIs' need to examine how trends, policies, and needs at each level influence digital transformation strategies and actions. In Ireland, HEIs prioritise local stakeholders and regional development while aligning with national policies, such as fostering a knowledge-based economy (O'Connor *et al.*, 2019; Walsh, 2018). They also engage globally through rankings, international student recruitment, e-learning initiatives, enterprise partnerships, and participation in EU funding programmes like Horizon Europe.

The concept of glocalisation highlights how Irish HEIs balance global pressures with local priorities, positioning themselves as key drivers of regional development. This theoretical perspective is reflected in the actions of specific institutions, which demonstrate how regional engagement strategies are operationalised through digital transformation initiatives. The following examples illustrate how Irish HEIs leverage digital technologies to enhance public value and address regional needs. The extension of HEIs' reach beyond traditional campus/geographical boundaries through digital platforms can be interpreted as a positive impact that enhances institutional influence and expands access to higher education (Marginson, 2011). Regional embeddedness and responsiveness to local needs enabled by digitalisation can be seen as a positive impact that strengthens institutional identity and legitimacy (Hazelkorn, 2015; Pinheiro *et al.*, 2012). The challenges of balancing efficiency and accountability while maintaining their educational and public good missions can be seen as a negative impact that may threaten institutional identity and autonomy (Christensen & Eyring, 2011; Holmwood & Marcuello Servós, 2019). This is a key consideration in the public value perspective (Kallio *et al.*, 2016; Pucciarelli & Kaplan, 2016) and highlights how unexpected outcomes may emerge from digital transformation.

While these examples illustrate positive outcomes, several factors must be taken into consideration. For example, 'managing to the measure' of the key performance indicators in the SPF, regardless of their alignment with a given HEI's goals and objectives, may constrain benefits realisation from digital transformation initiatives (Prinsloo, 2021). The effectiveness of performance agreements and linked funding provision in higher education remains unclear, as causality is difficult to prove (Jongbloed & Vossensteyn, 2016). Nevertheless, many countries, including Ireland, continue to use such mechanisms without thoroughly evaluating their impact.

Synthesising these perspectives suggests that effective digital transformation in Irish higher education requires a strategic approach that prioritises public value creation, regional engagement, and the development of comprehensive governance frameworks that emphasise qualitative measures and stakeholder needs. HEIs must also be mindful of the potential negative impacts of digital transformation and work to mitigate risks to institutional performance, identity, and autonomy. By leveraging digital technologies for regionally focused initiatives and extending their reach beyond traditional geographical boundaries, Irish HEIs

can position themselves as key drivers of innovation and development within the global higher education landscape.

6.4.5 Public Value in HEI Digital Transformation

Criticisms of managerialism among academic staff and other stakeholders remain prominent, even as it is heavily endorsed by the Irish state architecture. This analysis contributes to the ongoing critique of managerialism in academia by revealing how it undermines academic values and autonomy while intensifying the forces of neoliberal change that are reshaping higher education into a market-oriented, metrics-driven sector (Deem & Brehony, 2005; Pollitt & Bouckaert, 2011). Shore and Wright (2015) argue that metrics have become “instruments of governance” (p. 22) fostering an audit culture that prioritises what can be measured over what truly matters. This disconnect is evident in this study’s findings, where participants highlighted metrics as exacerbating “fragmented governance structures” (see Section 5.3.1) and amplifying the challenges posed by digitalisation.

A public value perspective provides a way to understand the limitations of metrics-driven approaches. Public value, as conceptualised by Moore (1995), emerges from the ‘strategic triangle’ of resource and capability constraints, value outcomes’ production, and a legitimising environment of public mandate and legal frameworks. This perspective emphasises the dual dimensions of utilitarian effectiveness (e.g., problem-solving and efficiency) and the deontological ‘public good’ (e.g., equity and fair resource use). Through this lens, digital transformation in Irish HEIs can be viewed as a means for creating public value. For example, participants highlighted how digital initiatives, such as improving organisational administration or fostering regional engagement, reflect a commitment to enhancing efficiency and service delivery. These are viewed as key domains of public value measurement in higher education (Coates, 2016; Guthrie & Dumay, 2015). This aligns with the value transformations concept within the Zone of Distal Digital Transformation framework, where digitalisation facilitates educational improvements, optimised capabilities, and long-term institutional sustainability.

Despite these opportunities, the findings reveal significant challenges in translating digital transformation into public value. Participants critiqued the fragmented adoption of technologies within Irish HEIs, often driven by vendor influence rather than strategic alignment. Saoirse, CIO of Horse Chestnut University, described this as “fragmented adoption”

(see Section 5.3.1), emphasising how it leads to higher costs and reduced effectiveness compared to comprehensive digital strategies. Similarly, Sinéad noted that funding constraints compel universities to rely on generic products marketed by vendors, rather than collectively bargaining for tailored solutions. Cathal further elaborated on the lack of collaboration among Irish HEIs, observing that institutions often approach similar challenges in isolation, rather than sharing resources or strategies (see Section 5.3.2).

These critiques resonate with the literature's discussion of the limitations of resource-constrained digital transformation (Vicente *et al.*, 2020; Reyhaneh & Burgess, 2022). The absence of a holistic strategy not only increases inefficiencies but also risks undermining the broader societal mission of HEIs, as siloed technologies fail to address the complex needs of diverse stakeholders. While organisation performance indicators remain necessary for accountability, they should be complemented by qualitative measures that emphasise stakeholder engagement, regional impact, and long-term sustainability. The Dutch 'Quality Agreements' experiment (Jongbloed *et al.*, 2020) offers a promising model, where quantitative metrics were deprioritised in favour of 'horizontal accountability' to stakeholders such as students, regional partners, and professional organisations. This approach fosters institutional autonomy while maintaining transparency and legitimacy. By integrating public value principles into digital transformation strategies, Irish HEIs can shift away from managerialist narratives and instead prioritise outcomes that align with their educational missions and societal responsibilities. This requires balancing quantitative measures of efficiency with qualitative evaluations of impact, ensuring that digital transformation efforts contribute to both institutional performance and public good.

While quantitative measures of value shape the strategic priorities of Irish HEIs, more intangible aspects of change, such as perceptions of the role of the campus are also being redefined by digital transformation. The integration of digital platforms into institutional operations has expanded the reach of HEIs beyond traditional campus boundaries, reshaping how and where education is delivered. The following section explores how these 'new spatialities' are transforming the higher education landscape in Ireland, highlighting the interoperation between physical infrastructure and digital delivery.

6.4.6 New Spatialities in Higher Education

The physical and social spaces associated with higher education are being redefined and reshaped as a result of digital transformation. However, the findings also reveal the persistent influence of physical infrastructure on access patterns. The relationship between physical proximity and digital delivery underscores the importance of considering material constraints when designing digital transformation strategies. Rather than assuming digitalisation alone can overcome geographical barriers, HEIs must adopt a more integrated approach that accounts for both physical and digital dimensions of access (Henderson *et al.*, 2017). Digital technologies are extending the reach of HEIs beyond geographical boundaries. While the participants in this study assert that the physical university campus remains *sine qua non* for higher education, Irish HEIs are exploring how digital platforms can broaden access to education and resources for students and stakeholders. Rowan University's executive education institute exemplifies this departure from traditional campus-centric models, as the university explores how virtual education service provision can overcome physical campus limitations. This glocal approach enables Rowan University to maintain its regional relevance while participating in the global higher education landscape, aligning with the ZDDT by demonstrating how digital platforms can extend institutional reach, enhance public value creation, and ensure long-term sustainability. By balancing regional engagement with global participation, Rowan University illustrates the ZDDT's emphasis on leveraging digital transformation to foster operational excellence, institutional agility, and continuous improvement while addressing both local and global educational needs. Rowan University's approach exemplifies the ZDDT by demonstrating how digital platforms can extend institutional reach and contribute to both regional and global engagement, ultimately enhancing public value creation and long-term institutional sustainability.

Global forces are mediated through local realities, with both physical and digital dimensions influencing education participation. While global HEI digital transformation trends promote standardised education service provision (Brooks & McCormack, 2020), their implementation and impact are ultimately shaped by regional infrastructure and individual organisational digital capability. Among these factors, the persistent influence of physical infrastructure on access patterns emerged as an unexpected and noteworthy finding. Despite increasing digitalisation of education, proximity to campus remains a crucial determinant of participation, illustrating how material constraints continue to shape access to education. While HEIs outside

of the Greater Dublin Area typically draw students from within a 50-to-80-kilometre radius, Dublin's catchment area is uniquely shaped by public transport infrastructure and travel time rather than simple geographic distance. In urban areas, students access on-campus higher education by combining different types of public transport, as long as the total journey time is manageable. For example, one study participant observed how ease of travel influences student choice: when Dublin's 46A bus route was redirected to a new terminus at the Phoenix Park, one HEI experienced an immediate increase in applications from the nearby Cabra suburb, as students could now reach the campus within an hour by public transport. This case shows that accessibility, rather than technical infrastructure or geographical proximity, influences patterns of access to education in urban settings. This finding suggests that successful digital transformation strategies must account for the persistent role of physical infrastructure in shaping access patterns, rather than assuming that digitalisation alone can overcome geographical barriers to education.

The spatial and temporal dimensions of regionality also reinforce the historical embeddedness of Irish HEIs within their local communities (Clancy, 2015; Walsh, 2014). However, the data from this study indicate that students are responsive to new opportunities and adapt their choices when conditions such as mobility options change. Furthermore, the findings show that HEI digital transformation has reshaped access patterns through hybrid and online provision, supporting similar evidence in the literature (García-Peñalvo et al., 2021; Teräs et al., 2020).

The relationship between physical access and digital delivery points to a more complex picture of regional engagement, reflected in how Irish HEIs are using digital technology to strengthen regional ties. The findings from this study suggest that Irish HEIs are leveraging digital technology for regionally focused initiatives. While utilising global digital platforms and technologies, their implementation is distinctly shaped by local contexts, stakeholder needs, and regional development priorities (Mercille & Murphy, 2015; Walsh *et al.*, 2015). This challenges the notion of digital transformation as a purely homogenising force (Henderson *et al.*, 2017), instead revealing how technology can reinforce institutional distinctiveness and regional embeddedness when strategically deployed (Benitez *et al.*, 2022). Rather than viewing convergence and divergence as mutually exclusive processes (Stiglitz, 2002; Vaira, 2004), the Irish case demonstrates how global and local forces can interact to produce context-specific institutional responses to digital transformation challenges. Irish HEIs leverage their local and regional socio-economic ecosystem while selectively engaging with beneficial national or

international opportunities (Clancy, 2015; Walsh, 2014), exemplified by their ‘concentric circles’ approach, where most effort focuses on local and regional activities. This synthesis suggests a more sophisticated digital transformation pathway that enables institutions to strengthen their regional advantages (Pinheiro *et al.*, 2012) while maintaining strategic global connections (Robertson, 2019).

6.4.7 Strategic Importance of Digital Transformation

The findings suggest that study participants perceive digital transformation as a viable strategic approach for sustaining HEIs in the Irish higher education system. The survey data show that institutional digital transformation is both a strategic priority for HEIs and critical for engaging higher education service users. This is reflected in the importance attributed by HEI managership to developing innovative digital services, and to leverage digital technologies for interactions with students, colleagues, and other stakeholders.

Digital transformation holds strategic importance, requiring a fundamental rethinking of university operations across teaching, learning, research, and outreach, as emphasised by Sinéad, who highlighted the need for radical, comprehensive change, rather than minor adjustments to the business model (see Section 5.4.2). This reflects a discourse of transformational change in higher education, where digital innovation is not merely an operational enhancement but a fundamental reimagining of institutional processes, strategies, and stakeholder engagement. This discourse emphasises the necessity for HEIs to embrace systemic shifts that align with the demands of a rapidly evolving digital and knowledge-based economy (Hess *et al.*, 2016; Kane *et al.*, 2015; Nadkarni & Prügl, 2021; Verhoef *et al.*, 2021; Vial, 2019; Westerman *et al.*, 2014).

Therefore, the findings suggest that Irish HEIs can enhance their long-term viability through strategically balanced approaches to digital transformation that build internal capabilities while responding to external demands. As noted by Ronan, the low-key ongoing “quiet revolution” (see Section 5.3.3) of increased organisational administration digitalisation emerged as a key enabler for this process: the participants identified it as their highest-rated objective for digital transformation. This strategic focus aligns with Vial’s (2019) assertion that digital transformation is an intentional, capability-driven process.

The emphasis on digitally enabling operational systems reflects Pucciarelli and Kaplan's (2016) findings that in order to remain viable, Irish HEIs are adopting more "entrepreneurial mindsets and flexible approaches" (p. 311) to education service provision. This is particularly relevant in a resource-constrained environment, where digital transformation provides efficiency gains and service improvements despite funding limitations. However, upon reviewing the strategic plans of 16 Irish HEIs¹⁸ as well as the strategic plans for the Higher Education Authority, the Irish Universities Association, and the Technological Higher Education Association¹⁹ a notable trend emerges. While these documents recognise the importance of digital transformation, Irish HEIs have yet to produce digital strategies that align with their overall institutional goals.

Nevertheless, the strategic importance of digital transformation lies in its potential to reshape the core activities of Irish HEIs, addressing immediate operational challenges and ensuring their long-term viability as institutions. By aligning digital initiatives with institutional missions and stakeholder needs, HEIs can foster innovation, regional engagement, and global competitiveness. The findings discussed in this chapter provide critical insights into these processes, which are summarised below. The findings suggest that digital transformation in Irish HEIs is a critical mechanism for addressing the dual pressures of regional engagement and global competitiveness. However, this dual focus creates tensions, particularly given the resource constraints and structural inertia faced by HEIs. The analysis emphasises the importance of regional identity, integrated networks, and collaborative governance in enabling effective digital transformation strategies. Best practices, such as Hawthorn TU's emphasis on

¹⁸ Atlantic Technological University Strategic Plan 2019-2023, (2019).; DCU Strategic Plan 2023, (2023); Dundalk Institute of Technology Strategic Plan 2024-2028, (2024); IADT Strategic Plan, (n.d.); Maynooth University Strategy Plan 2024, (2024); Mary Immaculate College Strategic Plan 2019-2023, (2019); Munster Technological University Strategic Plan, (n.d.); NCAD Strategy Communications, (n.d.); RCSI Strategy 2023-2027, (2023); Technological University Dublin Strategic Plan 2024-2028, (2024); Technological University of the Shannon Strategic Plan 2023-2026, (2023); Trinity Strategy, (n.d.); University College Dublin 2024 Strategy Document, (2024); University of Galway Strategic Plan 2020-2025, (2020); University of Limerick Strategic Plan 2019-2024, (2019).

¹⁹ Higher Education Authority Strategic Plan 2018-2022, (2018).; Irish Universities Association Strategy 2022-2025, (2022); Technological Higher Education Association Strategic Plan, (n.d.).

digital infrastructure for economic regeneration and Rowan University's hybrid education model, illustrate how digital transformation can enhance public value creation and institutional sustainability. Nevertheless, fragmented technology adoption, competition for resources, and the dominance of managerialist metrics remain key challenges. To ensure long-term viability, Irish HEIs must develop holistic, mission-driven digital strategies that align with their institutional goals, balance stakeholder needs, and address the complexities of operating within a globalised higher education ecosystem.

6.5 Conclusion

This chapter analysed the findings of the study on digital transformation in Irish HEIs, situating them within theoretical frameworks and existing literature. The discussion framed the digital transformation process as the interoperation of dynamics (the systemic forces shaping HEI responses), dimensions (the operational and cultural factors influencing change), and destinations (the long-term outcomes and strategic goals of transformation efforts), within the coherence of the HEI-DT conceptual framework. It highlighted Irish HEIs' reliance on external forces to drive change, reflecting limited internal capacity for rapid self-initiated transformation. Barriers to digital transformation, including structural inertia, leadership and academic staff resistance, underinvestment, and fragmented governance, were identified as significant challenges. However, the study also underscored the strategic importance of regional engagement, particularly for technological universities, which leverage digital tools to address local needs and foster innovation. The discussion revealed tensions between metrics-driven managerialism and the broader public value mission of HEIs, advocating for a more holistic, mission-driven approach to digital transformation that balances efficiency with societal impact. While progress has been uneven, the findings emphasise the need for integrated digital strategies to enhance institutional sustainability, address systemic barriers, and enable HEIs to navigate the competing demands of regional engagement and global competitiveness. These insights set the stage for the concluding chapter, which will reflect on the study's contributions, implications, and future directions for achieving sustainable transformation in Irish higher education.

Chapter 7 Conclusions

7.1 Introduction

This study addresses the question of how Irish HEIs navigate digital transformation amidst an unpredictable external sociopolitical environment, systemic constraints, and competing regional and global priorities. This chapter synthesises the findings and analysis to present its broader contributions to theory, methodology, policy, and practice. It provides a summary of the key insights derived from the research, emphasising the significance of digital transformation within Irish higher education institutions. The chapter also provides practical recommendations for stakeholders, outlines the policy implications, acknowledges the limitations of the research, and identifies areas for future research.

The study was guided by three research questions:

1. What change forces drive digital transformation in Higher Education Institutions in Ireland, from the perspective of senior managers responsible for these initiatives?
2. How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?
3. What is the impact of digital transformation on Higher Education Institutions in Ireland?

These questions explored how Irish HEIs navigate the interaction of external pressures, internal constraints, and strategic opportunities during digital transformation. The findings highlight the challenges, opportunities, and systemic shifts underpinning this process, offering insights into organisational change in academic institutions.

7.2 Summary of the Research

This study began with a multi-vocal literature review that critically examined the conceptualisation, evolution, and implementation of digital transformation in higher education institutions. It analysed organisational change paradigms, theoretical influences, as well as organisational roles, accountabilities, and capabilities, with particular emphasis on publicly funded higher education systems, and the higher education sector in Ireland. The review

revealed that existing research primarily focuses on the technical aspects of HEI digital transformation, while the strategic, operational, socio-political, and cultural dimensions are largely overlooked. Furthermore, the role of HEI managers in implementing digital initiatives has been insufficiently explored. To address these gaps, this research aimed to understand digital transformation from the perspective of HEI managers responsible for these initiatives. The review also identified gaps and theoretical limitations in the contemporary change discourse. This necessitated the development of a conceptual framework, the HEI-DT (see Chapter 3) which conceptualises digital transformation as an emergent, nonlinear process. Overall, the research demonstrates that Irish HEI digital transformation is a complex, multi-dimensional process shaped by a combination of external forces, internal organisation dynamics, and institutional responses unique to the Irish context.

This study makes several important contributions to research on digital transformation in higher education, particularly within the Irish context. These contributions can be categorised as empirical, theoretical, and methodological, as outlined below.

7.2.1 Empirical Contributions

This study provides new evidence on how Irish HEIs experience and respond to digital transformation. The following key empirical contributions advance understanding in this area.

7.2.1.1 Typologies of Change in Irish HEIs

The first contribution addresses the question: “What change forces drive digital transformation in Irish HEIs, from the perspective of senior managers responsible for these initiatives?” It provides evidence that change within Irish HEIs does not conform to the single-type-of-change discourses described in the literature. Instead, Irish HEIs experience three distinct and concurrent types of change, which can be classified using Gerschewski’s Typology of Change (2016):

1. **Exogenous Sudden Change:** Rapid responses to external shocks (e.g., the COVID-19 pandemic), demonstrating HEIs’ capacity for swift adaptation.
2. **Exogenous Gradual Change:** Slower, deliberate transformations (e.g., the IoT-to-TU mergers driven by external policy directives).

3. **Endogenous Gradual Change:** Ongoing, incremental digitalisation initiatives and process improvements within HEIs, reflecting adaptive evolution.

The absence of endogenous sudden change (Gerschewski Type III) within Irish HEIs is surprising, given the active influence of other change types. This finding suggests that internal HEI leadership and organisational dynamics are insufficient to alter established institutional norms and structures. This is significant because it underscores the entrenchment of institutional inertia within Irish HEIs. The phenomenon is extensively documented in neo-institutional theory and organisational change literature (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Oliver, 1991). It exemplifies complex organisations' tendencies to privilege institutional equilibrium as the basis for legitimacy and long-term sustainability. The findings therefore suggest that external forces—such as policy directives, market forces, and catalyst events—are frequently necessary to energise momentum for transformative change.

7.2.1.2 Structural and Cultural Barriers Influence HEI Digital Transformation

The study also addresses the question “How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?” by highlighting the impact of systemic barriers that limit digital transformation in Irish higher education institutions. These barriers are categorised as (1) organisational cultural barriers, particularly resistance to change among executive leadership and academic staff, and (2) operational barriers, such as underfunding and other resource constraints. This study demonstrates that these barriers to change are symptoms of organisational behaviours deeply rooted in institutional power dynamics. Consistent with traditional theories that attribute HEI resistance to change as a symptom of institutional inertia (DiMaggio & Powell, 1983) and academic conservatism engendered by normative isomorphism (Mejía *et al.*, 2019), this study also identifies the coercive influence of executive leadership as a significant source of resistance to change. Stealth power practices such as selective communication, agenda-setting, and the preservation of institutional power challenge theories that conceptualise leadership as inherently transformational (Cifuentes *et al.*, 2011; Kotter & Schlesinger, 2008; O'Connor *et al.*, 2019).

The study also challenges the discourse that academic resistance to change stems from technophobia or a reluctance to embrace digital tools (García-Morales *et al.*, 2021). Indeed, the findings show that academics embraced digital technologies during the pandemic, proactively

seeking informal peer learning opportunities in the absence of formal digital skills training provision. Instead, the findings indicate that academic resistance to change is concerned with power asymmetries and the erosion of professional identity under managerialist governance regimes. Therefore, academics do not resist technology itself, but its use as a mechanism for control and centralisation, echoing Selwyn's (2016) analysis of the disciplinary functions of digital tools, and Winter's (2009) argument that managerialism detrimentally affects academic autonomy and professional agency. Furthermore, these findings challenge the determinist narrative of inevitable technological progress, highlighting instead the critical role of social, cultural, and political factors in shaping or constraining the adoption and use of technology (Benavides *et al.*, 2020).

These internal dynamics, particularly the influence of managerialism on technology adoption, intersect with broader systemic issues affecting resource allocation and efficiency within the Irish higher education ecosystem. While resource-related external factors are well-documented (Cassells Report, 2016; Clarke *et al.*, 2015; Estermann & Kupriyanova, 2019), this study highlights how NPM ideology exacerbates inefficiencies within Irish HEIs. For instance, the managerialist culture enforced by the current iteration of the HEA's System Performance Framework (2020a) limits inter-institutional collaboration, hindering opportunities for efficiency gains, such as collective bargaining with technology vendors to secure better prices and more appropriate technologies. This, in turn, limits HEIs' capability to effectively address resourcing constraints.

Reliance on state funding further perpetuates institutional inertia. The 'state funding trap' reflects Gleeson's (2023) critique of output-based funding models, such as the HEA's Recurrent Grant Allocation Model (RGAM), which tie public subsidies to a quantitative gauge of performance to determine 'what good looks like'. While the HELMA literature often presents market-oriented approaches to educational provision as a panacea for resource dependency (Marginson, 2013), study participants highlighted the intra-institutional sociocultural tensions engendered by such neoliberal discourses. For example, the 'student as customer' model conflicts with Irish HEIs' civic mission for public value realisation. This exacerbates intra-institutional tensions and undermines academic values (Kezar & Eckel, 2002). More pragmatically, study participants observed that market saturation in online programmes often results in diminished returns, emphasising the need for differentiation and ongoing innovation to maintain competitiveness (Selwyn, 2022).

In summary, these findings show the structural and cultural barriers that constrain digital transformation in Irish HEIs. Leadership and academic staff resistance to change, managerialist governance, and misaligned operational priorities reveal the limitations of current approaches to digital technology implementation. Addressing these barriers requires a fundamental reimagining of institutional power dynamics, governance structures, and the alignment of digital strategies with HEIs' principles of civic value. Without these changes, digital transformation risks reinforcing the status quo rather than driving meaningful change. Instead, the findings suggest that technology-enabled managerialist logics constrain the potential of digital transformation to deliver meaningful change. This highlights the need to reassess how digital initiatives strategically align with institutional missions and stakeholder needs.

7.2.1.3 Impacts and Outcomes of Digital Transformation

The third contribution addresses the question of the impact of digital transformation on Irish Higher Education Institutions. The evidence indicates that Irish HEIs diverge from the globalised higher education narrative, which emphasises competition, marketisation, and the pursuit of international rankings (Ball *et al.*, 2010; Hazelkorn *et al.*, 2015; Sorensen *et al.*, 2021). Instead, Irish HEIs adopt a regionally focused, spatially sensitive, and public value-oriented approach to digital transformation. This manifests in three ways: (1) prioritising outcomes that deliver value to regional enterprises and communities, (2) maintaining institutional legitimacy through active engagement with local stakeholders, and (3) developing sustainable operational models that attempt to mitigate dependency on state funding sources, such as the HEA's Recurrent Grant Allocation Model.

In contrast to previous studies' findings that globalisation is a major exogenous force for HEI digital transformation (Benavides *et al.*, 2020; Gkrimpizi *et al.*, 2023; Rof *et al.*, 2020), Irish HEIs instead prioritise regional engagement. In particular, the findings indicate that they leverage digital technologies to address local needs, build and maintain regional stakeholder relationships, and support economic (re)generation within their 'sphere of influence' (see Section 5.2.3). This strategic orientation aligns with Robertson's (2005) concept of glocalisation, balancing global pressures with regional priorities. By embedding digital transformation within regionally focused strategic objectives, Irish HEIs redefine technology's role in higher education, positioning it as a tool for local impact rather than global competitiveness.

Contrary to the literature's emphasis on marketisation and efficiency (Christensen & Eyring, 2011; Marginson, 2016), this study positions digital transformation as a mechanism for public value creation. Irish HEIs, such as Hawthorn and Birch Technological Universities, use digital platforms to strengthen regional innovation, workforce development, and accessibility for underserved populations. This strategy aligns with Hazelkorn's (2015) 'civic university' model, but updates it by incorporating digitally enabled regional responsiveness as a form of institutional legitimacy. Digital transformation, therefore, emerges as a means to address pressing regional challenges while enhancing public value.

By prioritising regional engagement, public value creation, and spatially sensitive strategies, Irish HEIs offer an alternative to dominant globalised narratives. However, poorly aligned strategies and managerialist pressures risk undermining these efforts, highlighting the need for coherent, long-term digital strategies aligned with institutional goals.

7.3 Theoretical Contributions

This study makes a significant theoretical contribution by uncovering a divergence between two dominant perspectives on organisational digital transformation: the change-typology perspective and the institutionalist perspective. The former emphasises external and internal change forces, including globalisation, catalyst events, policy mandates, and emergent change (Gerschewski, 2016). In contrast, the institutionalist perspective, grounded in neo-institutionalism (DiMaggio & Powell, 1983; Meyer & Rowan, 1977), attributes organisational change to the influence of institutional pressures that drive conformity and legitimacy-seeking behaviours. While both perspectives offer valuable insights, each tends to privilege one explanatory domain, internal agency or external institutional pressures, often to the detriment of the other.

This research challenges the traditional framing of these perspectives as dichotomous by adopting a critical realist approach (see Section 4.5.1). This approach situates organisational change within a "laminated system" (Bhaskar & Danermark, 2006, p. 280). Lamination in critical realism refers to the multi-layered nature of reality, where phenomena like organisational change arise from the interaction of mechanisms across various levels—social, cultural, political, and normative. Each level has distinct mechanisms that interact dynamically, creating emergent properties that cannot be reduced to a single dimension. Through this lens, it becomes clear that digital transformation in higher education institutions results from the co-

determination of internal and external mechanisms, rather than being reducible to one or the other. This study suggests that HEI digital transformation results from the influence of internal and external drivers within a broader socio-political context. Additionally, this study contributes to glocalisation theory (Robertson, 2005) by integrating the glonacal agency heuristic (Marginson & Rhoades, 2002) to analyse multi-scalar institutional change in higher education. Glocalisation illustrates how HEIs balance global pressures and local priorities, while glonacal agency reveals the reciprocal influences of global, national, and local levels. HEIs act as multi-scalar agents, shaped by external forces while reciprocally influencing their environments. Digital transformation emerges as a mediator, enabling institutions to balance competing demands and respond to systemic challenges. Irish HEIs exemplify how institutional agency responds to global pressures, such as internationalisation, while addressing local needs, such as regional engagement. This study emphasises human agency—leadership, faculty, and policymakers—as central to leveraging digital technologies for institutional sustainability, defined as financial viability, social relevance, and academic competitiveness. By illustrating glocalisation in the Irish HE context, this study advances understanding of how global, national, and local dynamics shape sustainable digital transformation in complex environments like higher education ecosystems.

This study critiques deterministic and managerialist approaches to digital transformation in HEIs; they often reduce complex organisational change to a single dimension, such as technological solutionism or managerial efficiency. A critical realist perspective provides a pragmatic alternative by framing digital transformation as a multi-level phenomenon shaped by the interaction of underlying mechanisms across many dimensions. It avoids reductionism and recognises the emergent properties of transformation within complex systems. The HEI-DT conceptual framework operationalises critical realism's laminated systems concept, enabling researchers to analyse digital transformation holistically. By identifying and integrating causal mechanisms at multiple levels, the framework provides a richer understanding of internal and external change processes in complex organisations.

7.3.1 Recommendations for Theory

The researcher recommends that future research in digital transformation and organisational change in higher education considers the benefits of adopting a critical realist ontology to explore how the empirical, actual, and real domains interact to produce observable outcomes.

By distinguishing between what is experienced (empirical), what actually happens (actual), and the underlying mechanisms that generate events (real) (Bhaskar, 1975; Sayer, 2000), scholars can, in the words of educational psychologist Jerome S. Bruner (2006), “go beyond the information given” (p. 7) to move past surface-level descriptions of events to uncover the deeper causal forces and the generative mechanisms shaping digital transformation. Therefore, it can be argued that critical realism encourages the development of more robust, sophisticated theoretical and conceptual models that account for complexity, contingency, and emergence, thereby advancing both the explanatory power and practical relevance of organisational change theories in higher education. There is value in promoting theoretical and empirical work that reconciles divergent perspectives on digital transformation, such as technocentric, processual, and human-centric approaches, by leveraging the empirical, actual, and real domains incorporated in the critical realist ontology. By foregrounding these recommendations for theory, this study encourages an integrative approach accommodating multiple perspectives in order to advance understanding of digital transformation in higher education settings.

7.4 Methodological Contributions

Methodologically, this research contributes to the corpus by employing innovative approaches and frameworks to study the complexities of digital transformation in higher education institutions. Specifically, the use of a critical realist ontology, a sequential explanatory mixed methods design, and the development and application of the Higher Education Institution Digital Transformation conceptual framework together form a methodological ‘toolkit’ for future research in this field. Collectively, these elements offer valuable guidance for scholars aiming to navigate and investigate the multifaceted nature of digital transformation in higher education.

This methodology combines quantitative data from surveys with qualitative insights from semi-structured interviews. Statistical analysis of the quantitative data synthesised with thematic analysis of the qualitative data elucidated how HEI managership conceptualises and implements digital transformation initiatives. The methodological aspect of this study contributes to the literature by demonstrating how critical realism can underpin mixed methods research in educational settings. Furthermore, the methodology provides a transparent and replicable blueprint for future studies. Thus, this study offers a robust approach for exploring complex, context-dependent phenomena such as digital transformation in higher education.

A key methodological contribution of this study is the development and application of the HEI-DT conceptual framework (Figure 3.3). Designed in response to gaps in the literature around digital transformation in higher education, the framework conceptualises digital transformation as an emergent, nonlinear process influenced by ten interrelated components. Drawing inspiration from Vygotsky's Zone of Proximal Development, the HEI-DT framework provides a structured approach to analysing the interactions between external change forces, institutional enabling constraints, and organisational capabilities. This is arguably the study's most significant contribution to knowledge, as it offers a clear explanation of how higher education institutions—and the actors within them—navigate and enact digital transformation. For example, analysing Irish HEI responses to the early stages of the COVID-19 pandemic lockdown through the HEI-DT framework demonstrates its value in uncovering the dynamics of institutional adaptation and the interaction between external change forces, enabling constraints, and organisational capability. HEI-DT shows how informal peer networks, which emerged as a grassroots response to inadequate HEI-supported formal training, leveraged institutional enabling constraints such as organisational culture and norms to promote digital skills development among staff.

Additionally, the HEI-DT framework can contextualise institutional responses to change events and connect immediate actions to broader outcomes. For example, through the lens of the HEI-DT framework, it becomes clear how institutions such as Willow University, Hawthorn Technological University, and Birch Technological University navigate the interoperation of external change forces (e.g., regional economic shifts, declining local industries, and global competition) and institutional enabling constraints (e.g., strategy, resources, and stakeholder relationships) to position themselves as key agents within their respective ecosystems. These findings provide a foundation for rethinking higher education governance and strategy, with implications for practice, policy, and theory, which are discussed below. While the HEI-DT framework has not yet been tested in other settings, its development and deployment in this research represent a methodological advance, offering a tool for future studies to systematically explore the dynamics of digital transformation in higher education, and potentially in other complex organisational environments.

7.4.1 Contribution of the Higher Education Institution Digital Transformation Conceptual Framework

The HEI-DT framework contributes to the discourse on digital transformation in higher education in several ways. First, it provides a processual and staged view of HEI digital transformation by capturing a range of critical organisational and digital-related change domains, from external drivers to institutional outcomes. Second, it recognises dynamic feedback loops, emphasising the iterative, ongoing nature of organisational transformation. Third, the framework provides a balanced perspective, accounting for both enablers and constraints, and considering both positive and negative impacts of change. Finally, it is context-sensitive, enabling it to be tailored to the particular challenges and societal roles of higher education institutions. Collectively, these features position the HEI-DT framework as a robust tool for understanding digital transformation in higher education and provide a practical foundation for further research in this area.

7.5 Contribution to Policy

This study identifies state higher education policy, a Type II Exogenous Gradual Change force, as a key influence on Irish HEI digital transformation. Policy acts as a mechanism by which systemic reconfiguration is initiated and guided within a controlled environment, with external factors such as funding structures and policy mandates serving as levers to influence the trajectories of HEI change (HEA, 2023b). For example, the IoT-to-TU mergers demonstrate how coordinated government intervention can facilitate gradual, sector-wide reconfiguration, situating policy as a pivotal determinant on the evolution of higher/tertiary education in Ireland. However, the findings indicate that when policy is not supported by sufficient investment, it leads to piecemeal and short-term approaches to digitalisation—often shaped more by vendor influence than by institutional need (Schneckenberg, 2009; Vicente *et al.*, 2020).

The study also critiques the sector's reliance on managerialist approaches to quantitative performance measurement in higher education institutions, raising significant concerns about their impact on educational values, institutional culture, and stakeholder experiences. While performance metrics can provide valuable insights into institutional effectiveness, an overemphasis on quantification risks undermining HEIs' core mission (Kallio *et al.*, 2016). The findings further underscore the importance of regional differentiation in policy design.

Irish HEIs must navigate tensions between their regional development roles and the state's globalised human capital development ambitions (Pinheiro *et al.*, 2012). Addressing this dual focus in funding and evaluation frameworks is essential for enabling HEIs to meet both regional and national priorities.

7.5.1 Policy Recommendations

The evidence presented in this study underscores the limitations of the prevailing managerialist doxa in the governance and performance management of Irish higher education institutions, particularly in the context of digital transformation. The dominance of quantitative performance metrics and a narrow focus on external accountability often undermines Irish HEIs' broader educational and societal missions, and constrains the realisation of public value (see Section 6.4.5). The findings indicate that sustained digital transformation in higher education cannot be achieved through fragmented, vendor-driven solutionism, or through insufficiently resourced top-down policy mandates. Instead, policy must recognise the heterogeneity of Irish HEIs and the varied regional ecologies within which they operate (Pinheiro *et al.*, 2012). In this respect, the study aligns with international evidence—such as the Dutch 'Quality Agreements' (Jongbloed *et al.*, 2020)—which highlights the value of 'horizontal accountability', where institutions engage meaningfully with students, staff, and regional stakeholders, rather than being primarily oriented towards state-imposed performance targets. A central recommendation emerging from this analysis is the need for a paradigmatic shift in policy design: from vertical accountability (to funding bodies and the state) towards horizontal accountability (to regional stakeholders, students, and other stakeholders) (see Section 6.4.5). This would enable HEIs to balance efficiency (utilitarian outcomes) with societal good (deontological outcomes).

While HEI digital transformation is important, it should be understood as one component of a holistic approach to advancing the goal of higher education institute sustainability in a rapidly changing world. Safeguarding institutional legitimacy, academic autonomy, and professional values (see Section 6.3.6) emerges as a critical precondition for effective digital transformation. The study demonstrates that when digitalisation initiatives are aligned with academic ethos and professional expertise (see Section 6.4.3), rather than imposed as bureaucratic imperatives, they are more likely to provide education, research, and societal impact. Accordingly, future policy should not only provide for the material conditions of digital transformation but also

ensure that governance arrangements protect the core missions of higher education and the staff who enact them.

To conclude, this study calls for a recalibration of Irish higher education policy towards more holistic, inclusive, and contextually attuned models of digital transformation. Such a shift will require not only institutional and sectoral adaptation, but also a broader rethinking of the relationship between the state, HEIs, and society. This must privilege public value, academic autonomy, and the long-term sustainability of the higher education ecosystem over short-term managerialist imperatives.

7.6 Contribution to Practice

In addition to its more academic contributions, this study offers practical guidance for higher education leaders, managers, academics, and practitioners navigating HEI digital transformation. These contributions are grounded in the HEI-DT conceptual framework developed and operationalised in this thesis, which provides a structured lens for diagnosing institutional context, designing change strategies, and sequencing transformation initiatives.

By applying the HEI-DT framework, practitioners and institutional leaders are equipped to map current organisational capabilities, identify both internal and external drivers of change, and articulate a coherent pathway from existing constraints, situated in the Zone of Current State (ZCS), through scaffolded change processes in the Zone of Proximal Digital Transformation (ZPDT), towards the defined institutional outcomes represented by the Zone of Distal Digital Transformation (ZDDT).

7.6.1 Practice Recommendations

The framework enables a tailored approach, recognising that successful digital transformation requires sensitivity to the specific challenges and opportunities present within each institution. These contributions can inform institutional strategies, support the development of sustainable change processes, and highlight the importance of engaging multiple stakeholders across institutional levels and disciplinary boundaries.

The findings of this study demonstrate that understanding the interaction between Exogenous Sudden Change, Exogenous Gradual Change, and Endogenous Gradual Change events is

essential for effective digital transformation. At the institution level, HEI leaders and managers can develop HEI-specific strategies to mitigate barriers to change, and promote transformation drivers. Notably, the study's findings underscore the absence of Endogenous Sudden Change, highlighting a need for leadership and managership to cultivate internal conditions more conducive to organisation digital transformation. For example, addressing executive leadership and academic staff resistance to change—identified as significant barriers (see Sections 6.3.5-6.3.6)—requires confronting issues like stealth power dynamics (e.g., agenda control and rhetorical collegiality) that perpetuate institutional inertia (O'Connor *et al.*, 2019).

These findings are illuminated and structured by the HEI-DT conceptual framework, which distinguishes three dynamic zones of transformation. In the Zone of Current State (ZCS), change forces—both external (e.g., globalisation, policy changes, technological advancements) and internal (e.g., leadership priorities, institutional strategies)—provide the impetus for transformation. Institutional responses are shaped by enabling constraints, such as existing logics, strategies, and institutional values, which define the boundaries within which adaptive capabilities are activated to engage with change.

Progressing into the Zone of Proximal Digital Transformation (ZPDT), institutions occupy the transitional or proximal space between their current state and desired outcomes. Here, the framework 'connects the dots' between existing capabilities, contextual challenges, and key drivers of digital transformation. This phase is characterised by changes in organisational structure, culture, technology, and operations, supporting institutions as they move closer to their goals. The ZPDT thus reinforces the importance of evaluating readiness for change and absorptive capacity for new technologies and practices (Matt *et al.*, 2015). Operating within the ZPDT allows HEIs to prioritise and sequence transformation initiatives according to their current capabilities and the priority change drivers, ensuring a sustainable and manageable approach to digital transformation (Vial, 2019). The ZPDT also acknowledges the ongoing turbulent of organisational dynamics (Vaill, 1996) and aligns with the framework's emphasis on developing critical capabilities as scaffolding to maintain institutional equilibrium (Dawson, 2003; Hanelt *et al.*, 2021; Tsoukas & Chia, 2002).

The Zone of Distal Digital Transformation (ZDDT) represents the institution's improvement horizon: the advanced outcomes and capabilities achievable through sustained development. While the ZPDT focuses on short-term progress, the ZDDT guides longer-term strategic direction and maturity (Curley, 2015; Matt *et al.*, 2015). Crucially, as HEIs build new

capabilities in the ZPDT, previously distant goals in the ZDDT become accessible, creating a continuous cycle of development and transformation (Vaill, 1996).

Leadership practices focused on symbolic compliance rather than meaningful action must be replaced with strategies that prioritise open communication, staff involvement, and collaborative decision-making. This study also emphasises the importance of leveraging regional engagement as a driver of sustainability and transformation. HEIs such as Hawthorn Technological University and Rowan Technological University exemplify how digital transformation can enhance regional development through skills development, improved accessibility using digital technologies, and strategically engaging in local social and economic ecosystems. Additionally, the study highlights the critical role of informal peer networks within HEIs. For instance, peers that collaborate on developing digital skills demonstrate how these networks act as enabling constraints that complement formal digital transformation initiatives (Brunetti *et al.*, 2020). Such informal networks can drive innovation from within while supporting broader institutional goals.

Building on Biesta's (2015) concept of a renewed academic professionalism rooted in democratic participation, autonomy, and civic responsibility, the researcher recommends establishing formal inter-institutional consultation mechanisms, such as joint task forces, to facilitate collaboration between academic managers and faculty on digital transformation initiatives. Winter (2009) emphasises the importance of mutual understanding in addressing tensions between managerialist governmentalities and academic autonomy. By adopting a values-based approach to organisational change, Irish HEIs can align digital transformation initiatives with the professional values and agency of academics. This involves not only addressing bureaucratic practices but also reimagining the purpose of education for professional autonomy, public good, and societal benefit (Biesta, 2015). This change would create the conditions for effective HEI digital transformation while respecting the professional identities of academics.

To reclaim professional identity in the digital era, Irish HEIs should take deliberative steps to involve academic staff as active partners in the co-design of digital transformation initiatives. By integrating the perspectives and expertise of faculty, institutions can ensure that digital efforts are both relevant and responsive to the realities of academic work. Collaborative processes—where academics and institutional leaders jointly develop and implement digital strategies—not only foster a sense of shared ownership but also help to address longstanding

concerns about professional autonomy. Open dialogue and mutual understanding between academics and administrators are essential to bridge the gap between institutional goals and academic values, while aligning digital tools and technologies with pedagogical and research priorities further reinforces these values in practice. A values-based approach to co-design builds trust, reduces resistance to change, and promotes alignment between HEIs' evolving needs and the professional identities of those who work within them.

7.7 Summary

The contributions and recommendations discussed above advance the discourse on digital transformation in Irish higher education. They address systemic barriers through policy reform, and by tackling cultural challenges through evidence-informed changes in academic and administrative practice. Drawing on the principles of critical realism, this approach recognises the importance of understanding the deeper structures and mechanisms that influence digital transformation, rather than focusing solely on observable practices.

The recommendations move beyond narrow, performance-driven accountability frameworks, advocating for approaches that recognise the diversity and unique missions of Irish HEIs. By encouraging collaboration, openness to innovation, and ongoing professional development, they help to build institutional cultures that are adaptable and responsive. Aligning digital strategies with core academic values and empowering academic staff as partners ensures transformation is both relevant and sustainable. Through appropriate investment, policy reform, empowerment of staff, and more holistic evaluation, the sector can move beyond managerialist paradigms, creating the conditions for meaningful, sustainable, and equitable digital transformation that aligns with the societal missions of Irish higher education.

7.8 Delimitations and Limitations

Certain delimitations (see Section 4.8) were incorporated into this study's research design. Other delimitations not mentioned already include additional practical constraints and contextual factors that may have influenced the research process and outcomes, including the research time horizon, the single researcher's capacity to undertake the work to a high standard in an efficient and timely manner, as well as scope and scale considerations.

However, several limitations specific to this study warrant acknowledgement. First, the COVID-19 pandemic disrupted the planned ethnographic study of academics undergoing digital transformation in an Irish HEI, as social distancing measures prevented in-person observation. Ethnography remains valuable for capturing lived experiences, informal adaptations, and the emotional dimensions of digital transformation (Leonardi & Barley, 2010; Orlikowski, 2007). While the shift to video-mediated interviews facilitated scheduling, improved participation rates, and enhanced data capture accuracy, it also introduced technical challenges for some participants who were unfamiliar with the software. Nevertheless, this format proved effective and represented a small-scale digital transformation in the research process itself.

Another limitation concerns participant selection. Participants were purposefully selected to represent a managerial perspective on digital transformation in Irish HEIs, as this group is under-researched but critical to institutional operations (see Section 2.3.1). However, the emphasis on managerial perspectives excluded other stakeholders, such as non-managerial staff and students, whose perspectives could offer valuable insights. Future research should incorporate a more diverse range of stakeholders to provide a holistic view of digital transformation in higher education. As Bond *et al.* (2018) note, stakeholder perspectives in higher education can vary widely, and small studies may not capture this diversity adequately.

The reliance on self-reported data in the survey may also introduce bias, as participants could present themselves or their institutions in a more favourable light. To address this, bias reduction strategies such as triangulation and critical reflection during data analysis were employed (see Section 4.6). Researcher positionality is another important consideration. As an insider researcher and education manager in an Irish university research institute, my professional background may have influenced data interpretation. To mitigate this, I maintained a reflective journal, engaged in peer debriefing, and acknowledged my dual role throughout the research process (see Section 4.3).

Additionally, the HEI-DT conceptual framework developed for this study is complex and has not yet been tested in other settings. While it offers a fresh perspective on institutional digital transformation, future research is needed to refine and validate the framework in broader higher education contexts.

There are four factors to consider when critically engaging with the HEI-DT conceptual framework. Firstly, the conceptual framework was designed to address specific research themes and gaps, and to answer particular research questions. A limitation may be that it does not capture all the relevant factors and considerations that shape digital transformation in HEIs, despite the extensive work undertaken in the literature review (Vial, 2019). Secondly, the framework does not explicitly address the potential risks and unintended consequences of digital transformation in HEIs, such as the ethical implications of data collection, use, and security, the impact on academic labour and working conditions, or the potential for digital divides and inequalities (Selwyn, 2022). Thirdly, the conceptual framework was developed using literature and validation insights available during the research time horizon (2021-2023). Given the rapid evolution of digital technologies in this timeframe, the framework required regular updates to incorporate new research findings and maintain its relevance. This aligns with Vial's (2019) observation that digital transformation frameworks need continuous refinement to reflect the dynamic nature of the field. Finally, the framework was designed specifically for the target population in the Irish higher education context, and when applied to other national or institutional settings, sensitivity to its applicability to those contexts is advised.

Beyond the conceptual framework itself, the broader research context also imposes certain limitations. Ireland's small higher education sector limits the generalisability of this study's findings. Instead, the study prioritises transferability, allowing researchers to assess the applicability of findings in their own settings (Creswell & Creswell, 2018). By documenting the research process rigorously, this study contributes to broader theory development through replication logic, as suggested by Yin (2009). The HEI-DT framework and methodology offer valuable insights for understanding digital transformation in comparable higher education systems.

7.9 Future Research Agenda

This study has shown that several opportunities exist to advance understanding of digital transformation in higher education. The findings strongly indicate the need to further explore and expand contemporary theory, policy, and practice to better explicate the dynamics of 21st-century higher education.

First, future research should explore alternative organisational change typologies, such as episodic versus continuous change models (Weick & Quinn, 1999) or Kezar's (2018) multiple theories approach, to better understand the complexities of digital transformation in higher education institutions. In addition, established organisational theories like Resource Dependence Theory and Neo-Institutionalism require revision to address the unique properties of digital transformation, including boundary transcendence, malleability, and interoperability. Integrating contemporary 'born digital' theories, such as postdigitalism (Knox, 2019; Selwyn & Jandrić, 2020), would further enhance our understanding of the contested and evolving nature of digital transformation in HEIs.

A further priority is testing and refining the HEI-DT conceptual framework developed for this study. Applying the framework to different higher education systems would help validate its utility and transferability. Comparative or benchmark studies using the HEI-DT framework across European and Anglosphere higher education systems would be particularly valuable, as these systems share some characteristics with Ireland but also exhibit sufficient variation to provide meaningful contexts for comparison.

In terms of methodology, future research should employ digital ethnography and grounded theory approaches to capture the lived experiences of stakeholders involved in higher education digital transformation. Particular attention should be given to academic staff resistance, student expectations, and policymakers' influence, with a focus on documenting informal adaptations, emotional responses, and cultural dynamics that are often overlooked in formal assessments. Longitudinal ethnographic studies would be especially valuable in revealing how stakeholders navigate and adapt to technological change over time, providing deeper insights into the evolving dynamics of digital transformation.

Finally, further research should investigate how digital transformation in higher education institutions supports regional economic and social development while simultaneously addressing the demands of globalisation. Special attention should be given to the unique role of HEIs in smaller systems, where institutions play a critical 'civic university' role in supporting local economic and social systems. The higher education systems of Northern European countries share similarities with Ireland in terms of institutional autonomy, size, and public funding models (Eurydice, 2023), as well as comparable approaches to quality assurance and digital innovation (Vukasovic *et al.*, 2022). Additionally, Portugal and Malta offer interesting comparisons as smaller nations that have recently undergone rapid higher education

modernisation and digital transformation initiatives, leveraging higher education as a driver of economic development (European Commission, 2022).

7.10 Closing Thoughts

This study captures a pivotal moment for Irish higher education, defined by the impact of technological advancements within a glocalised tertiary ecosystem. The findings of this study reveal the complex and often contradictory role of digital transformation within the Irish higher education system. While digital technologies offer opportunities for innovation, regional engagement, and operational improvement, their implementation is constrained by systemic barriers, including resource limitations, cultural resistance, and managerialist governance practices. These challenges highlight the difficulties Irish HEIs face in balancing competing regional and global priorities, as well as their broader societal responsibilities. Consequently, although digital transformation has the potential to drive meaningful change, its efficacy remains uneven across HEIs. The findings suggest that, in many cases, digital initiatives are shaped more by external forces, such as funding constraints and policy mandates, than by internal strategic vision. These dynamics risk reinforcing existing institutional inertia, limiting the capacity for transformative change and reducing digital transformation to a series of fragmented, compliance-driven endeavours.

Moreover, the reliance on digital technologies as a solution to systemic challenges often obscures deeper structural issues, such as underfunding, power asymmetries, and the erosion of academic autonomy. Without addressing these root causes, digital transformation risks becoming a mechanism for reinforcing existing hierarchies and inefficiencies rather than a driver of innovation and sustainability. This study highlights the need for a more coherent and mission-driven approach to digital transformation in Irish HEIs, such as integrating stakeholder feedback mechanisms and aligning digital initiatives closely with institutional missions. While some progress is evident, the overall landscape is still marked by uncertainty, competing priorities, and persistent tensions. Digital transformation in higher education will only succeed if it addresses both technical challenges and the human dimensions of change. These findings serve as a cautionary reminder that digital transformation, if poorly aligned with institutional missions and stakeholder needs, risks falling short of its potential to deliver lasting and equitable change.

Bibliography

- Abimbola, S., Patel, B., Peiris, D., Patel, A., Harris, M., Usherwood, T. and Greenhalgh, T. (2019). The NASSS framework for ex-post theorisation of technology-supported change in healthcare: Worked example of the TORPEDO programme. *BMC Medicine*, 17.
- Acar, O. A., Tarakci, M. and van Knippenberg, D. (2019). Creativity and innovation under constraints: A cross-disciplinary integrative review. *Journal of Management*, 45(1), pp.96–121.
- Ackroyd, S., Hughes, J. A. and Soothill, K. (2007). *Organizations and Social Analysis: An Introduction to Sociology of Organizations*. Routledge.
- Adams, R. J., Smart, P. and Huff, A. S. (2017). Shades of grey: Guidelines for working with the grey literature in systematic reviews for management and organizational studies. *International Journal of Management Reviews*, 19(4), pp.432–454.
- Adedoyin, O. B. and Soykan, E. (2023). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments*, 31(2), pp.863–875.
- Aditya, B. R., Ferdiana, R. and Kusumawardani, S.S. (2022a). A Barrier Diagnostic Framework in the Process of Digital Transformation in Higher Education Institutions. *Journal of Applied Research in Higher Education*, 14(2), pp.749–761.
- Agarwal, H., Bommadevara, N. and Weinberg, A. (2013). Using a Plan-Build-Run organizational model to drive IT infrastructure objectives. *McKinsey Quarterly*, December 2013.
- Akins, A., Crawford, J. and Mathis, C. (2019). Exploring the digital transformation of higher education: drivers and barriers. *Journal of Educational Leadership and Management*, 17(3), pp.23–34.
- Al-Hail, M., Zguir, M.F. and Koç, M. (2023). University students' and educators' perceptions on the use of digital and social media platforms: a sentiment analysis and a multi-country review. *iScience*, 26(8).

- Alcoff, L. (1991). The Problem of Speaking for Others. *Cultural Critique*, (20), pp.5–32.
- Alenezi, M. (2021). Deep dive into digital transformation in higher education institutions. *Education Sciences*, 11(12), p.770.
- Alenezi, M., Wardat, S. and Akour, M. (2023). The need of integrating digital education in higher education: challenges and opportunities. *Sustainability*, 15(6), 4782.
- Allen, I. E., Seaman, J. and Seaman, J. (2019). *Grade Increase: Tracking Distance Education in the United States*. Babson Survey Research Group.
- Allsopp, D., Hohlfeld, T. and Kemker, K., (2007). *Technology Integration Matrix*. Florida Center for Instructional Technology, University of South Florida. Available at: <https://fcit.usf.edu/matrix/>
- Alon, A. (2012). Complexity and Dual Institutionalality: The Case of IFRS Adoption in Russia. *Corporate Governance an International Review*, 21(1), pp.42–57.
- Alshoubaki, W. and Harris, M. (2020). Jordanian Public Expenditures: Dynamics, Incrementalism, and Punctuated Equilibrium. *Global Encyclopedia of Public Administration, Public Policy, and Governance*, pp.1–9.
- Altbach, P. G. (2007). Globalization and the University: Realities in an Unequal World. In: Forest, J. J. F. and Altbach, P. G. (eds) *International Handbook of Higher Education*. Dordrecht: Springer Netherlands. pp.121–139.
- Altbach, P. G. (2015). The Costs And Benefits Of World-Class Universities. *International Higher Education*, (33).
- Altbach, P. G. (2016). *Global perspectives on higher education*. Johns Hopkins University Press.
- Altbach, P. G. and De Wit, H. (2020). Are we at a transformative moment for online learning? [online]. *University World News*, 2 May 2020. Available from: <https://www.universityworldnews.com/post.php?story=20200427120502132>.

- Altbach, P. G. and De Wit, H. (2023). In creating new technological universities, did we make a mistake? [online]. *The Irish Times*, 5 September 2023. Available from: <https://www.irishtimes.com/ireland/education/2023/09/05/in-creating-new-technological-universities-did-we-make-a-mistake/>.
- Altbach, P. G. and Knight, J. (2007). The internationalization of higher education: Motivations and realities. *Journal of Studies in International Education*, 11(3-4), pp.290–305.
- Altbach, P. G., De Wit, H. and Woldegiyorgis, A. (2021). *Public vs. private participation in higher education: Realities and debates*. France: UNESCO.
- Altbach, P. G., Reisberg, L. and Rumbley, L. E. (2009). Trends in Global Higher Education: Tracking an Academic Revolution A Report Prepared for the UNESCO 2009 World Conference on Higher Education. In: *UNESCO 2009 World Conference on Higher Education*, p.278.
- Ames, M.G. (2015). Charismatic Technology. *Aarhus Series on Human Centered Computing*, 1(1), p.12.
- Amit, R. and Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, 22(6–7), pp.493–520.
- Anderson, D. and Ackerman-Anderson, L.S. (2010). *Beyond Change Management: How to Achieve Breakthrough Results Through Conscious Change Leadership*. : ed. San Francisco: Pfeiffer.
- Anderson, P. (1999). Complexity theory and organization science. *Organization Science*, 10(3), pp.216–232.
- Andriole, S. J. (2017). Five myths about digital transformation. *MIT Sloan Management Review*, 58, pp.19–22.
- Anfara, V. A. and Mertz, N. T. (eds) (2006). *Theoretical frameworks in qualitative research*. SAGE Publications, Inc.

- Antunes, M.E., Upton, L., Traça, D., Becker, M.P. and Heitor, M. (2021). *Deloitte: The Future of Higher Education* [online]. Deloitte Center for Higher Education Excellence.
- Appadurai, A. (1996). *Modernity at large: Cultural dimensions of globalization*. University of Minnesota Press.
- Arah, O. A., Klazinga, N. S., Delnoij, D. M., ten Asbroek, A. H. and Custers, T. (2003). Conceptual frameworks for health systems performance: a quest for effectiveness, quality, and improvement. *International journal for quality in health care: journal of the International Society for Quality in Health Care*, 15(5), pp.377–398.
- Archer, M. S. (1995). *Realist Social Theory: The Morphogenetic Approach*. Cambridge University Press.
- Australasian Council on Open, Distance and e-Learning. (2019). *ACODE TEL Framework: A Template for Higher Education Institutions* [online]. Available from: <https://acode.edu.au/wp-content/uploads/2023/11/ACODE-TEL-Framework-Pilot-Version.pdf>.
- Ball, S. J. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, 18(2), pp.215–228.
- Ball, S. J. (2004). Education For Sale! The Commodification of Everything?. *King's Annual Education Lecture 2004*, p.30.
- Ball, S. J. (2007). *Education plc: understanding private sector participation in public sector education*. London: Routledge.
- Ball, S. J. (2012). Performativity, commodification, and commitment: An I-Spy guide to the neoliberal university. *British Journal of Educational Studies*, 60(1), pp.17–28.
- Ball, S. J. (2016). Neoliberal education? Confronting the slouching beast. *Policy Futures in Education*, 14(8), pp.1046–1059.

- Ball, S. J., Maguire, M., Braun, A. and Hoskins, K. (2011). Policy Actors: Doing Policy Work in Schools. *Discourse: Studies in the Cultural Politics of Education*, 32(4), pp.625–639.
- Becker, J., Knackstedt, R. and Pöppelbuß, J. (2009). Developing maturity models for IT management. *Business and Information Systems Engineering*, 1(3), pp.213–222.
- Beetham, H., & Sharpe, R. (eds) (2019). *Rethinking Pedagogy for a Digital Age: Principles and Practices of Design*. 3rd ed. Routledge. <https://doi.org/10.4324/9781351252805>
- Bekkhus, R. (2016). Do KPIs used by CIOs decelerate digital business transformation? The case of ITIL. *Digital Innovation, Technology, and Strategy Conference*. Dublin, Ireland.
- Benavides, L. M. C., Tamayo Arias, J. A., Arango Serna, M. D., Branch Bedoya, J. W. and Burgos, D. (2020). Digital transformation in higher education institutions: A systematic literature review. *Sensors*, 20(11), p.3291.
- Benington, J. and Moore, M. (eds) (2011). *Public Value*. London: Macmillan Education UK.
- Benitez, J., Ray, G. and Henseler, J. (2018). Impact of information technology infrastructure flexibility on mergers and acquisitions. *MIS Quarterly*, 42(1), pp.25–43.
- Benitez, J., Ruiz, L., Castillo, A. and Llorens-Montes, F. J. (2022). How Corporate Digital Transformation Influences Value Creation: The Role of Digital Distinctiveness. *Information and Management*, 59(2), p.103545.
- Benneworth, P. and Jongbloed, B.W. (2010). Who matters to universities? A stakeholder perspective on humanities, arts and social sciences valorisation. *Higher Education*, 59(5), pp.567–588.
- Bensimon, E. M. (2007). The underrepresentation of women in academic leadership. *New Directions for Higher Education*, 2007(119), pp.1–12.
- BERA (2018). Ethical Guidelines for Educational Research. *British Educational Research Association*.

- Berghaus, S. and Back, A. (2016). Stages in Digital Business Transformation: Results of an Empirical Maturity Study. In: *Mediterranean Conference on Information Systems (MCIS).Proceedings*, pp. p.1–17.
- Berman, E. P. (2012). *Creating the Market University: How Academic Science Became an Economic Engine*. Princeton University Press.
- Berman, S. J. and Marshall, A. (2014). The next digital transformation: From an individual-centered to an everyone-to-everyone economy. *Strategy and Leadership*, 42(5), pp.9–17.
- Bernard, H. R. (2006). *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. Altamira Press.
- Besson, P. and Rowe, F. (2012). Strategizing information systems-enabled organizational transformation: A transdisciplinary review and new directions. *Journal of Strategic Information Systems*, 21(2), pp.103–124.
- Beveridge, W. (1942). *Social Insurance and Allied Services. (The Beveridge Report)*.
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A. and Venkatraman, N. (2013). Digital Business Strategy: Toward a Next Generation of Insights. *MIS Quarterly*, 37(2), pp.471–482.
- Bhaskar, R. (1975). *A Realist Theory of Science*. Leeds: Leeds Books.
- Bhaskar, R. and Danermark, B. (2006). Metatheory, Interdisciplinarity and Disability Research: A Critical Realist Perspective. *Scandinavian Journal of Disability Research*, 8(4), pp.278–297.
- Biber, D. (2015). *Variation Across Speech and Writing*. Cambridge University Press.
- Bien, J. and Arena, M. (2017). Complexity leadership: Enabling people and organizations for adaptability. *Organizational Dynamics*, 46(1), pp.9–20.
- Biesta, G. (2005). Against learning Reclaiming a language for education in an age of learning. *Nordisk Pedagogik*, 25, pp.54–66.

- Biesta, G. (2013). Interrupting the politics of learning. *Power and Education*, 5(1), pp.4–15.
- Biesta, G. (2015). *Good education in an age of measurement: Ethics, politics, democracy*. London: Routledge.
- Biesta, G. and Säfström, C.A. (2023). *The New Publicness of Education: Democratic Possibilities After the Critique of Neo-Liberalism*. London: Routledge.
- Biesta, G., Allan, J. and Edwards, R. (2014). *Making a Difference in Theory: The Theory Question in Education and the Education Question in Theory*. Routledge.
- Blackmore, J. (1999). *Troubling women: feminism, leadership and educational change*. Buckingham: Open University Press.
- Blackmore, J. (2013). A Feminist Critical Perspective on Educational Leadership. *International Journal for Leadership in Education*, 16, pp.139–154.
- Blackmore, J. and Sachs, J. (2003). ‘Zealotry or Nostalgic Regret’? Women Leaders in Technical and Further Education in Australia: Agents of Change, Entrepreneurial Educators or Corporate Citizens? *Gender, Work and Organization*, 10(4), pp.478–503.
- Blackmore, P. and Kandiko, C. B. (2011). *Strategic Curriculum Change: Global Trends in Universities*. Routledge.
- Bloomberg, J. (2018). Digitization, Digitalization, and digital transformation: Confuse them at your peril [online]. *Forbes*, 29 April 2018. Available from: <https://www.forbes.com/sites/jasonbloomberg/2018/04/29/digitization-digitalization-and-digital-transformation-confuse-them-at-your-peril/?sh=3ed0f88d2f2c>.
- Boer, H. F., Enders, J. and Schimank, U. (2017). On the way towards new public management? The governance of university systems in England, the Netherlands, Austria, and Germany. *Governance of Higher Education: Global Perspectives*, 1, 113–140.

- Bokor, J. (2012). EY University of the future [online]. Australia: EY. Available from: <https://www.bu.edu/edtechcouncil/files/2012/10/Ernst-Young-Higher-University-of-the-Future-2012.pdf>.
- Bolden, R., Gosling, O'Brien, A., Peters, K., Ryan, M., Haslam, A., Longworth, L., Davidovic, A. and Winklemann, K. (2012). *Academic leadership: changing conceptions, identities and experiences in UK higher education : summary report*. London: Leadership Foundation for Higher Education.
- Bond, M., Buntins, K., Bedenlier, S., Zawacki-Richter, O. and Kerres, M. (2020). Mapping research in student engagement and educational technology in higher education: a systematic evidence map. *International Journal of Educational Technology in Higher Education*, 17(1), p.2.
- Bond, M., Marín, V.I., Dolch, C., Bedenlier, S. and Zawacki-Richter, O. (2018). Digital transformation in German higher education: student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, 15(1), p.48.
- Bonvillian, W. B. and Singer, S. R. (2013). The online challenge to higher education. *Issues in Science and Technology*, 29(4), 23–30.
- Botha, C., Schachtebeck, C., Nieuwenhuizen, C. and Bossink, B. (2020). A Framework for Digital Transformation And Business Model Innovation. *Management : Journal of Contemporary Management Issues*, 25, pp.111–132.
- Bouma, G. D. (1998). Distinguishing institutions and organisations in social change. *Journal of Sociology*, 34(3), pp.232–245.
- Bourdieu, P. (1977). *Outline of a theory of practice*. (R. Nice, Trans.).
- Bourdieu, P. (1980). *Distinction: A social critique of the judgment of taste* (R. Nice, Trans.).
- Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education*. pp.241–258. New York, NY: Greenwood.
- Bourdieu, P. (1988). *Homo Academicus* (P. Collier, Trans.).

Bourdieu, P. (1989). Social space and symbolic power. *Sociological Theory*, 7(1), pp.14–25.

Bourdieu, P. (1990). *The logic of practice*. Stanford University Press.

Bourdieu, P. (1992). *Language and symbolic power*. Cambridge, UK: Polity Press

Bourdieu, P. (1998). *Acts of resistance against the tyranny of the market*. London: Polity Press.

Bourdieu, P. and Passeron, J.-C. (2000). *Reproduction in education, society and culture*. Nice, R. trans., reprinted. London: SAGE Publications Ltd.

Bozkurt, A., Jung, I., Xiao, J., Vladimirschi, V. and Schuwer, R. (2020). A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, 15(1), pp.1–126.

Bradburn, N. M., Sudman, S. and Wansink, B. (2004). *Asking Questions: The Definitive Guide to Questionnaire Design – For Market Research, Political Polls, and Social and Health Questionnaires*. John Wiley and Sons.

Branković, J. and Cantwell, B. (2022). Making sense of change in higher education research: Exploring The intersection of science and policy. *Higher Education*, 84(6), pp.1207–1226.

Braun, V. and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), pp.77–101.

Braun, V. and Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), pp.589–597.

Braun, V. and Clarke, V. (2021). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, 21(1), pp.37–47.

Brazzill, J. (2020). Online education and the impact of COVID-19: Lessons learned for the future of higher education. *Journal of Higher Education Policy and Practice*, 33(4), pp.15–22.

- Brennan, J. and Teichler, U. (2008). The future of higher education and of higher education research: Higher education looking forward: an introduction. *Higher Education*, 56(3), pp.259–264.
- Brennan, J., Cochrane, A. and Williams, R. (2013). *The University in its Place: Social and Cultural Perspectives on Higher Education*. Springer.
- Brennen, S., Kreiss, D. and Meraz, S. (2019). Digital media and the transformation of news and journalism. *The International Encyclopedia of Journalism Studies*, pp.1–13.
- Brookfield, S. D. (2017). What is Critically Reflective Teaching?. In: *Becoming a Critically Reflective Teacher*. : ed. San Francisco, CA, USA: Jossey-Bass, p.19.
- Brooks, A. C. (2000). Is There a Dark Side to Government Support for Nonprofits?. *Public Administration Review*, 60(3), pp.211–218.
- Brooks, C. and McCormack, M. (2020). Driving digital transformation in higher education. ECAR research report. *ECAR*.
- Brooks, J., McCluskey, S., Turley, E. and King, N. (2015). The Utility of Template Analysis in Qualitative Psychology Research. *Qualitative Research in Psychology*, 12(2), pp.202–222.
- Broucker, B. and De Wit, K. (2013). New public management in higher education. In J. Huisman, H. de Boer, D. D. Dill, and M. Souto-Otero (eds), *The Palgrave International Handbook of Higher Education Policy and Governance*, pp.57–75. Palgrave Macmillan.
- Broucker, B., De Wit, K. and Verhoeven, J. C. (2017). Higher education for public value: The role of public management in higher education. *Public Management Review*, 19(3), pp.301–319.
- Bruner, J. S. (2006). *In Search of Pedagogy Volume I: The selected works of Jerome S. Bruner*. Oxon, UK: Routledge.

- Brunetti, F., Matt, D. T., Bonfanti, A., Longhi, A. D., Pedrini, G. and Orzes, G. (2020). Digital transformation challenges: strategies emerging from a multi-stakeholder approach. *The TQM Journal*, 32(4), pp.697–724.
- Brunson, L., Lauzier-Jobin, F., Olson, B. and Côté, L. (2023). Seven key insights from critical realism and their implications for ecological thinking and action in community psychology. *Journal of Community Psychology*, 5 June 2023, p.21.
- Buchanan, D., Fitzgerald, L., Ketley, D., Gollop, R., Jones, J. L., Saint Lamont, S., Neath, A. and Whitby, E. (2013). No going back: A review of the literature on sustaining organizational change. *International Journal of Management Reviews*, 15(4), pp.394–410.
- Buckley, J., Seery, N., Power, J. and Canty, D. (2021). Conceptualizing a transformative pedagogy for engineering education. *Journal of Engineering Education*, 110(1), pp.1–20.
- Bucy, M., Finlayson, A., Kelly, G. and Moye, C. (2021). The state of digital transformation. *McKinsey Quarterly*, 2021, pp.1–9.
- Bucy, M., Schaninger, B., VanAkin, K. and Weddle, B. (2021). *Losing from Day One: Why Even Successful Transformations Fall Short*. McKinsey & Company.
- Bulger, M., Mayer, R. E., Metzger, M. J. and Blumenfeld, P. C. (2014). Knowledge and processes that predict proficiency in digital literacy. *Reading and Writing*, 27(9), pp.1567–1583.
- Burnes, B. (2008). *Managing change: a strategic approach to organisational dynamics*. 4th ed. Harlow: Prentice Hall.
- Bush, T. (2008). From management to leadership: Semantic or meaningful change? *Educational Management Administration and Leadership*, 36(2), pp.271–288.
- By, R. T. (2005). Organisational change management: A critical review. *Journal of Change Management*, 5(4), pp.369–380.

- Byrne, D. (2022). A worked example of Braun and Clarke’s approach to reflexive thematic analysis. *Quality and Quantity*, 56(3), pp.1391–1412.
- Caballero, A. and Gallagher, S. (2021). *Post-Covid, universities must embrace work-integrated learning* [online]. *Times Higher Education* [online]. Available from: <https://www.timeshighereducation.com/blog/post-covid-universities-must-embrace-work-integrated-learning>.
- Çağlar, A. and Glick Schiller, N. (2011). Introduction: Migrants and cities. In A. Çağlar and N. Glick Schiller (eds), *Locating migration: Rescaling cities and migrants*, (pp. p.1–22).
- Cameron, R. (2011). Mixed Methods Research: The Five Ps Framework. *Electronic Journal of Business Research Methods*, 9.
- Cano, E., Fernandez, M. and Garcia, M. (2020). Digital transformation in higher education: Methodologies and case studies. *Sustainability*, 12(7), p.2710.
- Capgemini. (2021). The digital transformation of higher education: A comprehensive study. *Capgemini Research Institute*.
- Carroll, C., Booth, A. and Cooper, K. (2011). A worked example of ‘best fit’ framework synthesis: A systematic review of views concerning the taking of some potential chemopreventive agents. *BMC medical research methodology*, 11, p.29.
- Carroll, C., Booth, A., Leaviss, J. (2013). “Best fit” framework synthesis: refining the method. *BMC Med Res Methodol* 13, p.37.
- Casanova, D., Moreira, A. and Costa, N. (2011). Technology Enhanced Learning in Higher Education: results from the design of a quality evaluation framework. *The : International Conference on Education and Educational Psychology 2011*, 29, pp.893–902.
- Cassells, P. (2016). *Investing In National Ambition: A Strategy for Funding Higher Education. Report of the Expert Group on Future Funding for Higher Education* [online]. Dublin, Ireland: Higher Education Authority. Available from:

<https://hea.ie/assets/uploads/2016/07/Investing-in-National-Ambition-A-Strategy-for-Funding-Higher-Education.pdf>.

- Castañeda, L. and Selwyn, N. (2018). More than tools? Making sense of the ongoing digitizations of higher education. *International Journal of Educational Technology in Higher Education*, 15(1), p.22.
- Castells, M. (1999). Grassrooting the space of flows. *Urban Geography*, 20(4), pp.294–302.
- Castro Benavides, L. M., Tamayo Arias, J. A., Burgos, D. and Martens, A. (2022). Measuring digital transformation in higher education institutions – content validity instrument. *Applied Computing and Informatics* [online]. 9 September 2022. Available from: <https://www.emerald.com/insight/content/doi/10.1108/ACI-03-2022-0069/full/html>.
- Chanias, S., Myers, M. D. and Hess, T. (2019). Digital transformation strategy making in pre-digital organizations: The case of a financial services provider. *The Journal of Strategic Information Systems*, 28(1), pp.17–33.
- Cherns, A. (1976). The principles of sociotechnical design. *Human relations*, 29(8), pp.783–792.
- Chia, R. (1999). A ‘rhizomic’ model of organizational change and transformation: Perspective from a metaphysics of change. *British Journal of Management*, 10(3), pp.209–227.
- Christensen, C. M. (2016). Disruptive innovation and the future of higher education. *Harvard Business Review*, 94(6), pp.1–8.
- Christensen, C. M. and Eyring, H. J. (2011). *The innovative university: Changing the DNA of higher education from the inside out*. John Wiley and Sons.
- Christensen, C. M., Horn, M. B. and Caldera, L. (2018). *Disrupting class: How disruptive innovation will change the way the world learns*. John Wiley and Sons.
- Christopherson, R. W. and Birkeland, G. H. (2018). *Geosystems: An Introduction to Physical Geography* (10th ed.).

- Cifuentes, L., Alvarez Xochihua, O. and Edwards, J. C. (2011). Learning in Web 2.0 environments: Surface learning and chaos or deep learning and self-regulation? *Quarterly Review of Distance Education*, 12(1), pp.1–21.
- Clancy, P. (2015). *Irish higher education: A comparative perspective*. Institute of Public Administration.
- Clark, B. R. (1983). *The Higher Education System: Academic Organization in Cross-National Perspective*. Berkeley and Los Angeles, CA: University of California Press.
- Clark, B. R. (1997). The modern integration of research activities with teaching and learning. *Journal of Higher Education*, 68(3), pp.241–255.
- Clark, C., Ludgate, A., Fritz, P., Friedman, S., Cluver, M., Galletti, E., Upton, L., Healy, E., Kinsella, D. and Cremin, M.R. (2020). Deloitte Higher education remade by COVID-19: Scenarios for resilient leaders [online]. Deloitte Center for Higher Education Excellence.
- Clark, I. (2018). Review of the role of assessment feedback in student learning. *Higher Education Research and Development*, 37(1), pp.1–14.
- Clark, R. C. and Mayer, R. E. (2011). *E-learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*. 3rd ed. John Wiley & Sons, Inc., San Francisco.
- Clarke, M. (2006). The impact of market forces on higher education in Ireland. *Irish Educational Studies*, 25(1), pp.45–62.
- Clarke, M., Drennan, J., Hyde, A. and Politis, Y. (2018). The impact of austerity on Irish higher education faculty. *Higher Education*, 75(6), pp.1047–1060.
- Clarke, M., Hyde, A. and Drennan, J. (2015). Professional identity in higher education. In M. B. Paulsen (Ed.), *Higher Education: Handbook of Theory and Research*, 341–375. Springer.
- Clegg, S. (2009). Forms of knowing and academic development practice. *Studies in Higher Education*, 34(4), pp.403–416.

- Clement, J. (2017). Digital transformation in higher education: Current state and future directions. *Journal of Higher Education Policy and Management*, 39(1), pp.1–11.
- CMMI Product Team. (2010). *CMMI for Development, Version 1.3* (CMU/SEI-2010-TR-033).
- Coates, H. (2015). Assessment of Learning Outcomes. In: Curaj, A., Deca, L. and Pricopie, R. (eds) *The European Higher Education Area: Between Critical Reflections and Future Policies* [online]. Cham: Springer International Publishing, pp.399–413. Available from: https://doi.org/10.1007/978-3-319-20877-0_26.
- Cohen, E., Nijkamp, P. and van der Wal, N. (2018). Digital transformation requires purposeful leadership. *Journal of Environmental Studies and Sciences*, 9(1), pp.22–26.
- Colley, H., Hodgkinson, P. and Malcolm, J. (2002). *Non-formal learning: mapping the conceptual terrain. A consultation report*. Leeds: Lifelong Learning Institute, University of Leeds.
- Collier, A. (1994). *Critical Realism: An Introduction to Roy Bhaskar's Philosophy*. Routledge.
- Collins, J. (1998). *Good to Great: Why Some Companies Make the Leap... and Others Don't*. Harper Business.
- Connolly, M., James, C. and Fertig, M. (2017). The difference between educational management and educational leadership and the importance of educational responsibility. *Education Management Administration and Leadership*, 45(1), pp.92–108.
- Connor, H. M., Pokorny, M. and Steffens, H. (2019). Academic identity and the challenges of neoliberalism in higher education. *Studies in Higher Education*, 44(12), pp.2045–2061.

- Connor, P. J. (2023). Leadership and governance in higher education: New challenges and opportunities. *Journal of Higher Education Policy and Management*, 45(2), pp.155–170.
- Courtney, S. J. (2013). Corporatised leadership in English schools. *Journal of Educational Administration and History*, 45(2), pp.127–144.
- Courtney, S.J., McGinity, R. and Gunter, H. (eds) (2018). *Educational leadership : theorising professional practice in neoliberal times*. Oxon: Routledge.
- Courtney, S.J. and Gunter, H.M. (2015). Get off my bus! School leaders, vision work and the elimination of teachers. *International Journal of Leadership in Education*, 20 January 2015, pp.1–23.
- Craig, R. (2004). *The Higher Education Managerial Revolution*. Palgrave Macmillan.
- Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., Magni, P. and Lam, S. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning and Teaching*, 3(1), pp.1–20.
- Creswell, J.W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. 3rd ed. London: SAGE Publications Ltd.
- Creswell, J. W. and Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 5th ed. London: SAGE Publications Ltd.
- Creswell, J. W. and Plano Clark, V. L. (2017). *Designing and Conducting Mixed Methods Research*. 3rd ed. London: SAGE Publications Ltd.
- Creswell, J. W. and Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. 4th ed. London: SAGE Publications Ltd.
- Creswell, J. W., Hanson, W. E., Clark Plano, V. L. and Morales, A. (2003). Qualitative research designs: Selection and implementation. *The Counseling Psychologist*, 35(2), pp.236–264.

- Cuban, L. (1988). *The Managerial Imperative and the Practice of Leadership in Schools*. SUNY Press.
- Cukurova, M., Luckin, R. and Clark-Wilson, A. (2018). Creating the golden triangle of evidence-informed education technology with EDUCATE. *British Journal of Educational Technology*, 50(2), pp.490–504.
- Cummings, S., Bridgman, T. and Brown, K. G. (2016). Unfreezing change as three steps: Rethinking Kurt Lewin’s legacy for change management. *Human Relations*, 69(1), pp.33–60.
- Curley, M. (2015). IT Capability Maturity Framework: A business process assessment approach. *Van Haren Publishing*.
- Curley, M., Kenneally, J. and Carcary, M. (2015). IT Capability Maturity Framework (IT-CMF).
- Daenekindt, S. and Huisman, J. (2020). Mapping the spatiality of higher education: A multi--perspective approach. *Higher Education*, 80(6), pp.1065–1082.
- Danermark, B., Ekstrom, M., Jakobsen, L. and Karlsson, J. C. (2002). *Explaining Society: Critical Realism in the Social Sciences*. Routledge.
- Daniel, B. K. (2019). Big data and data science: A critical review of issues for educational research. *British Journal of Educational Technology*, 50(1), pp.101–113.
- Danielsen, Å. G., Foss Hansen, K. and Steen-Johnsen, K. (2022). Digital transformation in the public sector: A case study from Norwegian higher education. *Government Information Quarterly*, 39(4), pp.152—187.
- Davies, J. (2014). Rethinking urban power and the local state: Hegemony, domination and resistance in neoliberal cities. *Urban Studies*, 51(15), pp.3215–3232.
- Dawson, P. (2003). *Understanding Organizational Change: The Contemporary Experience of People at Work*. Sage Publications.

- de Bruin, T., Freeze, R. and Rosemann, M. (2005). Understanding the Main Phases of Developing a Maturity Assessment Model. *Australasian Conference on Information Systems*.
- De Wit, H., Hunter, F., Howard, L. and Egron-Polak, E. (2015). *Internationalisation of higher education*. European Parliament, Committee on Culture and Education.
- Deal, T. E. and Kennedy, A. A. (1982). *Corporate Cultures: The Rites and Rituals of Corporate Life*. Addison-Wesley.
- Dechow, P. M., Hutton, A. P., Kim, J. H. and Sloan, R. G. (2012). Detecting earnings management: A new approach. *Journal of Accounting Research*, 50(2), pp.275–334.
- Deem, R. (1998). ‘New managerialism’ and higher education: The management of performances and cultures in universities in the United Kingdom. *International Studies in Sociology of Education*, 8(1), pp.47–70.
- Deem, R. (2001). Globalisation, New Managerialism, Academic Capitalism and Entrepreneurialism in Universities: Is the local dimension still important?. *Comparative Education*, 37(1), pp.7–20.
- Deem, R. (2004). The Knowledge Worker, the Manager-academic and the Contemporary UK University: New and Old Forms of Public Management?. *Financial Accountability and Management*, 20(2), pp.107–128.
- Deem, R. (2009). Leading and Managing Contemporary UK Universities: Do Excellence and Meritocracy still Prevail over Diversity?. *Higher Education Policy*, 22(1), pp.3–17.
- Deem, R. and Brehony, K. J. (2005). Management as ideology: The case of ‘new managerialism’ in higher education. *Oxford Review of Education*, 31(2), pp.217–235.
- Deem, R., Hillyard, S. and Reed, M. (2007). *Knowledge, Higher Education, and the New Managerialism: The Changing Management of UK Universities*. Oxford University Press.
- Deleuze, G. and Guattari, F. (1991). *What is Philosophy?* (Trans. Hugh Tomlinson and Graham Burchell).

- Demirkan, H., Spohrer, J. C. and Welser, J. J. (2016). Digital innovation and strategic transformation [online]. *IT Professional*, 18(6), pp.14-18. Available from: <http://dx.doi.org/10.1109/MITP.2016.115>.
- Department of Communications, Energy and Natural Resources. (2013). *Doing more with Digital National Digital Strategy for Ireland Phase 1 – Digital Engagement*.
- Department of Education and Skills. (2011). *National Strategy for Higher Education to 2030: Report of the Strategy Group*.
- Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2021).
- Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2022a).
- Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2022b). *Policy Platform: Progressing a Unified Tertiary System for Learning, Skills and Knowledge*, May.
- Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2022c).
- Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2022d). *Funding the Future: Summary of the Department's Policy Response, Funding Higher Education, Reducing the Cost of Education* [online]. 1 May. Available from: <https://www.gov.ie/en/policy-information/49e56-future-funding-in-higher-education/>
- Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2023a). *Funding the Future: Investing in Knowledge and Skills: Ireland's Competitive Advantage*, 1 May.
- Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2023b).

Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2023c). *Statement of Strategy 2023–2025*, 8 December.

Department of Public Expenditure and Reform (DPER). (2016).

Department of the Taoiseach. (2020). Programme for Government: Our Shared Future [online]. Available from: <https://assets.gov.ie/static/documents/programme-for-government-our-shared-future-c0e5f2fe-ebb0-4430-9a42-68b34be57a16.pdf>.

Department of the Taoiseach. (2022). *Harnessing Digital: The Digital Ireland Framework*. , 2022.

Dewey, J. (1929). *The Quest for Certainty: A Study of the Relation of Knowledge and Action*. Minton, Balch and Company.

Díaz-García, V., Montero-Navarro, A., Rodríguez-Sánchez, J.-L. and Gallego-Losada, R. (2022). Digitalization and digital transformation in higher education: A bibliometric analysis. *Frontiers in Psychology*, 13, p.1081595.

DiMaggio, P. J. and Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), pp.147–160.

Dingsøyr, T. and Moe, N. B. (2014). Towards principles of large-scale agile development. In *Agile Methods. Large-Scale Development, Refactoring, Testing, and Estimation* , pp.1–8. Springer.

Dingsøyr, T., Nerur, S., Balijepally, V. and Moe, N. B. (2012). A decade of agile methodologies: Towards explaining agile software development. *Journal of Systems and Software*, 85(6), pp.1213–1221.

Donnelly, R. and McSweeney, F. (2009). Applied eLearning and eTeaching in Higher Education. *Information Science Reference*.

Donoghue, F. (2008). *The Last Professors: The Corporate University and the Fate of the Humanities*. Fordham University Press.

- Dörner, O. and Rundel, S. (2021). Organizational Learning and Digital Transformation: A Theoretical Framework. In: pp.61–75.
- dos Santos, S.B., Capellin, F., Trentin, M., Bortoluzzi, S.C. and de Lima, E.P. (2022). Digital Transformation in the Public Sector: Enabling Technologies and Their Impacts. In: López Sánchez, V., Mendonça Freires, F., Gonçalves dos Reis, J. and Costa Martins das Dores, J. (eds) *Industrial Engineering and Operations Management*. Cham: Springer International Publishing, pp.101–113.
- Drueke, B., Mainz, V., Lemos, M., Wirtz, M. and Boecker, M. (2021). An evaluation of forced distance learning and teaching under pandemic conditions using the technology acceptance model. *Frontiers in Psychology*, 12, pp.1–15.
- Dunleavy, P. and Hood, C. (1994). From old public administration to new public management. *Public Money and Management*, 14(3), pp.9–16.
- Dunphy, D. C. (1996). Organizational change as a process of convergence and divergence. *Academy of Management Review*, 21(4), pp.792–821.
- Dwyer, R., Silver, J. and Thurston, S. (2023). Rethinking digital transformation in higher education: Lessons from the pandemic. *Educational Technology and Society*, 26(1), pp.221–240.
- Ekanem, E., Olanrewaju, A. and Omole, T. (2020). Digital transformation in higher education: Opportunities and challenges. *International Journal of Innovation and Technology Management*, 17(5), pp. p.41–47.
- Elder-Vass, D. (2022). Pragmatism, critical realism and the study of value. *Journal of Critical Realism*, 21(3), pp.261–287.
- Engineers Joint Council. (1953). *A Manual on the Use of Industrial Engineering Techniques*.
- Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education*, 26(2), pp.247–273. <https://doi.org/10.1080/158037042000225245>
- Erwin, D. and Garman, A. (2010). Resistance to organizational change: Linking research and practice. *Leadership & Organization Development Journal*, 31, pp.39–56.

- Espeland, W. N. and Sauder, M. (2007). Rankings and reactivity: How public measures recreate social worlds. *American Journal of Sociology*, 113(1), pp.1–40.
- Estermann, T. and Kupriyanova, V. (2019). Efficiency, effectiveness, and value for money at universities. *European University Association*.
- Etzkowitz, H. and Leydesdorff, L. (2000). The dynamics of innovation: From national systems and “Mode 2” to a triple helix of university-industry-government relations. *Research Policy*, 29(2), pp.109–123.
- EU Commission, Madiaga, T. and Mar, N. (2019). *Briefing: EU policies – Delivering for citizens* [online]. EPRS | European Parliamentary Research Service. Available from: www.europarl.europa.eu/thinktank.
- European Commission Directorate General for Education, Youth, Sport and Culture. and PPMI Group. (2021). *The impact of COVID-19 on higher education: a review of emerging evidence : analytical report*. [online]. Available from: <https://data.europa.eu/doi/10.2766/069216>.
- European Commission. (2003). *The Role of the Universities in the Europe of Knowledge*. Luxembourg: Office for Official Publications of the European Communities.
- European Commission. (2018a). *DigCompOrg Framework. The Joint Research Centre: EU Science Hub* [online]. Available from: https://joint-research-centre.ec.europa.eu/european-framework-digitally-competent-educational-organisations-digcomporg/digcomporg-framework_en.
- European Commission. (2018b). *Education and Training Monitor 2018*. Publications Office of the European Union.
- European Commission. (2022). *European Universities Initiative: Progress Report*. Publications Office of the European Union, LU.
- European Commission. (2023). *Towards a European Education Area by 2025*. Publications Office of the European Union, LU.

- European Commission. Joint Research Centre. (2020). *The likely impact of COVID-19 on education: reflections based on the existing literature and recent international datasets*. [online]. Available from: <https://data.europa.eu/doi/10.2760/126686>.
- European Parliament. (2014). *Resolution on the role and operations of the Troika with regard to the euro area programme countries*. (TA-7-2014-0239).
- Eurydice. (2023). National education systems. *European Commission, EACEA National Policies Platform*.
- EY (2022). *Are universities of the past still the future?* [online]. Available from: <https://ey.com>.
- Faulkner, N. and Kaufman, S. (2018). Avoiding theoretical stagnation: A systematic review and framework for measuring public value. *Australian Journal of Public Administration*, 77(1), 69–86.
- Fedor, D. B., Caldwell, S. and Herold, D. M. (2006). The Effects Of Organizational Changes On Employee Commitment: A Multilevel Investigation. *Personnel Psychology*, 59(1), pp.1–29.
- Felicio, T., Samagaio, A. and Rodrigues, R. (2021). Adoption of management control systems and performance in public sector organizations. *Journal of Business Research*, 124, pp.593–602.
- Ferlie, E., Musselin, C. and Andresani, G. (2008). The steering of higher education systems: A public management perspective. *Higher Education*, 56(3), pp.325–348.
- Fernandez-Vidal, J., Antonio Perotti, F., Gonzalez, R. and Gasco, J. (2022). Managing digital transformation: The view from the top. *Journal of Business Research*, 152, pp.29–41.
- Fernandez, S., Cho, Y. J. and Perry, J. L. (2010). Exploring the link between integrated leadership and public sector performance. *The Leadership Quarterly*, 21(2), pp.308–323.

- Fetters, M. D., Curry, L. A. and Creswell, J. W. (2013). Achieving integration in mixed methods designs—principles and practices. *Health Services Research*, 48(6), pp.2134–2156.
- Fialho, B. C., Hasenclever, L. and Hemais, C. A. (2009). Punctuated equilibrium and technological innovation in the polymer industry. *Revista Brasileira de Inovação*, 2(2), pp.309–338.
- Findler, F., Schönherr, N., Lozano, R. and Reider, J. G. (2019). Assessing the impacts of higher education institutions on sustainable development—An analysis of tools and indicators. *Sustainability*, 11(1), p.59.
- Fitzgerald, L. and Ferlie, E. (2021). Rethinking public service innovation: The case of healthcare. *Public Management Review*, 23(2), pp.267–289.
- Fitzgerald, M., Kruschwitz, N., Bonnet, D. and Welch, M. (2013). Embracing digital technology: A new strategic imperative. *MIT Sloan Management Review*, 55(2), pp.1–12.
- Fitzgerald, T. (2009). The tyranny of bureaucracy: Continuing challenges of leading and managing from the middle. *Educational Management Administration and Leadership*, 37(1), pp.51–65.
- Fleetwood, S. (2005). Ontology in organization and management studies: A critical realist perspective. *Organization*, 12(2), pp.197–222.
- Fletcher, A. J. (2017). Applying critical realism in qualitative research: Methodology meets method. *International Journal of Social Research Methodology*, 20(2), pp.181–194.
- Flick, U. (2014). The SAGE Handbook of Qualitative Data Analysis [online]. London: SAGE Publications Ltd. Available from: <http://methods.sagepub.com/book/the-sage-handbook-of-qualitative-data-analysis>.
- Floyd, A. and Dimmock, C. (2011). ‘Jugglers’, ‘copers’ and ‘strugglers’: Academics’ perceptions of being a head of department in a post-1992 UK university and how it

- influences their future careers. *Journal of Higher Education Policy and Management*, 33(4), pp.387–399.
- Floyd, S. W. and Wooldridge, B. (1999). Knowledge creation and social networks in corporate entrepreneurship: The renewal of organizational capability. *Entrepreneurship: Theory and practice*, 23(3), pp.123–144.
- Flynn, N. (2002). *Public sector management*. Harlow: Financial Times/Prentice Hall.
- Ford, J. D., Ford, L. W. and D’Amelio, A. (2008). Resistance to change: The rest of the story. *Academy of Management Review*, 33(2), pp.362–377.
- Forth, G., O’Reilly, D. and Smith, J. (2020). Engaging students with technology: A study of staff and student perceptions of learning and teaching in higher education. *British Journal of Educational Technology*, 51(5), pp.1730–1743.
- Foucault, M. (1980). *Power/Knowledge: Selected Interviews and Other Writings 1972–1977* (ed. C. Gordon).
- Foucault, M. (1991). Governmentality. In G. Burchell, C. Gordon, and P. Miller (eds), *The Foucault Effect: Studies in Governmentality*, 87-104. University of Chicago Press.
- Fullan, M. (2001). *Leading in a Culture of Change*. Jossey-Bass.
- Fulton, O. (2003). Managerialism in UK universities: Unstable hybridity and the complications of implementation. In A. Amaral, V. L. Meek, and I. M. Larsen (eds), *The Higher Education Managerial Revolution?* pp.155–178. Kluwer Academic Publishers.
- Gamble, A. (1988). *The Free Economy and the Strong State: The Politics of Thatcherism*. Palgrave Macmillan.
- García-Morales, V., Garrido-Moreno, A. and Martín-Rojas, R. (2021). The Transformation of Higher Education After the COVID Disruption: Emerging Challenges in an Online Learning Scenario. *Frontiers in Psychology*, 12, p.616059.

- García-Peñalvo, F. J., Corell, A., Abella-García, V. and Grande-de-Prado, M. (2021). Online assessment in higher education in the time of COVID-19. *Education in the Knowledge Society*, 22, e24409.
- Gerousi, V., Dimakis, N. and Stergiopoulos, G. (2022). Exploring teachers' perceptions of digital transformation in higher education. *Education Sciences*, 12(2), p.78.
- Gerring J. (1999). What makes a concept good? a criterial framework for understanding concept formation in the social sciences. *Polity*. 31(3): pp.357–93.
- Gerschewski, S. (2016). Explanations of institutional change: Reflecting on a “missing diagonal.” *American Political Science Review*, 110(3), pp.556–570.
- Gewirtz, S. and Ball, S. J. (2010). From “welfarism” to “new managerialism”: Shifting discourses of school headship in the education marketplace. *Discourse: Studies in the Cultural Politics of Education*, 21(3), pp.253–268.
- Gfrerer, H., Matthes, F. and Fromm, M. (2021). Digital transformation of higher education: Exploring factors of positive change for universities. *The International Journal of Management Education*, 19(3), pp.1–14.
- Ghasemy, M., Hussin, S. and Daud, M.A.K.M. (2016). Academic leadership capability framework: a comparison of its compatibility and applicability in Australia, New Zealand, and Malaysia. *Asia Pacific Education Review*, 17(2), pp.217–233.
- Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*. University of California Press.
- Gioia, D. A. and Chittipeddi, K. (1991). Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal*, 12(6), pp.433–448.
- Giroux, H. A. (2002). Neoliberalism, corporate culture, and the promise of higher education: The university as a democratic public sphere. *Harvard Educational Review*, 72(4), pp.425–464.
- Giroux, H. A. (2014). *Neoliberalism's War on Higher Education*. Haymarket Books.

- Gkrimpizi, T., Peristeras, V. and Magnisalis, I. (2023). Classification of barriers to digital transformation in higher education institutions: Systematic literature review. *Education Sciences*, 13(7).
- Gleeson, J. (2023). From New Public Management to public value: Irish education policy through the lens of Statements of Strategy. *Irish Educational Studies*, pp.1–20.
- Goddard, J. and Kempton, L. (2016). The civic university: Universities in leadership and management of place. *Centre for Urban and Regional Development Studies*, Newcastle University.
- Gong, L., Miao, Y., Zhao, Y., Li, A. and Ren, H. (2023). Higher vocational students' innovation and entrepreneurship ability demand prediction. *International Journal of Emerging Technologies in Learning (Ijet)*, 18(08), pp.196–209.
- Gornitzka, Å. and Larsen, I. M. (2004). Towards a new managerial order? International trends of decentralization and managerialism in higher education. *Higher Education*, 48(4), pp.471–496.
- Goskoy, A. (2017). The Role of Psychological Empowerment and Organizational Citizenship Behaviors on Employee Resistance to Change. *European Journal of Interdisciplinary Studies Articles*, 3(1).
- Government of Ireland. (2018). Technological Universities Act 2018. Number 3 of 2018. Dublin: Stationery Office.
- Grab, B., Olaru, M. and Gavril, R. (2019). The impact of digital transformation on strategic business management. *Ecoforum* [online], 8(1).
- Grand-Clement, S. (2017). *Digital learning: education and skills in the digital age*. Rand Corporation.
- Grant, C. and Osanloo, A. (2015). Understanding, selecting, and integrating a theoretical framework in dissertation research: Developing a 'blueprint' for your "house". *Administrative Issues Journal*, 4.

- Greene, J. C., Caracelli, V. J. and Graham, W. F. (1989). Toward a Conceptual Framework for Mixed-Method Evaluation Designs. *Educational Evaluation and Policy Analysis*, 11(3), p.21.
- Gregory, M. S. J. and Lodge, J. M. (2015). Academic workload: The silent barrier to the implementation of technology-enhanced learning strategies in higher education. *Distance Education*, 36(2), pp.210–230.
- Gronn, P. and Lacey, K. (2006). Cloning their own: Aspirant principals and the school-based selection game. *Australian Journal of Education*, 50(2), pp.102–121.
- Grunberg, N., Barry, E., Callahan, C., Kleber, H., McManigle, J. and Schoomaker, E. (2018). A conceptual framework for leader and leadership education and development. *International Journal of Leadership in Education*, 22, pp.1–7.
- Gunter, H. (2004). Labels and labelling in the field of educational leadership. *Discourse: Studies in the Cultural Politics of Education*, 25(1), pp.21–41.
- Gunter, H. and Ribbins, P. (2002). Leadership Studies in Education: Towards a Map of the Field. *Educational Management and Administration*, 30(4), pp.387–416.
- Gunter, H. and Ribbins, P. (2003a). Challenging Orthodoxy in School Leadership Studies: Knowers, knowing and knowledge?. *School Leadership and Management*, 23(2), pp.129–147.
- Gunter, H. and Ribbins, P. (2003b). The Field of Educational Leadership: Studying Maps and Mapping Studies. *British Journal of Educational Studies*, 51(3), pp.254–281.
- Gunter, H. M. and Ribbins, P. (2016). The field of educational leadership: Studying maps and mapping studies. *British Journal of Educational Studies*, 51(3), pp.254–281.
- Guppy, N., Verpoorten, D., Boud, D., Lin, L., Tai, J. and Bartolic, S. (2022), The post-COVID-19 future of digital learning in higher education: Views from educators, students, and other professionals in six countries, *British Journal of Educational Technology*, 53(6), pp.1750–1765.

- Guppy, N., Verpoorten, D., Boud, D., Lin, L., Tai, J. and Bartolic, S. (2022). The post-COVID-19 future of digital learning in higher education: Views from educators, students, and other professionals in six countries. *British Journal of Educational Technology*, 53(6), pp.1750–1765.
- Guthrie, J. and Dumay, J. (2015). New frontiers in the use of intellectual capital in the public sector. *Journal of Intellectual Capital*, 16(2), pp.258–266.
- Haffke, I.; Kalgovas, B. and Benlian, A. (2017). Options for Transforming the IT Function Using Bimodal IT. *MIS Quarterly Executive*: 16(2), 2.
- Hallencreutz, J. and Turner, D. (2011). Exploring organizational change best practice: are there any clear-cut models and definitions?. *International Journal of Quality and Service Sciences*, 3(1), pp.60–68.
- Halloran, L. and Friday, C. (2018a). *EY Can the universities of today lead learning for tomorrow?*. EY, October 2018, p.36.
- Halloran, L. and Friday, C. (2018b). *EY The peak of higher education — a new world for the university of the future* [online]. EY. Available from: https://www.ey.com/en_au/government-public-sector/the-peak-of-higher-education.
- Hanelt, A., Bohnsack, R., Marz, D. and Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of Management Studies*, 58(5), pp.1159–1197.
- Hardiman, N. and MacCarthaigh, M. (2017). State Retrenchment and Administrative Reform in Ireland: Probing Comparative Policy Paradigms. *Journal of Comparative Policy Analysis: Research and Practice*, 19(2), pp.100–118.
- Harigopal, U. and Satyadas, A. (2001). Cognizant enterprise maturity model (CEMM).
- Harvey, D. (2005). *A Brief History of Neoliberalism*. Oxford University Press.
- Harvey, D. (2006). Spaces of global capitalism: Towards a theory of uneven geographical development. Verso.

- Hausberg, J. P., Liere-Netheler, K., Packmohr, S., Pakura, S. and Vogelsang, K. (2019). Research streams on digital transformation from a holistic business perspective: A systematic literature review and citation network analysis. *Journal of Business Economics*, 89(8), pp.931–963.
- Hawes, J. (2022). The challenges of emergency online instruction at a small HBCU. *Journal of Higher Education Theory and Practice* [online], 22(18).
- Hazelkorn, E. (2012). European “Transparency Instruments”: Driving the Modernisation of European Higher Education. In: Curaj, A., Deca, L. and Pricopie, R. (eds). *European Higher Education at the Crossroads* [online]. Dordrecht: Springer Netherlands, pp.339–360. Available from: http://link.springer.com/10.1007/978-94-007-3937-6_19.
- Hazelkorn, E. (2015). *Rankings and the Reshaping of Higher Education: The Battle for World-Class Excellence*. Palgrave Macmillan.
- Hazelkorn, E. and Gibson, A. (2018). The Impact and Influence of Rankings on the Quality, Performance and Accountability Agenda. In: Hazelkorn, E., Coates, E., and McCormick, A. (eds). *Research Handbook on Quality, Performance and Accountability*. Cheltenham: Edward Elgar, pp.232–246.
- Hazy, J.K. and Uhl-Bien, M. (2015). Towards operationalizing complexity leadership: How generative, administrative and community-building leadership practices enact organizational outcomes. *Leadership*, 11(1), pp.79–104.
- Held, D., McGrew, A., Goldblatt, D. and Perraton, J. (1999). *Global Transformations: Politics, Economics and Culture*. Stanford University Press.
- Helfat, C. E. and Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 24(10), pp.997–1010.
- Henderson, M., Selwyn, N. and Aston, R. (2017). What works and why? Student perceptions of 'useful' digital technology in university teaching and learning. *Studies in Higher Education*, 42(8), pp.1567–1579.

- Hendry C. (1996). Understanding and Creating Whole Organizational Change Through Learning Theory. *Hum. Relat.* 49(6), pp.21–41.
- Henriette, E., Feki, M. and Boughzala, I. (2015). The Shape of Digital Transformation: A Systematic Literature Review [online]. in *MCIS 2015 Proceedings*. Available from: <http://aisel.aisnet.org/mcis2015/10> .
- Heracleous, L. and Bartunek, J. (2021). Organization change failure, deep structures and temporality: Appreciating Wonderland. *Human Relations*, 74(2), pp.208–233.
- Hess, T., Matt, C., Benlian, A. and Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2), pp.123–139.
- Higgs, M. and Rowland, D. (2005). All changes great and small: Exploring approaches to change and its leadership. *Journal of Change Management*, 5(2), pp.121–151.
- Higher Education Authority. (2016). *HEA Forward-Look Forum: Private Providers: What Role Should They Play in the Irish Higher Education Landscape?* Dublin: Higher Education Authority. November 2016.
- Higher Education Authority. (2017). *Completing the Landscape Process for Irish Higher Education* [online]. Dublin: Higher Education Authority. Available from: <https://hea.ie/assets/uploads/2017/04/Completing-the-Landscape-Process.pdf>.
- Higher Education Authority. (2018). *Higher Education System Performance Framework 2018 – 2020* [online]. Dublin: Higher Education Authority. January 2018. Available from: <https://hea.ie/assets/uploads/2018/01/higher-education-system-performance-framework-2018-2020.pdf>.
- Higher Education Authority. (2019). *Digital Transformation and Empowering Technologies in Higher Education* [online]. Dublin: Higher Education Authority. 19 February 2019.
- Higher Education Authority. (2020a). *System Performance Framework 2023-2028* [online]. Dublin: Higher Education Authority. Available from: https://hea.ie/assets/uploads/2017/04/System_Performance_Framework_2023-2028.pdf.

- Higher Education Authority. (2020b). *The Human Capital Initiative (HCI).will deliver an investment targeted towards increasing capacity in higher education in skills-focused programmes designed to meet priority skills needs* [online]. Dublin: Higher Education Authority.
- Higher Education Authority. (2022). *Draft Higher Education System Performance Framework 2023 – 2027*. Dublin: Higher Education Authority.
- Higher Education Authority. (2023a). *How we fund* [online]. Dublin: Higher Education Authority. Available from: <https://hea.ie/funding-governance-performance/funding/how-we-fund/>.
- Higher Education Authority. (2023b). *Higher Education Institutions*. Dublin: Higher Education Authority.
- Highman, L. (2019). Irish technological universities and the binary divide: a qualitative study. *Higher Education*, 79(4), pp.637–656.
- Hinings, B., Gegenhuber, T. and Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Information and Organization*, 28(1), pp.52–61.
- Hodges, C., Moore, S., Lockee, B., Trust, T. and Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*.
- Høiland, G. C. and Klemsdal, L. (2020). Organizing professional work and services through institutional complexity – how institutional logics and differences in organizational roles matter. *Human Relations*, 75(2), pp.240–272.
- Holmwood, J. and Marcuello Servós, C. (2019). Challenges to Public Universities: Digitalisation, Commodification and Precarity. *Social Epistemology*, 33(4), pp.309–320.
- HolonIQ. (2018). *Education in 2030* [online], HolonIQ. Available from: www.holoniq.com/2030.

- HolonIQ. (2020). *Initial Insights. Higher Education Digital Capability 2020* [online]. HolonIQ. Available from: <https://www.holoniq.com/wp-content/uploads/2020/12/HolonIQ-Higher-Education-Digital-Framework-Initial-Insights-Dec-2020.pdf>
- HolonIQ. (2022). *Annual Insights. Higher Education Digital Capability* [online]. HolonIQ. Available from: www.holoniq.com.
- Hood, C. (1991). A public management for all seasons? *Public Administration*, 69(1), pp.3–19.
- Hood, C. (1995). The “new public management” in the 1980s: Variations on a theme. *Accounting, Organizations and Society*, 20(2–3), pp.93–109.
- Horlacher, A., Klarner, P., Hess, T. (2016). Crossing boundaries: organization design parameters surrounding CDOs and their digital transformation activities. In: : *Americas Conference on Information Systems: Surfing the IT Innovation Wave*, AMCIS 2016.
- Hsu, P.-S. (2016). Examining Current Beliefs, Practices and Barriers About Technology Integration: A Case Study. *TechTrends*, 60(1), pp.30–40.
- Hughes, J., Thomas, R. and Scharber, C. (2006). Assessing Technology Integration: The RAT - Replacement, Amplification, and Transformation - Framework. In: *International conference; 17th, Society for Information Technology and Teacher Education*. Orlando, Fla.: Association for the Advancement of Computing in Education;, pp.1616–1620. Available from: <https://www.tib.eu/de/suchen/id/BLCP%3ACN060336293>.
- Hughes, M. (2011). Do 70 Per Cent of All Organizational Change Initiatives Really Fail?. *Journal of Change Management*, 11(4), pp.451–464.
- Humphrey, W. S. (1988). Characterizing the software process: a maturity framework. *IEEE Software*, 5(2), pp.73–79.

- Hunt, C. (2011). *National Strategy for Higher Education to 2030* [online]. Dublin, Ireland: Department of Education and Skills. Available from: <https://hea.ie/about-us/strategic-plan/>
- Hussain, S. T., Lei, S., Akram, T., Haider, M. J., Hussain, S. H. and Ali, M. (2018). Kurt Lewin's change model: A critical review of the role of leadership and employee involvement in organizational change. *Journal of Innovation and Knowledge*, 3(3), pp.123–127.
- Hutchison, A. and Woodward, L. (2014). A Planning Cycle for Integrating Digital Technology Into Literacy Instruction. *The Reading Teacher*, 67(6), pp.455–464.
- IBM. (2023). *What is Digital Transformation?* | IBM [online]. Available from: <https://www.ibm.com/topics/digital-transformation>
- Imenda, S. (2014). Is There a Conceptual Difference between Theoretical and Conceptual Frameworks?. *Journal of Social Sciences*, 38(2), pp.185–195.
- Ismail, M. H., Khater, M. and Zaki, M. (2017). Digital business transformation and strategy: What do we know so far. *Cambridge Service Alliance*, 10, pp.1–35.
- Ivankova, N. V., Creswell, J. W. and Stick, S. L. (2006). Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, 18(1), pp.3–20.
- Jabareen, Y. (2009). Building a conceptual framework: Philosophy, definitions, and procedure. *International Journal of Qualitative Methods*, 8(4), pp.49–62.
- Jablonski, A. and Jablonski, J. (2019). The role of social factors in digital transformation of railway enterprises. *Transportation Research Procedia*, 24, pp.111–118.
- Jameson, J. (2013). e-Leadership in higher education: The fifth “age” of educational technology research. *British Journal of Educational Technology*, 44(6), pp.889–915.
- Jameson, J., Rummyantseva, N., Cai, M., Markowski, M., Essex, R. and McNay, I. (2022). A systematic review and framework for digital leadership research maturity in higher education. *Computers and Education Open*, 3, p.100115.

- Jaros, S. (2010). Commitment to organizational change: A critical review. *Journal of Change Management*, 10(1), pp.79–108.
- Jarvis, S. (2018). Practice-focused, Constructivist Grounded Theory Methodology in Higher Education Leadership Research. In: Huisman, J. and Tight, M., (eds). *Theory and Method in Higher Education Research*. Emerald Publishing Limited, pp.189–207.
- Jensen, L. A. and Allen, M. N. (1996). Meta-synthesis of qualitative findings. *Qualitative Health Research*, 6(4), pp.553–560.
- Jessop, B. (2018). On academic capitalism. *Critical Policy Studies*, 12(1), pp.104–109.
- Johnson, M. and Majewska, D. (2022). *Formal, non-formal, and informal learning: What are they, and how can we research them?* Cambridge University Press & Assessment. doi:10.17863/CAM.110841.
- Johnson, R. B. and Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), pp.14–26.
- Jones, C. and Shao, B. (2011). The Net generation and digital natives: implications for higher education. *Higher Education Academy*, York.
- Jones, S., Lefoe, G., Harvey, M. and Ryland, K. (2012). Distributed leadership: a collaborative framework for academics, executives and professionals in higher education. *Journal of Higher Education Policy and Management*, 34(1), pp.67–78.
- Jongbloed, B. W. A. and Vossensteyn, J. J. (2016). University funding and student funding: International comparisons. *Oxford Review of Economic Policy*, 32(4), pp.576–595.
- Jongbloed, B., Enders, J. and Salerno, C. (2008). Higher education and its communities: Interconnections, interdependencies and a research agenda. *Higher Education*, 56(3), pp.303–324.
- Jongbloed, B., Kaiser, F. and Westerheijden, D. F. (2020). Improving study success and diversity in Dutch higher education using performance agreements. *Tertiary Education and Management*, 26(3), pp.329–343.

- Jørgensen, T. H. (2019). Digital transformation in higher education: A holistic and multidimensional framework. *Journal of Higher Education Policy and Management*, 41(5), pp.555–571.
- Joshi, K. M. and Ahir, K. V. (2015). Reflections on changing landscape of private higher education space in Indian higher education. *Intellectual Economics*, 8(2).
- Juma, K. S., Raihan, M. A. and Clement, C. K. (2016). Role of ICT in higher educational administration in Uganda. *World Journal of Educational Research*, 3(1).
- Kaivo-Oja, J., Vähäsantanen, S., Karppinen, A. and Haukioja, T. (2017). Smart specialization strategy and its operationalization in the regional policy: Case Finland. *Journal of the Knowledge Economy*, 8(1), pp.119–139.
- Kallio, K. M. and Kallio, T. J. (2014). Management-by-results and performance measurement in universities—Implications for work motivation. *Studies in Higher Education*, 39(4), pp.574–589.
- Kallio, K. M., Kallio, T. J., Tienari, J. and Hyvönen, T. (2016). Ethos at stake: Performance management and academic work in universities. *Human Relations*, 69(3), pp.685–709.
- Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D. and Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan Management Review and Deloitte University Press*, 14, pp.1–25.
- Kaputa, J., Hemminger, C. J., Huffman, C., Tong, C. K. and Morrison, N. (2022). Keeping pace with diverse student preferences in an increasingly digital higher education landscape: A Department of Chemistry Case Study. *Journal of Chemical Education*, 99(9), pp.8635–8640.
- Karimi, J., Somers, T. M. and Bhattacharjee, A. (2007). The role of information systems resources in ERP capability building and business process outcomes. *Journal of Management Information Systems*, 24(2), pp.221–260.

- Kehm, B. M. and Lanzendorf, U. (2007). The impacts of university management on academic work: Reform experiences in Austria and Germany. *Management Revue*, 18(2), pp.153–173.
- Kelly, L. M. and Cordeiro, M. (2020). Three principles of pragmatism for research on organisational processes. *Methodological Innovations*, 13(2).
- Kelly, S., Noonan, C., O'Reilly, P. and Pandya, D. (2012). Issues of Higher Education Institution Governance. Dublin, Ireland: Royal Irish Academy.
- Kezar, A. (2018). *How Colleges Change: Understanding, Leading, and Enacting Change*. : ed. New York: Routledge.
- Kezar, A. and Eckel, P. D. (2002). The effect of institutional culture on change strategies in higher education: Universal principles or culturally responsive concepts? *The Journal of Higher Education*, 73(4), pp.435–460.
- Kezar, A. and Lester, J. (2018). *Governing higher education: The evolving role of leadership*. Jossey-Bass.
- Khanagha, S., Volberda, H. and Oshri, I. (2014). Business model renewal and ambidexterity: structural alteration and strategy formation process during transition to a Cloud business model. *RandD Management*, 44(3), pp.322–340.
- Khin, S. and Ho, T. C. (2019). Digital technology, digital capability and organizational performance. *International Journal of Innovation Science*, 11(2), pp.177–195.
- King, N. (2012). Doing template analysis. In: Symon, G. and Cassell, C. (eds). *Qualitative Organizational Research: Core Methods and Current Challenges*, London: Sage, pp.426—50.
- Kingston, C. (2019). Institutional Change. In: Marciano, A. and Ramello, G. B. (eds). *Encyclopedia of Law and Economics* [online]. New York, NY: Springer New York, pp.1153–1161. Available from: https://doi.org/10.1007/978-1-4614-7753-2_259.

- Kipnis, E., Bebek, G. and Bröckerhoff, A. (2021). Within, in-between, out-of-bounds? Locating researcher positionalities in multicultural marketplaces. *Journal of Business Research*, 123(1), pp.401–414.
- Knight, J. (2004). Internationalization remodeled: Definition, approaches, and rationales. *Journal of Studies in International Education*, 8(1), pp.5–31.
- Knight, J. (2013). The changing landscape of higher education internationalisation – for better or worse? *Perspectives: Policy and Practice in Higher Education*, 17(3), pp.84–90.
- Knight, J. (2014). *International Education Hubs: Student, Talent, Knowledge-Innovation Models*. Springer.
- Knox, J. (2019). What does the ‘postdigital’ mean for education? Three critical perspectives on the digital, with implications for educational research and practice. *Postdigital Science and Education*, 1(2), pp.357–370.
- Komljenovic, J. (2019). Making higher education markets: Trust-building strategies of private companies to enter the public sector. *Higher Education*, 78(1), pp.51–66.
- Komljenovic, J. (2021). Digital transformation in higher education: A comprehensive review of the literature. *Education and Information Technologies*, 26(1), pp.457–482.
- Konopik, J., Jahn, C., Schuster, T., Hoßbach, N. and Pflaum, A. (2022). Mastering the digital transformation through organizational capabilities: A conceptual framework. , 2, p.100019.
- Kotter, J. P. (1996). *Leading Change*. Harvard Business Press.
- Kotter, J. P. and Schlesinger, L. A. (2008). Choosing strategies for change. *Harvard Business Review*, 86(7/8), pp.130–139.
- KPMG (2022). *Digital Transformation* [online]. KPMG Ireland. Available from: <https://kpmg.com/ie/en/home/services/consulting/management-consulting/digital-transformation.html>

- KPMG and Parker, S. (2020). KPMG The future of higher education in a disruptive world [online]. Available from: <https://home.kpmg/education/>.
- Kraus, S., Clauss, T., Breier, M., Gast, J., Zardini, A. and Tiberius, V. (2020). The economics of digital transformation: A supply-side perspective. *Journal of Business Economics*, 90(5), pp.487–522.
- Kromydas, T. (2017). Rethinking higher education and its relationship with social inequalities: Past knowledge, present state and future potential. *Palgrave Communications*, 3(1), pp.1–12.
- Kromydas, T., Papadakis, S. and Fragkou, M. (2022). Digital transformation in higher education: A systematic literature review and research agenda. *Journal of Educational Technology and Society*, 25(1), pp.161–180.
- Krücken, G., Blümel, A. and Kloeke, K. (2013). The managerial turn in higher education? On the interplay of organizational and occupational change in German academia. *Minerva*, 51(4), pp.417–442.
- Kyvik, S. (2004). Structural changes in higher education systems in Western Europe. *Higher Education in Europe*, 29(3), pp.393–409.
- Kyvik, S. and Aksnes, D. W. (2015). Explaining the increase in publication productivity among academic staff: A generational perspective. *Studies in Higher Education*, 40(8).
- LaBerge, L., O’Toole, C., Schneider, J. and Smaje, K. (2020). *How COVID-19 has pushed companies over the technology tipping point—and transformed business forever* [online]. McKinsey. Available from: https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/how-covid-19-has-pushed-companies-over-the-technology-tipping-point-and-transformed-business-forever#.
- Lapiente, V. and Van De Walle, S. (2020). The effects of new public management on the quality of public services. *Governance*, 33(3), pp.461–475.

- Laswad, F. and Redmayne, N. B. (2015). IPSAS or IFRS as the framework for public sector financial reporting? New Zealand preparers' perspectives. *Australian Accounting Review*, 25(2), pp.175–184.
- Law, S. and Glover, D. C. (2000). *Educational leadership and learning : practice, policy and research*. Open University Press.
- Learmonth, M. and Morrell, K. (2021). 'Leadership' as a Project: Neoliberalism and the Proliferation of 'Leaders'. *Organization Theory*, 2(4),
- Lee, K. and Joshi, K. (2016). Examining the use of status quo bias perspective in IS research: Need for re-conceptualizing and incorporating biases. *Information Systems Journal*, 27(6), pp.733–752.
- Legner, C., Eymann, T., Hess, T., Matt, C., Böhmman, T., Drews, P., Maedche, A., Urbach, N. and Ahlemann, F. (2017). Digitalization: Opportunity and challenge for the business and information systems engineering community. *Business and Information Systems Engineering*, 59, pp.301–308.
- Leonardi, P. M. (2012). Materiality, sociomateriality, and socio-technical systems: What do these terms mean? How are they different? Do we need them? In *Materiality and Organizing: Social Interaction in a Technological World*, 25–48. Oxford University Press.
- Leonardi, P. M. and Barley, S. R. (2010). What's under construction here? Social action, materiality, and power in constructivist studies of technology and organizing. *Academy of Management Annals*, 4(1), pp.1–51.
- Leonardi, P. M. and Treem, J. W. (2020). Behavioral Visibility: A new paradigm for organization studies in the age of digitization, digitalization, and datafication [online]. *Organization Studies*, 41(12), pp.1601–1625. Available from: <https://doi.org/10.1177/0170840620970728>
- Levering, B. (2002). Concept analysis as empirical method. *International Journal of Qualitative Methods*, 1(1), pp.35–48.

- Lewin, K. (1947). Frontiers in group dynamics: Concept, method and reality in social science; social equilibria and social change. *Human Relations*, 1(1), pp.5–41.
- Liao, Y., Deschamps, F., Loures, E. d. F. R. and Ramos, L. F. P. (2015). Past, present and future of Industry 4.0: A systematic literature review and research agenda proposal. *International Journal of Production Research*, 55(12), pp.3609–3629.
- Liehr, P. and Smith, M. J. (1999). Middle range theory: spinning research and practice to create knowledge for the new millennium. *ANS. Advances in nursing science*, 21(4), pp.81–91.
- Liere-Netheler, K., Packmohr, S., Vogelsang, K. (2018). Drivers of digital transformation in manufacturing. In: Hawaii International Conference on System Sciences, pp.3926–3935.
- Limani, Y., Hajrizi, E., Stapleton, L. and Retkoceri, M. (2019). Digital transformation readiness in higher education institutions (HEI): The case of Kosovo. *IFAC-Papers-OnLine*, 52, pp.52–57.
- Liu, D. Y., Chen, S. W. and Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10), pp.1728–1742.
- Loonam, J., Froese, T. M. and Simpson, M. (2018). Digital transformation: A roadmap for organizational renewal. *MIT Sloan Management Review*, 59(4), pp.1–12.
- Lorenz, C. (2012). If you're so smart, why are you under surveillance? Universities, neoliberalism, and new public management. *Critical Inquiry*, 38(3), pp.599–629.
- Lucas Jr, H. C., Agarwal, R., Clemons, E. K., El Sawy, O. A. and Weber, B. (2013). Impactful research on transformational information technology: An opportunity to inform new audiences. *MIS Quarterly*, 37(2), pp.371–382.
- Lumby, J. (2012). Leading organizational culture: Issues of power and equity. *Educational Management Administration and Leadership*, 40(5), pp.576–591.

- Luna, F. and Breternitz, V. (2021). Digital transformation in private Brazilian higher education institutions: Pre-Coronavirus baseline. *RAM. Revista de Administração Mackenzie*, 22.
- Lunenburg, F.C. (2018). Organizational Structure: Mintzberg's Framework. , 2018.
- Ly, B. (2023). The Interplay of Digital Transformational Leadership, Organizational Agility, and Digital Transformation [online]. *Journal of the Knowledge Economy* [online], 28 March 2023. Available from: <https://link.springer.com/10.1007/s13132-023-01377-8>
- Lynch, K. (2014). New managerialism in education: The organisational form of neoliberalism. In A. Loxley, A. Seery, and J. Walsh (eds), *Higher education in Ireland*, pp.189–206. Palgrave Macmillan.
- Lynch, K. (2015). Control by numbers: New managerialism and ranking in higher education. *Critical Studies in Education*, 56(2), pp.190–207.
- Malodia, S., Dhir, A., Mishra, M. and Bhatti, Z. (2021). Future of e-Government: An integrated conceptual framework. *Technological Forecasting and Social Change*, 173, p.121102.
- Malterud, K. (2001). Qualitative research: standards, challenges, and guidelines. *The Lancet*, 358(9280), pp.483–488.
- Marckstadt, F., Laamanen, T. and Dimke, M. (2020). *Transformation Champions: Turning Opposites into Complements* [online]. Deloitte; University of St. Gallen. Available from: <https://www2.deloitte.com/de/de/pages/strategy-analytics/articles/transformation.html>.
- Marginson, S. (2006). Dynamics of national and global competition in higher education. *Higher Education*, 52(1), pp.1–39.
- Marginson, S. (2007). The public/private divide in higher education: A global revision. *Higher Education*, 53(3), pp.307–333.
- Marginson, S. (2011). Higher education and public good. *Higher Education Quarterly*, 65(4), pp.411–433.

- Marginson, S. (2013). The impossibility of capitalist markets in higher education. *Journal of Education Policy*, 28(3), pp.353–370.
- Marginson, S. (2016). *Higher education and the common good*. Melbourne University Publishing.
- Marginson, S. (2019). Limitations of human capital theory. *Studies in Higher Education*, 44(2), pp.287–301.
- Marginson, S. (2022). Space and scale in higher education: the glonacal agency heuristic revisited. *Higher Education*, 84(6), pp.1365–1395.
- Marginson, S. and Rhoades, G. (2002). Beyond national states, markets, and systems of higher education: A glonacal agency heuristic. *Higher Education*, 43, pp.281–309.
- Marinoni, G., Van't Land, H. and Jensen, T. (2020). The impact of COVID-19 on higher education around the world. *International Association of Universities*.
- Marks, A., Al-Ali, M. and Rietsema, K. (2018). Learning management systems: A shift toward learning and academic analytics. *International Journal of Emerging Technologies in Learning (iJET)*, 13(4), pp.77–82.
- Marks, A., Al-Ali, M., Atassi, R., Abualkishik, A. and Rezgui, Y. (2020). Digital Transformation in Higher Education: A Framework for Maturity Assessment. *International Journal of Computer Science and Application*, 11.
- Marshall, S. (2010). Change, technology and higher education: Are universities capable of organisational change? *ALT-J*, 18(3), pp.179–192.
- Marshall, S. (2018). *Shaping the university of the future: Using technology to catalyse change in university teaching and learning*. Singapore: Springer.
- Martin, A.J., Jones, E.S. and Callan, V.J. (2005). The role of psychological climate in facilitating employee adjustment during organizational change. *European Journal of Work and Organizational Psychology*, 14(3), pp.263–289.

- Martins, P. and Duarte, D. (2013). A maturity model for higher education institutions. *Journal of Spatial and Organizational Dynamics*, 1, pp.25–45.
- Marx, K (1906). *Capital: a critique of political economy*. New York. Modern Library.
- Marx, L. (1964). *The machine in the garden*. New York: Oxford University Press
- Matt, C., Hess, T. and Benlian, A. (2015). Digital transformation strategies. *Business and Information Systems Engineering*, 57(5), pp.339–343.
- Maxwell, J. A. (2012). *A Realist Approach for Qualitative Research*. London: Sage.
- Mazlan Haji Che Mat, M. and bin Hj. Mohd Shah, Z. (2006). Value management as an effective and efficient tool for space management [online]. Available from: http://www.vm-academy.com/seminar_paper_01.pdf.
- McCarthy, A. M., Maor, D., McConney, A. and Cavanaugh, C. (2023). Digital transformation in education: critical components for leaders of system change. *Social Sciences & Humanities Open*, 8(1), p.100479.
- McGivern, G., Currie, G., Ferlie, E., Fitzgerald, L. and Waring, J. (2015). Hybrid Manager-Professionals' Identity Work: The Maintenance and Hybridization of Medical Professionalism in Managerial Contexts. *Public Administration*.
- McKinsey. (2020). *How COVID-19 has pushed companies over the technology tipping point—and transformed business forever* [online]. McKinsey Digital and Strategy & Corporate Finance Practices. Available from: <https://www.mckinsey.com/~/media/mckinsey/business%20functions/strategy%20and%20corporate%20finance/our%20insights/how%20covid%2019%20has%20pushed%20companies%20over%20the%20technology%20tipping%20point%20and%20transformed%20business%20forever/how-covid-19-has-pushed-companies-over-the%20technology%20tipping-point-final.pdf>.
- Mejía, L. M. C., Pardo Del Val, M. and Dasí Coscollar, À. (2020). The Institutional Isomorphism in the Context of Organizational Changes in Higher Education Institutions. *International Journal of Research in Education and Science*, 6(1), p.61.

- Melo, S., Beck, M. and Townley, B. (2020). Performance management: The impact of performance targets on organizations and individuals. In *Managing and measuring performance in public and nonprofit organizations: An integrated approach*, pp.147–169. Routledge.
- Melville, N., Kraemer, K. and Gurbaxani, V. (2004). Review: Information technology and organizational performance: An integrative model of IT business value. *MIS Quarterly*, 28(2), pp.283–322.
- Mercer, J. (2007). The challenges of insider research in educational institutions: Wielding a double-edged sword and resolving delicate dilemmas. *Oxford Review of Education*, 33(1), pp.1–17.
- Mercille, J. and Murphy, E. (2015). The neoliberalization of Irish higher education under austerity. *Critical Sociology*, 43(3), pp.371–387.
- Mergel, I., Edelmann, N. and Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government Information Quarterly*, 36(4), p.101385.
- Merriam, S. B., Johnson-Bailey, J., Ming-Yeh, L., Kee, M., Ntseane, G. and Muhamad, M. (2001). Power and positionality: Negotiating insider/outsider status within and across cultures. *International Journal of Lifelong Education*, 20(5), pp.405–416.
- Mettler, T. (2011). Maturity assessment models: A design science research approach. *International Journal of Society Systems Science*, 3(1–2), pp.81–98.
- Meyer J. W., Rowan B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83, pp.340–363.
- Meyer, C. B. and Stensaker, I. G. (2006). Developing capacity for change. *Journal of Change Management*, 6(2), pp.217–231.
- Meyer, E., Shankar, K., Willis, M., Sharma, S. and Sawyer, S. (2019). The social informatics of knowledge. *Journal of the Association for Information Science and Technology*, 70(4), pp.307–312.

- Microsoft Inc. (2023). Education Transformation Framework for Higher Education [online]. Available from: https://www.microsoft.com/en-us/education/msdownloads/Education_transformation_framework_higher_education.pdf.
- Mikalef, P. and Pateli, A. (2017). Information technology-enabled dynamic capabilities and their indirect effect on competitive performance: Findings from PLS-SEM and fsQCA. *Journal of Business Research*, 70, pp.1–16.
- Miles, M. B. and Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. : ed. London: SAGE Publications Ltd.
- Ministry of Education, Culture, Netherlands and Science. (2020). Acceleration Plan Educational Innovation with IT.
- Mintzberg, H. (1979). The structuring of organizations. In *Readings in Strategic Management*, pp.322–352. Palgrave, London.
- Mishra, P. and Koehler, M.J., 2006. Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), pp.1017–1054.
- Mithas, S., Tafti, A. and Mitchell, W. (2013). How a Firms Competitive Environment and Digital Strategic Posture Influence Digital Business Strategy, *MIS Quarterly*, 37(2).
- Mohamed Hashim, M. A., Tlemsani, I. and Matthews, R. (2022). Higher education strategy in digital transformation. *Education and Information Technologies*, 27(3), pp.3171–3195.
- Molesworth, M., Scullion, R. and Nixon, E. (2010). *The Marketisation of Higher Education and the Student as Consumer*. Routledge.
- Monteiro, S., Vasconcelos, A. and Varajão, J. (2019). Applying a capability maturity model to curriculum development: A case study. In 2019 *International Symposium on Computers in Education (SIIE)*.pp. p.1–6. IEEE.
- Moore, M. H. (1995). *Creating public value: Strategic management in government*. Harvard University Press.

- Moore, M. H. (2014). Public Value Accounting: Establishing the Philosophical Basis. *Public Administration Review*, 74(4), pp.465–477.
- Morakanyane, R., Grace, A. and O'Reilly, P. (2017). Conceptualizing digital transformation in business organizations: A systematic review of literature. In Ayed, M. B. (Ed.), *Proceedings of the 30th Bled eConference*, pp.427–444. University of Maribor Press.
- Morales, V., Garrido-Moreno, A. and Rojas, R. (2021). The transformation of higher education after the COVID disruption: Emerging challenges in an online learning scenario. *Frontiers in Psychology*, 12.
- Morgan, D. L. (2014). Pragmatism as a paradigm for social research. *Qualitative Inquiry*, 20(8), pp.1045–1053.
- Morse, J. M. (1991). Subjects, respondents, informants, and participants? *Qualitative Health Research*, 1(4), pp.403–406.
- Morse, J. M., Hupcey, J. E., Penrod, J., Spiers, J. A., Pooler, C. and Mitcham, C. (2002). Issues of validity: Behavioral concepts, their derivation and interpretation. *International Journal of Qualitative Methods*, 1(4), pp.68–73.
- Mukan, N., Havryliuk, M. and Stoliarchuk, L. (2015). Theoretical Framework of Leadership in Higher Education of England and Wales. *Comparative Professional Pedagogy*, 5.
- Muller, J. (2018). *The tyranny of metrics*. Princeton University Press.
- Nadkarni, S. and Prügl, R. (2021). Digital transformation: A review, synthesis and opportunities for future research. *Management Review Quarterly*, 71(2), pp.233–341.
- Naidoo, R. (2003). Repositioning higher education as a global commodity: Opportunities and challenges for future sociology of education work. *British Journal of Sociology of Education*, 24(2), pp.249–259.
- Naidoo, R. and Williams, J. (2015). The neoliberal regime in English higher education: Charters, consumers and the erosion of the public good. *Critical Studies in Education*, 56(2), pp.208–223.

- Naidoo, R., Shankar, A. and Veer, E. (2011). The consumerist turn in higher education: Policy aspirations and outcomes. *Journal of Marketing Management*, 27(11–12), pp.1142–1162.
- Nambisan, S., Lyytinen, K., Majchrzak, A. and Song, M. (2017). Digital innovation management: Reinventing innovation management research in a digital world. *MIS Quarterly*, 41(1), pp.223–238.
- National Oversight and Audit Commission. (2016). *Local Authority Performance Indicator Report 2016* [online]. Available from: <https://www.noac.ie>.
- Navarro-Prieto, R., Roldán-Bravo, M. I. and Jiménez-Zarco, A. I. (2019). Building Dynamic Capabilities Through the Evaluation of the Adoption and Use of Information Technologies in Higher Education. In: *17th European Conference on e-Learning*, (pp. p.492–500).
- Nelson, A. M. (2006). A metasynthesis of qualitative breastfeeding studies. *Journal of Midwifery and Women's Health*, 51(2), pp. p.e13–e20.
- Nieves, J. and Quintana, A. (2018). Human resource practices and innovation in the hotel industry: The mediating role of human capital. *Tourism and Hospitality Research*, 18(1), pp.72–83.
- North, K., Vargo, J. and Hampton, M. (2020). Digital maturity framework for small and medium-sized enterprises (SMEs).
- Nowell, L. S., Norris, J. M., White, D. E. and Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), pp.1–13.
- Nwankpa, J. K. and Roumani, Y. (2016). IT Capability and Digital Transformation: A Firm Performance Perspective. *International conference of information systems*. Dublin, Ireland.
- Nye, D. (1994). *American technological sublime*. Cambridge, MA: MIT Press.
- Nye, J. S. (1994). *Bound to lead: The changing nature of American power*. Basic Books.

- Nye, J. S. (1996). *Understanding international conflicts: An introduction to theory and history*. Longman.
- Ó Buachalla, S. (1988). *Education policy in twentieth century Ireland*. Dublin: Wolfhound.
- O’Cathain, A. and Thomas, K. J. (2004). “Any other comments?” Open questions on questionnaires—A bane or a bonus to research? *BMC Medical Research Methodology*, 4(25), pp.1–7.
- O’Connor, P., Martin, P.Y., Carvalho, T., Hagan, C.O., Veronesi, L., Mich, O., Saglamer, G., Tan, M.G. and Caglayan, H. (2019). Leadership practices by senior position holders in Higher Educational Research Institutes: Stealth power in action?. *Leadership*, 15(6), pp.722–743.
- O’Donnell, A. (2014). Another Relationship to Failure: Reflections on Beckett and Education. *Journal of Philosophy of Education*, 48(2), pp.260–275.
- O’Dwyer, M., Filieri, R. and O’Malley, L. (2023). Establishing successful university–industry collaborations: barriers and enablers deconstructed. *J Technol Transf* 48, pp.900–931.
- O’Mullane, M. (2021). Developing a theoretical framework for exploring the institutional responses to the Athena SWAN Charter in higher education institutions—A feminist institutionalist perspective. *Irish Journal of Sociology*, 29(2), pp.215–235.
- O’Reilly, D. and Reed, M. (2010). ‘Leaderism’: An Evolution of Managerialism in UK Public Service Reform. *Public Administration*, 88(4), pp.960–978.
- O’Shea, S. and O’Hara, J. (2020). The impact of Ireland’s new higher education system performance framework on institutional planning towards the related policy objectives. *Higher Education*, 80(2), pp.335–351.
- OECD. (1966). *Investment in Education: Ireland*. OECD.
- OECD. (2013). *Education Policy Outlook Ireland 2013* [online]. Paris: Organisation for Economic Cooperation and Development. Available from:

https://www.oecd.org/ireland/EDUCATION%20POLICY%20OUTLOOK%20IRELAND_EN.pdf

OECD. (2015). *Education Policy Outlook 2015: Making Reforms Happen* [online]. Paris: OECD Publishing. Available from: [https://read-oecd-ilibrary-org.jproxy.nuim.ie/education/education-policy-outlook-2015_9789264225442-en#page1](https://read-oecd-ilibrary.org/jproxy.nuim.ie/education/education-policy-outlook-2015_9789264225442-en#page1).

OECD. (2016a). *Digital Government Strategies for Transforming Public Services in the Welfare Areas*. [online]. Available from: <https://www.oecd.org/gov/digital-government/Digital-Government-Strategies-Welfare-Service.pdf>

OECD. (2016b). *Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills* [online]. OECD. Available from: https://www.oecd-ilibrary.org/education/innovating-education-and-educating-for-innovation_9789264265097-en.

OECD. (2018a). *The Future of Education and Skills: Education 2030*. Paris: OECD Publishing.

OECD. (2018b). *Education at a Glance 2018: OECD Indicators*. OECD Publishing, Paris.

OECD. (2018c). *Going Digital in a Multilateral World*. Paris: OECD Publishing.

OECD. (2019). *Education at a Glance 2019: OECD Indicators*. OECD Publishing.

OECD. (2020a). *Education Policy Outlook Ireland 2020* [online]. Paris: OECD Publishing. Available from: <https://www.oecd.org/education/policy-outlook/country-profile-Ireland-2020.pdf>.

OECD. (2020b). *Responding to Changing Demographics in Higher Education*. OECD Publishing.

OECD. (2021a). *OECD Digital Education Outlook 2021: Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots* [online]. OECD.

- OECD. (2021b). *The state of higher education: One year in to the COVID-19 pandemic* [online]. Available from: https://www.oecd-ilibrary.org/education/the-state-of-higher-education_83c41957-en.
- OECD. (2022). *Resourcing higher education in Ireland* [online]. Available from: <https://www.oecd-ilibrary.org/content/paper/67dd76e0-en>.
- OECD. (2023). *Education at a Glance 2023: OECD Indicators* [online]. OECD Publishing, Paris, <https://doi.org/10.1787/e13bef63-en>.
- Olawale, A. and Mutongoza, P. (2021). Student Expectations and Perceptions of Digital Learning and the Effect of COVID-19 During a Pandemic: A Developing Country Perspective. *African Journal of Information Systems*, 13(3), pp.373–394.
- Oliveira, J., Magalhães, A., Matsuda, L., Santos, J., Souto, R., Riboldi, C. and Ross, R. (2021). Mixed methods appraisal tool: Strengthening the methodological rigor of mixed methods research studies in nursing. *Texto and Contexto - Enfermagem*, 30.
- Oliver, C. (1991). Strategic Responses to Institutional Processes. *The Academy of Management Review*, 16(1), pp.145–179.
- Olssen, M. and Peters, M. A. (2005). Neoliberalism, higher education and the knowledge economy: From the free market to knowledge capitalism. *Journal of Education Policy*, 20(3), pp.313–345.
- Orlikowski, W. J. (1996). Improvising organizational transformation over time: A situated change perspective. *Information Systems Research*, 7(1), pp.63–92.
- Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies*, 28(9), pp.1435–1448.
- Orlikowski, W. J. and Scott, S. V. (2008). Sociomateriality: Challenging the separation of technology, work and organization. *The Academy of Management Annals*, 2(1), pp.433–474.
- Ormerod, R. (2006). The history and ideas of pragmatism. *Journal of the Operational Research Society*, 57(8), pp.892–909.

- Orton, J. D. and Weick, K.E. (1990). Loosely Coupled Systems: A Reconceptualization. *The Academy of Management Review*, 15(2), pp.203–223.
- Ostrom, E. (2005). *Understanding institutional diversity*. Princeton University Press.
- Oswald, F. L. and Kolb, S. M. (2014). Predicting future performance from past performance: The dichotomy of potential versus achievement. *Industrial and Organizational Psychology*, 7(3), pp.238–243.
- Owuondo, J. (2023). Fostering financial inclusion and education access in the global south: collaborative stratagem. *International Journal of Latest Technology in Engineering Management and Applied Science*, XII(X), pp.34–40.
- Paavola, R., Hallikainen, P. and Elbanna, A. R. (2017). Role of middle managers in modular digital transformation: The case of SERVU. *Association for information systems (Chair), Proceedings of the 25th European conference on information systems (ECIS)*.
- Pablo, A. L., Reay, T., Dewald, J. R. and Casebeer, A. L. (2007). Identifying, Enabling and Managing Dynamic Capabilities in the Public Sector. *Journal of Management Studies*, 44(5), pp.687–708.
- Pache, A. and Santos, F. (2013). Inside the hybrid organization: selective coupling as a response to competing institutional logics. *Academy of Management Journal*, 56(4), pp.972–1001.
- Page, M. J. (2021). The PRISMA 2020 Statement: An updated guideline for reporting systematic reviews. *Systematic Reviews*, 10(1), p.89.
- Page, S. (2014). *Diversity and complexity*. Princeton University Press.
- Palinkas, L. A., Aarons, G. A., Horwitz, S. M., Chamberlain, P., Hurlburt, M. and Landsverk, J. (2016). Mixed method designs in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(1), pp.44–53.
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N. and Hoagwood, K. (2011). Purposeful sampling for qualitative data collection and analysis in mixed

- method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42(5), pp.533–544.
- Parajuli, M., Chhatbar, M. and Hassan, A. (2022). The impact of corporate governance on integrated reporting (IR).quality and sustainability performance: evidence from listed companies in South Africa. *Meditari Accountancy Research*, 31.
- Parasuraman, A., & Colby, C. L. (2015). An Updated and Streamlined Technology Readiness Index: TRI2.0. *Journal of Service Research*, 18(1), 59–74.
- Pardo-del-Val, M. and Martinez-Fuentes, C. (2003). Resistance to change: A literature review and empirical study. *Management Decision*. 41. pp.148–155.
- Parent, J. D. and Lovelace, K. J. (2018). Employee engagement, positive organizational culture, and individual adaptability. *On the Horizon*, 26(3), pp.206–214.
- Pascale, R., Millemann, M. and Gioja, L. (1997). Changing the way we change. *Harvard Business Review*, 75, pp.126–139.
- Paulk, M. C., Curtis, B., Chrissis, M. B. and Weber, C. V. (1993). Capability maturity model, version 1.1. *IEEE Software*, 10(4), pp.18–27.
- Peppard, J. and Ward, J. (2004). Beyond strategic information systems: Towards an IS capability. *Journal of Strategic Information Systems*, 13(2), pp.167–194.
- Peppard, J. and Ward, J. (2007). *The strategic management of information systems: Building a digital strategy*. John Wiley and Sons.
- Pereira, L., Asrar, G. R., Bhargava, R., Fisher, L. H., Hsu, A., Jabbour, J., Nel, J., Selomane, O., Sitas, N., Trisos, C., Ward, J., van den Ende, M., Vervoort, J. and Weinfurter, A. (2021). Grounding global environmental assessments. *Sustainability Science*, 16(6), pp.1907–1922.
- Perez, C. (2010). Technological revolutions and techno-economic paradigms. *Cambridge Journal of Economics*, 34(1), pp.185–202.

- Peter, A., Piccoli, G. and Ives, B. (2020). Digital transformation: A strategic action field perspective. *Journal of Strategic Information Systems*, 29(4).
- Peters, M. A., Jandrić, P. and Hayes, S. (2023). Postdigital-biodigital: An emerging configuration. *Educational Philosophy and Theory*, 55(1), pp.1–14.
- Petrie, P. and Chambers, H. (2009). *Richer lives: creative activities in the education and practice of Danish Pedagogues*. Thomas Coram Research Unit: University of London.
- Petticrew, M. and Roberts, H. (2006). *Systematic reviews in the social sciences: A practical guide*. Oxford: Blackwell Publishing.
- Pettigrew, A. M. (1997). What Is a Processual Analysis? *Scandinavian Journal of Management*, 13(4), pp.337–348.
- Pezeshkan, A., Fainshmidt, S., Nair, A., Frazier, M. L. and Markowski, E. (2016). An empirical assessment of the dynamic capabilities–performance relationship. *Journal of Business Research*, 69(8), pp.2950–2956.
- Pfeffer, J. A. and Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper and Row.
- Phillips, A. and Merrill, J. (2015). innovative use of the integrative review to evaluate evidence of technology transformation in healthcare. *Journal of Biomedical Informatics*, 58, pp.114–121.
- Phillips, D. (2015). Policy Analysis in Higher Education Research. In: Huisman, J. and Tight, M. (eds). *Theory and method in higher education research*. Bingley: Emerald Group Publishing Limited, pp.333–344.
- Pike, K. L. (1967). *Language in Relation to a Unified Theory of the Structure of Human Behavior*. The Hague: Mouton.
- Pinheiro, R., Benneworth, P. and Jones, G. A. (2012). *Universities and regional development: A critical assessment of tensions and contradictions*. Routledge.

- Pirta, R. and Grabis, J. (2015). Integrated Methodology For Information System Change Control Based On Enterprise Architecture Models. *Information Technology and Management Science*, 18(1).
- Plekhanov, D., Franke, H. and Netland, T. H. (2023). Digital transformation: A Review and Research Agenda. *Systematic Literature Reviews in Management Research*, 41(6), pp.821–844.
- Politis, J. D., Politis, N. J. and Politis, K. (2012). The relationship between leadership styles and knowledge management practices in organizations. *Leadership and Organization Development Journal*, 33(6), pp.522–534.
- Pollitt, C. (1995). Justification by works or by faith?: Evaluating the New Public Management. *Evaluation*, 1(2), pp.133–154.
- Pollitt, C. and Bouckaert, G. (2011). *Public management reform: A comparative analysis - New Public Management, governance, and the neo-Weberian state*. 3rd ed. Oxford: Oxford University Press.
- Ponzi, A. and Aizawa, Y. (2000). Criticality and punctuated equilibrium in a spin system model of a financial market. *Chaos, Solitons and Fractals*, 11(11), pp.1739–1746.
- Porter, M. E. (2008). The five competitive forces that shape strategy, *Harvard Business Review*, 86(1), pp. 778–93.
- Powell, W. W. and DiMaggio, P. J. (1991). *The new institutionalism in organizational analysis*. Chicago: University of Chicago Press.
- Power, M. (1997). *The audit society: Rituals of verification*. Oxford: Oxford University Press.
- Prahalad, C. K. and Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, 68(3), pp.79–91.
- Prinsloo, T. (2021). Exploring digital transformation priorities and challenges in European higher education. *Technological Forecasting and Social Change*, 187, p.122242.

- Prinsloo, T. and Deventer, J. P. v. (2017). Using the Gartner hype cycle to evaluate the adoption of emerging technology trends in higher education–2013 to 2016. *Emerging Technologies for Education*, pp.49–57.
- Project Management Institute. (2010). *A guide to the Project Management Body of Knowledge (PMBOK Guide)*. 4th ed. Project Management Institute.
- Pucciarelli, F. and Kaplan, A. (2016). Competition and strategy in higher education: Managing complexity and uncertainty. *Business Horizons*, 59(3), pp.311–320.
- Puentedura, R. (2006). Transformation, technology, and education. [Blog post]. Available from: <http://hippasus.com/resources/tte/>.
- Pult, S. and Manwani, S. (2014). Towards a framework for managing IT-enabled change, sourcing and governance [online]. In: : *International Conference on Management, Leadership and Governance*. Available from: <http://academic-conferences.org/icmlg/icmlg2014/icmlg14-proceedings.htm>.
- Purcell, W. M. and Chahine, T. (2019). Leadership and governance frameworks driving transformational change in an entrepreneurial UK university. *Leadership and Organization Development Journal*, 40(5), pp.612–623.
- Quinn, J. B. (1982). Managing strategies incrementally. *Omega*, 10(6), pp.613–627.
- Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L. and Koole, M. (2020). Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education*, 2(3), pp.923–945.
- Reich, J. (2020). *Failure to Disrupt: Why Technology Alone Can't Transform Education*. Harvard University Press.
- Reich, J. and Ito, M. (2017). Three Myths about Education Technology and the Points of Light Beyond [online]. *Connected Learning Alliance Blog*. Available from: <https://clalliance.org/blog/three-myths-education-technology-points-light-beyond/>.

- Reis, J., Silva, C., Melão, N. and Matos, P. A. d. (2018). Digital transformation: A literature review and guidelines for future research. *Advances in Intelligent Systems and Computing*, pp.745–756.
- Reyhaneh, M. and Burgess, K. (2022). Digital transformation and sustainability: A systematic literature review. *Sustainability*, 14(12).
- Ribeiro, S., Araujo, M. and Gonçalves, L. (2018). Digital transformation in higher education: The role of leadership. *International Journal of Educational Technology in Higher Education*, 15(1).
- Ridgway, V. F. (1956). Dysfunctional consequences of performance measurements. *Administrative Science Quarterly*, 1(2), pp.240–247.
- Robertson, R. (2005). The conceptual promise of glocalization: Commonality and diversity. *Art-e-Fact: Strategies of Resistance*, (4).
- Robertson, S. L. (2019). Digital technology and the changing nature of higher education institutions. *Policy Futures in Education*, 17(8), pp.1038–1054.
- Robey, D. and Abdalla Mikhaeil, C. (2016). Déjà vu or art nouveau? A comment on Demetis and Lee's "Crafting theory to satisfy the requirements of systems science". *Information and Organization*, 26(4), pp.127–130.
- Robey, D. and Sahay, S. (1996). Transforming work through information technology: A comparative case study of geographic information systems in county government. *Information Systems Research*, 7(1), pp.93–110.
- Robins, K. and Webster, F. (2002). *The virtual university? Knowledge, markets, and management*. Oxford: Oxford University Press.
- Rof, A., Bikfalvi, A. and Marquès, P. (2020). Digital transformation for business model innovation in higher education: Overcoming the tensions. *Sustainability*, 12(12).
- Rof, A., Bikfalvi, A. and Marquès, P. (2022). Pandemic-accelerated digital transformation of a born-digital higher education institution: Towards a customized multimode learning strategy. *Educational Technology and Society*, 25(1), pp.124–141.

- Rogers, E. M. (2003). *Diffusion of innovations*. 5th ed. Simon and Schuster.
- Rogers, J. (2000). Communities of Practice: A framework for fostering coherence in virtual learning communities. *Educational Technology and Society*, 3.
- Röglinger, M., Pöppelbuß, J. and Becker, J. (2012). Maturity models in business process management. *Business Process Management Journal*, 18(2), pp.328–346.
- Rorty, R. (1979). *Philosophy and the Mirror of Nature*. Princeton University Press.
- Rosenblit, G. and Gros, B. (2007). E-learning: Confusing terminology, research gaps, and inherent challenges. *International Journal of Distance Education*, 23(2), pp.117–135.
- Ross, J. W., Sebastian, I. M. and Beath, C. M. (2016). Digital innovation and transformation: A framework for achieving a sustainable competitive advantage. *MIS Quarterly Executive*, 15(1), pp.1–7.
- Rudd, T. (2013). The Ideological Appropriation of Digital Technology in UK Education: Symbolic Violence and the Selling and Buying of the “Transformation Fallacy”. In: Selwyn, N. and Facer, K. (eds). *The Politics of Education and Technology*. New York: Palgrave Macmillan US, 147–166.
- Rumbley, L. E. (2015). “Intelligent internationalization”: A 21st-century imperative. *International Higher Education*, (80), pp.16–17.
- Säfström, C. A. and Månsson, N. (2022). The marketisation of education and the democratic deficit. *European Educational Research Journal*, 21(1), pp.124–137.
- Sahputri, R. A. M., Sujarwoto, S. and Haryono, B. S. (2022). Resistance behaviour among Indonesian academics experiencing policy change on international peer-review publication. *International Journal of Educational Management*, 36(5), pp.729–749.
- Sailer, M., Hommes, J. and Ringle, C. M. (2021). Digital transformation in higher education: A systematic review and research agenda. *International Journal of Educational Technology in Higher Education*, 18(1), pp.1–31.

- Salemans, L. and Budding, T. (2022). Operationalizing public value in higher education: The use of narratives as an alternative for performance indicators. *Journal of Management and Governance*, 26(1), pp.337–363.
- Salemans, L. and Budding, T. (2023). Exploring narratives in public value creation: A focus on higher education governance. *Governance Studies*, 27(2), pp.45–67.
- Sambamurthy, V., Bharadwaj, A., Grover, V., 2003. Shaping agility through digital options: reconceptualizing the role of information technology in contemporary firms. *MIS Q.* pp.237–263.
- Sambamurthy, V., Zmud, R.W. (2000). Research Commentary: The Organizing Logic for an Enterprise's IT Activities in the Digital Era—A Prognosis of Practice and a Call for Research. *Information Systems Research* 11, pp.105–114.
- Sánchez, I. D., Sitú, M. and Murillo, L. (2022). Breaking down walls, building bridges: The importance of transformational leadership considering contextual and individual factors in resistance to change. *International Journal of Organizational Analysis*, 31(7), pp.3295–3314.
- Sandelowski, M., Docherty, S. and Emden, C. (1997). Qualitative metasynthesis: Issues and techniques. *Research in Nursing and Health*, 20(4), pp.365–371.
- Santiago, R., Carvalho, T., Amaral, A. and Meek, V. L. (2006). Changing patterns in the middle management of higher education institutions: The case of Portugal. *Higher Education*, 52(2), pp.215–250.
- Saucier, D. A., Schiffer, A. A. and Jones, T. L. (2022). “Exams by you”: Having students write and complete their own exams during the COVID-19 pandemic. *Teaching of Psychology*, 51(2), pp.158–165.
- Sayer, A. (2000). *Realism and social science*. Sage Publications.
- Scalabrino, C. (2022). *European sustainability competence framework background document*. European Union Publications Office.
- Schein, E. H. (2010). *Organizational culture and leadership*. 4th ed. San Francisco: Wiley.

- Schiller, H. I. (2011). *Digital capitalism: Networking the global market system*. MIT Press.
- Schiuma, G., Schettini, E. and Santarsiero, F. (2021). How wise companies drive digital transformation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(2).
- Schneckenberg, D. (2009). Understanding the real barriers to technology-enhanced innovation in higher education. *Educational Research*, 51(4), pp.411–424.
- Schneider-Kamp, A. (2021). Health capital: toward a conceptual framework for understanding the construction of individual health. *Social Theory and Health*, 19(3), pp.205–219.
- Schrama, R., Martinsen, D. S. and Mastenbroek, E. (2020). Going Nordic in European administrative networks? *Politics and Governance*, 8(4), pp.65–77.
- Schwarz, G.M., Bouckennooghe, D. and Vakola, M. (2021). Organizational change failure: Framing the process of failing. *Human Relations*, 74(2), pp.159–179.
- Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences*, 15(Suppl. 1), pp.388–393.
- Scott, W. R. (2014). *Institutions and organizations: Ideas, interests, and identities*. SAGE Publications.
- Seaman, J. E., Allen, I. E. and Seaman, J. (2018). *Grade increase: Tracking distance education in the United States*. Babson Survey Research Group.
- Sebastian, I. M., Ross, J. W., Beath, C., Mocker, M., Moloney, K. G. and Fonstad, N. O. (2017). How big old companies navigate digital transformation. *MIS Quarterly Executive*, 16(3), pp.197–213.
- Seeber, M., Barberio, V., Huisman, J. and Mampaey, J. (2016). Factors affecting the evolution of higher education systems: An institutional analysis. *Higher Education Quarterly*, 70(3), pp.296–313.

- Selwyn, N. (2013). Discourses of digital ‘disruption’ in education: A critical analysis. *Fifth International Roundtable on Discourse Analysis*.
- Selwyn, N. (2014). *Digital technology and the contemporary university: Degrees of digitization*. Routledge.
- Selwyn, N. (2016). *Is technology good for education?* John Wiley and Sons.
- Selwyn, N. (2020). How creative use of technology may have helped save schooling during the pandemic [online]. *The Conversation*. Available from: <https://theconversation.com/how-creative-use-of-technology-may-have-helped-save-schooling-during-the-pandemic-146488>.
- Selwyn, N. (2022). *Education and technology: key issues and debates*. 3rd ed. London: Continuum.
- Selwyn, N. and Jandrić, P. (2020). Postdigital living in the age of Covid-19: Unsettling what we see as possible. *Postdigital Science and Education*, 2(3), pp.989–1005.
- Serdyukov, P. (2017). Innovation in education: What works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching and Learning*, 10(1), pp.4–33.
- Seres, L., Pavlicevic, V. and Tumbas, P. (2019). Digital transformation of higher education: Competing on analytics. In *Proceedings of INTED2019 Conference*, pp.9491–9497.
- Sharpe, W. F. (1998). *Investments*. 6th ed. Pearson.
- Shattock, M. (2013). *Managing successful universities*. McGraw-Hill Education.
- Shelton, C. (2018). An ecological model for university faculty members’ thinking about technology. *Journal of Computing in Higher Education*, 30.
- Sheninger, E. (2019). *Digital leadership: Changing paradigms for changing times*. Corwin Press.
- Shin, J. C. and Jung, J. (2014). Academics’ job satisfaction and job stress across countries in the changing academic environments. *Higher Education*, 67(5), pp.603–620.

- Shore, C. and Wright, S. (2015). Governing by numbers: audit culture, rankings and the new world order: Governing By Numbers. *Social Anthropology*, 23(1), pp.22–28.
- Silva, F., Soares, F., Lima Peres, A., Azevedo, I., Vasconcelos, A., Kamei, F.K. and Meira, S. (2014). Using CMMI together with agile software development: A systematic review. *Information and Software Technology*, 58.
- Slaughter, S. and Leslie, L. L. (1997). *Academic capitalism: Politics, policies, and the entrepreneurial university*. Johns Hopkins University Press.
- Slaughter, S. and Rhoades, G. (2004). *Academic capitalism and the new economy: Markets, state, and higher education*. JHU Press.
- Slobodian, Q. (2018). *Globalists: The End of Empire and the Birth of Neoliberalism*, Cambridge, MA: Harvard University Press.
- Smith, M. P. (2001). *Transnational urbanism: Locating globalization*. Blackwell.
- Smith, M. P. (2011). Translocality: A critical reflection. In K. Brickell and A. Datta (eds), *Translocal geographies: Spaces, places, connections*, pp.181–198. Ashgate.
- Smith, S., Hayes, S. and Shea, P. (2017). A Critical Review of the Use of Wenger’s Community of Practice (CoP). Theoretical Framework in Online and Blended Learning Research, 2000-2014. *Online Learning*, 21.
- Snowden, D. and Boone, M. E. (2007). A leader’s framework for decision making. *Harvard Business Review*, 85(11), pp.68–76.
- Snowden, D. and Rancati, A. (2021). Managing complexity (and chaos).in times of crisis: A field guide for decision-makers inspired by the Cynefin framework. Luxembourg: Publications Office of the European Union.
- SOLAS. (2020). *Future FET: Transforming Learning – The National Further Education and Training Strategy 2020–2024* [online]. Available from: <https://www.solas.ie>.

- Soluk, J., Kammerlander, N. and De Massis, A. (2021). Exogenous shocks and the adaptive capacity of family firms: Exploring behavioral changes and digital technologies in the COVID-19 pandemic. *RandD Management*, 51(4), pp.364–380.
- Sorensen, T.B., Ydesen, C. and Robertson, S.L. (2021). Re-reading the OECD and education: the emergence of a global governing complex – an introduction. *Globalisation, Societies and Education*, 19(2), pp.99–107.
- Spivak, G. C. and Gunew, S. (1986). Questions of multiculturalism. *Hecate*. 12(1/2), pp.136–142.
- Springer, S. (2010). Neoliberalism and geography: Expansions, variegations, formations. *Geography Compass*, 4(8), pp.1025–1038.
- Spyridonidis, D., Hendy, J. and Barlow, J. (2015). Understanding hybrid roles: The role of identity processes amongst physicians. *Public Administration*, 93(2), pp.395–411.
- Stacey, R. D. (1996). *Complexity and creativity in organizations*. Berrett-Koehler Publishers.
- Stiglitz, J. E. (2002). *Globalization and its discontents*. Norton.
- Stolterman, E. and Fors, A. C. (2004). Information Technology and the Good Life. In: Kaplan, B., Truex, D. P., Wastell, D., Wood-Harper, A. T. and DeGross, J. I. (eds) *Information Systems Research: Relevant Theory and Informed Practice*. Boston, MA: Springer US, pp.687–692. Available from: https://doi.org/10.1007/1-4020-8095-6_45.
- Stracke, C. (2019). Quality Frameworks and Learning Design for Open Education. *The International Review of Research in Open and Distributed Learning*, 20.
- Svahn, F., Mathiassen, L. and Lindgren, R. (2017). Embracing digital innovation in incumbent firms: How Volvo Cars managed competing concerns. *MIS Quarterly*, 41(1), pp.239–253.
- Tashakkori, A. and Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. SAGE Publications.

- Tashakkori, A. and Teddlie, C. (2010). *SAGE handbook of mixed methods in social and behavioral research*. SAGE Publications.
- Teaching and Learning Forum. (2020). INDEx Findings from Students and Staff Who Teach in Higher Education: Summary of Main Report [online]. Dublin, Ireland: *National Forum for the Enhancement of Teaching and Learning in Higher Education*. Available from: 10.6084/m9.figshare.12253091.
- Teaching and Learning Forum. (n.d.). *Towards a National Digital Skills Framework for Irish Higher Education: Review and Comparison of Existing Frameworks and Models* [online]. Available from: www.allaboardhe.org.
- Teddlie, C. and Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. SAGE Publications.
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), pp.1319–1350.
- Teece, D. J., Pisano, G. and Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), pp.509–533.
- Teixeira, A., Gonçalves, M. and Taylor, M. (2021). How higher education institutions are driving digital transformation: A case study. *Education Sciences*, 11(10).
- Teräs, M., Suoranta, J., Teräs, H. and Curcher, M. (2020). Post-Covid-19 education and education technology ‘solutionism’: A seller's market. *Postdigital Science and Education*, 2(3), pp.863–878.
- Terziev, V., Dimitrova, G. and Georgiev, M. (2021). Social responsibility of higher education institutions in the context of digital transformation. *Journal of Business Research*, 124, pp.453–464.

- Thomas, A. and Paul, J. (2019). Knowledge transfer and innovation through university-industry partnership: An integrated theoretical view. *Knowledge Management Research and Practice*, 17(4), pp.436–448.
- Tian, X. and Huber, C. (2019). Innovating higher education through digital transformation: Challenges and opportunities. *International Journal of Educational Management*, 33(3), pp.490–506.
- Tight, M. (2014a). Theory development and application in higher education research: The case of academic mobility. *Higher Education Policy*, 27(2), pp.179–195.
- Tight, M. (2014b). Discipline and theory in higher education research. *Research Papers in Education*, 29(1), pp.93–110.
- Tilak, J. B. G. (2008). Higher education: A public good or a commodity for trade? *Prospects*, 38(4), pp.449–466.
- Tocto-Cano, E., Paz Collado, S., López-Gonzales, J.L. and Turpo-Chaparro, J.E. (2020). A Systematic Review of the Application of Maturity Models in Universities. *Information*, 11(10).
- Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative Inquiry*, 16(10), pp.837–851.
- Trow, M. (2000). From mass higher education to universal access: The American advantage. *Minerva*, 37(4), pp.303–328.
- Trowler, P. (2008). *Cultures and change in higher education: Theories and practices*. Palgrave Macmillan.
- Tsoukas, H. and Chia, R. (2002). On organizational becoming: Rethinking organizational change. *Organization Science*, 13(5), pp.567–582.
- Tungpantong, C., Nilsook, P. and Wannapiroon, P. (2022). Factors influencing digital transformation adoption among higher education institutions during digital disruption. *Higher Education Studies*, 12(2), p.9.

- Tyack, D.B. and Cuban, L. (1995). *Tinkering toward utopia: a century of public school reform*. Cambridge, Mass: Harvard University Press.
- Tyndall, J. (2008). How Low Can You Go? : Toward a Hierarchy of Grey Literature. In: *Dreaming 08 Australian Library and Information Association Biennial Conference*. Alice Springs, NT Australia: Flinders Academic Commons, p.14.
- Uhl-Bien, M. and Arena, M. (2017). Complexity leadership: Enabling people and organizations for adaptability. *Organizational Dynamics*, 46(1), pp.9–20.
- Ulrich, D. and Smallwood, N. (2004). Capitalizing on capabilities. *Harvard Business Review*, 82(6), pp.119–127.
- UNESCO International Bureau of Education. (2013). *UNESCO International Bureau of Education Glossary of Curriculum Terminology* [online], September 2013, p.65. Available from:
https://www.researchgate.net/publication/333700936_Assessment_of_transversal_competencies_current_tools_in_the_Asian_region.
- UNESCO International Institute for Higher Education in Latin America and the Caribbean. (2020). *COVID-19 and higher education: Today and tomorrow; Impact analysis, policy responses and recommendations*.
- UNESCO. (2016a). *Changing dynamics in the governance of education: A comparative analysis of emerging issues and reforms in emerging countries* [online]. Paris, France: UNESCO. Available from: <http://sdg.iisd.org/news/unesco-explores-school-leadership-governance-in-achieving-2030-targets/>.
- UNESCO. (2016b). *Designing effective monitoring and evaluation of education systems for 2030: A global synthesis of policies and practices* [online]. Paris, France: UNESCO. Available from: <http://sdg.iisd.org/news/unesco-explores-school-leadership-governance-in-achieving-2030-targets/>.
- UNESCO. (2016c). *Leading better learning: School leadership and quality in the Education 2030 agenda*. Paris, France: UNESCO.

- UNESCO. (2018). *UNESCO ICT Competency Framework for Teachers* [online]. Paris, France: UNESCO. Available from: <https://en.unesco.org/themes/ict-education/competency-framework-teachers>.
- UNESCO. (2020). *COVID-19 and higher education: Today and tomorrow. Impact analysis, policy responses and recommendations* [online]. UNESCO International Institute for Higher Education in Latin America and the Caribbean. Paris, France: UNESCO. Available from: <https://www.iesalc.unesco.org/en/wp-content/uploads/2020/05/COVID-19-EN-130520.pdf>.
- UNESCO. (2022). *UNESCO Higher Education Global Data Report (Summary)*.
- UNESCO. (2023). *Global Education Monitoring Report 2023: Technology in education: A tool on whose terms?* [online]. GEM Report UNESCO. Paris, France: UNESCO. Available from: <https://unesdoc.unesco.org/ark:/48223/pf0000385723>.
- United States Government Accountability Office. (2016). *Highlights of a Forum: Data and Analytics Innovation: Emerging Opportunities and Challenges. Report to Congressional Addressees* [online]. United States Government Accountability Office. Available from: <https://www.gao.gov/products/gao-16-659sp>.
- Vaill, P. (1996). *Learning as a Way of Being: Strategies for Survival in a World of Permanent White Water*. Jossey-Bass.
- Vaira, M. (2004). Globalization and higher education organizational change: A framework for analysis. *Higher Education*, 48(4), pp.483–510.
- Van Damme, D. (2002). Trends and models in international quality assurance in higher education in relation to trade in education services. *Higher Education Management and Policy*, 14(3), pp.51–71.
- Van de Ven, A. H. and Poole, M. S. (1995). Explaining development and change in organizations. *Academy of Management Review*, 20(3), pp.510–540.

- Varpio, L., Paradis, E., Uijtdehaage, S. and Young, M. (2019). The Distinctions Between Theory, Theoretical Framework, and Conceptual Framework. *Academic Medicine*, 95, p.1.
- Venkatesh, V. and Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences - DECISION SCI*, 39, pp.273–315.
- Venkatesh, V. and Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), pp.186–204.
- Venugopal, R. (2015). Neoliberalism as concept. *Economy and Society*, 44(2), pp.165–187.
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J., Fabian, N. and Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, pp.889–901.
- Verina, N. and Titko, J. (2019). *Digital transformation: conceptual framework*.
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), pp.118–144.
- Vicente, P. N., Lucas, M., Carlos, V. and Bem-Haja, P. (2020). Higher education in a material world: constraints to digital innovation in Portuguese universities and polytechnic institutes. *Education and Information Technologies*, 25(6), pp.5815–5833.
- Vidovich, L. (2001). A Conceptual Framework for Analysis of Education Policy and Practices. In: *Australian Association for Research in Education*. Fremantle: The University of Western Australia, p.21.
- Vom Brocke, J. and Rosemann, M. (eds). (2015). *Handbook on Business Process Management 1: Introduction, Methods, and Information Systems* [online]. Berlin, Heidelberg: Springer Berlin Heidelberg. Available from: <https://link.springer.com/10.1007/978-3-642-45100-3>.

- Vom Brocke, J., Schmiedel, T., Recker, J., Trkman, P., Mertens, W. and Viaene, S. (2015). Ten principles of good business process management. *Business Process Management Journal*, 20(4), pp.530–532.
- Vukasovic, M., Maassen, P., Nerland, M., Pinheiro, R., Stensaker, B. and Vabø, A. (2022). Higher Education Systems and Institutions, Northern Europe, in *Encyclopedia of International Higher Education Systems and Institutions*. Springer, Dordrecht.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Walsh, J. (2014). The transformation of higher education in Ireland, 1945-80. In: Loxley, A., Seery, A. and Walsh J. (eds), *Higher education in Ireland: Practices, policies and possibilities*, pp.5–32. Palgrave Macmillan.
- Walsh, J. (2018). *Higher Education in Ireland, 1922-2016: Politics Policy and Power – A History of Higher Education in the Irish State*. Palgrave Macmillan, Dublin
- Walsh, S., Flannery, D. and Cullinan, J. (2015). Geographic accessibility to higher education on the island of Ireland. *Irish Educational Studies*, 34(1), pp.5–23.
- Warner, K. and Wäger, M. (2019). Building dynamic capabilities for digital transformation: an ongoing process of strategic renewal. *Long Range Planning*, 52(3), pp.326–349.
- Watermeyer, R. and Chubb, J. (2019). Evaluating ‘impact’ in the UK’s Research Excellence Framework (REF): liminality, looseness and new modalities of scholarly distinction. *Studies in Higher Education*, 44(9), pp.1554–1566.
- Watermeyer, R., Crick, T., Knight, C. and Goodall, J. (2021). COVID-19 and digital disruption in UK universities: afflictions and affordances of emergency online migration. *Higher Education*, 81(3), pp.623–641.
- Watts, R. (2017). *Public Universities, Managerialism and the Value of Higher Education*. London: Palgrave Macmillan UK.

- Watty, K., McKay, J. and Ngo, L. (2016). Innovators or inhibitors? Accounting faculty resistance to new educational technologies in higher education. *Journal of Accounting Education*, 36, pp.1–15.
- Weber, M. (1949). *The Methodology of the Social Sciences*. II. USA: The Free Press.
- Weick, K. E. (1976). Educational organizations as loosely coupled systems. *Administrative Science Quarterly*, 21: pp.1–19
- Weick, K. E. and Quinn, R. E. (1999). Organizational change and development. *Annual Review of Psychology*, 50(1), pp.361–386.
- Weick, K.E. (2009). *Making Sense of the Organization, Volume 2*. Chichester: John Wiley and Sons Ltd.
- Weill, P. and Woerner, S.L. (2017). Future Ready? Pick Your Pathway For Digital Business Transformation. *MIT CISR*, 17(9).
- Weill, P. and Woerner, S.L. (2019). *Is Your Company Ready for a Digital Future?. Who Wins in a Digital World?*, 5 March 2019, pp.9–22.
- Wendler, R. (2012). The maturity of maturity model research: A systematic mapping study. *Information and Software Technology*, 54(12), pp.1317–1339.
- Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J. and Jensen, T. B. (2021). Unpacking the difference between digital transformation and IT-enabled organizational transformation. *Journal of the Association for Information Systems*, 22(1), pp.102–129.
- Westerman, G., Bonnet, D. and McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Review Press.
- Westerman, G., Calm  jane, C., Bonnet, D., Ferraris, P. and McAfee, A. (2011). Digital Transformation: A roadmap for billion-dollar organizations. *MIT Center for Digital Business and Capgemini Consulting*, pp.1–68.

- Whitchurch, C. (2008a). Shifting Identities and Blurring Boundaries: the Emergence of Third Space Professionals in UK Higher Education. *Higher Education Quarterly*, 62(4), pp.377–396.
- Whitchurch, C. (2008b). *Professional Managers in UK Higher Education: Preparing for Complex Futures*. London: Institute of Education, University of London.
- Williams, I. and Shearer, H. (2011). Appraising Public Value: Past, Present and Futures. *Public Administration*, 89(4), pp.1367–1384.
- Williamson, B. (2018). The hidden architecture of higher education: Building a big data infrastructure for the 'smarter university'. *International Journal of Educational Technology in Higher Education*, 15(1), pp.1–26.
- Williamson, R. (2015). Towards a Multi-scalar Methodology: The Challenges of Studying Social Transformation and International Migration. In: Castles, S., Ozkul, D., Cubas, M.A. (eds). *Social Transformation and Migration. Migration, Diasporas and Citizenship Series*. Palgrave Macmillan, London.
- Winter, R. (2009). Academic manager or managed academic? Academic identity schisms in higher education. *Journal of Higher Education Policy and Management*, 31(2), pp.121–131.
- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), pp.991–995.
- Wirtz, B.W., Weyerer, J.C. and Geyer, C. (2022). Artificial Intelligence and the Public Sector. *Venture Capital* 24, pp.53–70.
- Wu, M. Y., Huang, C. L., Li, C. P. and Pan, C. H. (2021). Management innovation: A review and future research agenda. *Management Review Quarterly*, 71(3), pp.465–511.
- Wylie, C. and McKinley, S. (2018). *Educational leadership capability framework*. Education Council New Zealand.
- Xiong, S. and Wang, H. (2022). The logic of urban land system reform in China—a policy analysis framework based on punctuated-equilibrium theory. *Land*, 11(8).

- Yin, R. (2009). How to do Better Case Studies: (With Illustrations from 20 Exemplary Case Studies). In: *The SAGE Handbook of Applied Social Research Methods*. California: SAGE Publications, Inc., pp.254–282. Available from: <http://methods.sagepub.com/book/the-sage-handbook-of-applied-social-research-methods-2e/n8.xml>.
- Yin, Y., Zhai, E., Fan, X. and Wang, K. (2020). IT capabilities and business transformation: Evaluating the performance of Chinese universities. *Information Systems Frontiers*, 22(5), pp.1149–1163.
- Zachariadis, M., Hileman, G. and Scott, S. V. (2013). Governance and control of strategic initiatives: An exploratory study of financial services firms. *Journal of Management Information Systems*, 30(3), pp.65–100.
- Zawacki-Richter, O., Marín, V. I., Bond, M. and Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators?. *International Journal of Educational Technology in Higher Education*, 16(1), p.39.
- Zha, Q. (2009). Diversification or Homogenization in Higher Education: A Global Allomorphism Perspective. *Higher Education in Europe*, 34(3–4), pp.459–479.
- Zhou, S., Zhou, A., Feng, J. and Jiang, S. (2017). Dynamic capabilities and organizational performance: The mediating role of innovation. *Journal of Management and Organization*, pp.1–17.
- Zilvinskis, J., Kinzie, J., Daday, J., O'Donnell, K. and Zande, C.V. (2022). Delivering on the Promise of High-Impact Practices: A New Resource for Assessment. *Assessment Update*, 34(4), pp.1–16.
- Zouari, D., Ruel, S. and Viale, L. (2020). Does digitalising the supply chain contribute to its resilience?. *International Journal of Physical Distribution and Logistics Management*, 51(2), pp.149–180.
- Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. New York: Public Affairs.

Appendices

Appendix A: Research question development process

This appendix describes the systematic research question development process used in this study. The process involved identifying gaps in the literature, aligning the gaps with broader themes, and synthesising gaps and themes to produce focused research questions. Broad questions were initially developed and then refined through iterative review. Key research questions include change forces driving digital transformation (Research Question 1); organisational operational and cultural enabling constraints perceived by HEI managership (Research Question 2); and the evaluation of how Irish HEIs leverage digital transformation (Research Question 3). These questions are mapped to the themes and finalised after ensuring relevance and alignment with the research objectives. The development process is as follows:

- **Literature Review**

- Conducted a comprehensive review of existing literature.
- Identified three key knowledge gaps:
 1. Limited focus on digital transformation in HEIs compared to for-profit organisations.
 2. Under-theorised role of middle managers in driving digital change.
 3. Lack of a coherent framework integrating change forces, organisational dynamics, and managerial strategies.

- **Identify Key Themes**

- Based on the knowledge gaps, the following themes were identified:
 - Globalisation, Marketisation, and Massification.
 - Change Forces.
 - Technological Advancements.
 - Societal Shifts.
 - Outcomes & Value Realisation.

- **Map**

- Mapped each identified theme to research question domains, to ensure comprehensive coverage of the knowledge gaps.

- Created a matrix aligning themes with objectives, highlighting where each theme contributes to the research focus (see Table 2.7).
 - Ensured that each research question is directly informed by one or more themes, guaranteeing alignment between the literature, thematic analysis, and study aims.
 - Refined the mapping through iterative consultation with supervisors and subject matter experts, ensuring both academic rigour and practical relevance.
- **Develop Research Questions**
 - Drawing on the mapped themes, a set of research questions was developed to address the identified knowledge gaps:
 - **Research Question 1: What change forces drive digital transformation in Higher Education Institutions in Ireland, from the perspective of senior managers responsible for these initiatives?**
 - Informed by themes of Globalisation, Marketisation, and Change Forces.
 - **Research Question 2: How do operational capabilities and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Higher Education Institutions in Ireland?**
 - Informed by themes of Technological Advancements and Societal Shifts.
 - **Research Question 3: What is the impact of digital transformation on Higher Education Institutions in Ireland**
 - Informed by themes of Outcomes and Value.

This process ensures that the research questions are systematically derived from the identified gaps and key themes in the literature as critical areas for inquiry.

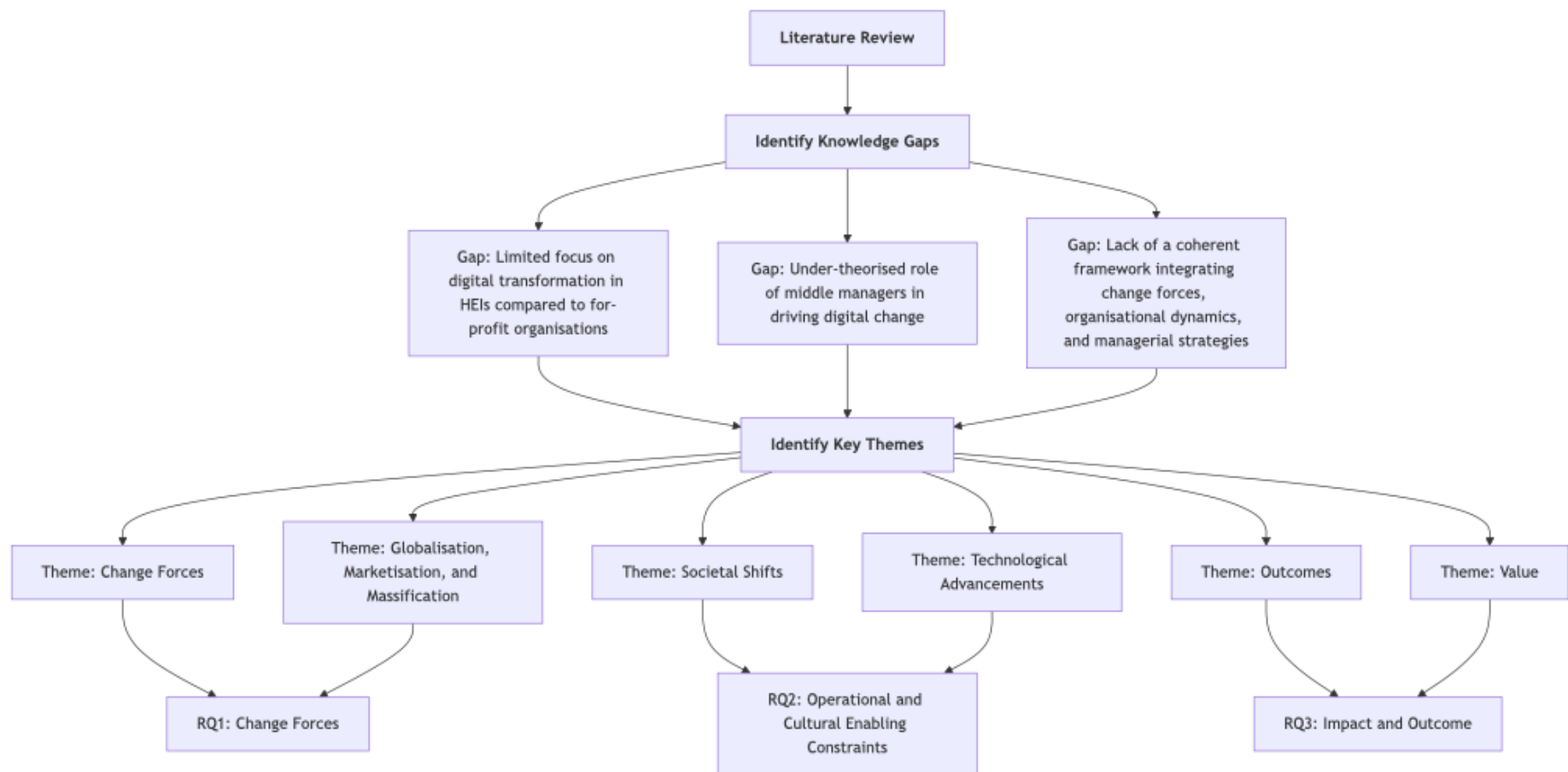


Figure A.1 Mapping research questions to research themes. Source: Author's own work.

Appendix B: Evaluation of Grey Literature Sources Using the AACODS Checklist

This appendix outlines the application of the AACODS checklist to evaluate the inclusion of grey literature sources in this study. Each source was assessed on the criteria of Authority, Accuracy, Coverage, Objectivity, Date, and Significance to ensure the reliability and relevance of the material used.

Table B.1 Grey literature evaluated using the AACODS methods

Source: Adapted from Tyndall, 2008

Source Document	Authority	Accuracy	Coverage	Objectivity	Date	Significance	Outcome
Innovation 2020: Excellence, Talent, Impact. (2015).	Published by the Irish Department of Jobs, Enterprise and Innovation, a credible authority.	Methodologically sound with clear policy goals.	Emphasises HE's role in fostering innovation and Ireland's knowledge economy.	Balanced and evidence-based.	2015	Relevant for understanding HE's role in Ireland's innovation framework.	Highly relevant and suitable for inclusion.
National Skills Strategy 2025. (2016).	Published by the Department of Education and Skills, a credible authority.	Clear policy directives on workforce skills development; methodologically sound.	Covers workforce skills for Ireland's knowledge economy.	Evidence-based and balanced.	2016	Relevant for understanding HE's role in Ireland's skills strategy.	Highly relevant and suitable for inclusion.
HEA. (2017). Completing the Landscape Process for Irish Higher Education	Published by the HEA, highly credible in Irish HE policy and administration.	Provides clear recommendations based on institutional and expert input.	Comprehensive analysis of system reform; informs structural decisions.	Balanced and evidence-based.	2017	Significant for understanding system reform and policy evolution.	Highly relevant and suitable for inclusion.

Source Document	Authority	Accuracy	Coverage	Objectivity	Date	Significance	Outcome
HEA. (2018). Higher Education System Performance Framework 2018–2020	Published by the HEA, a credible government body.	Based on measurable objectives and performance data; highly reliable.	Comprehensive coverage of goals and targets for Irish HE.	Evidence-based and balanced.	2018	Critical for understanding HEI performance metrics and system priorities.	Highly relevant and suitable for inclusion.
HolonIQ. (2018). Education in 2030.	Published by HolonIQ, an authoritative source on global education trends.	Long-term predictions based on global data; reliable but speculative.	Focuses on how technology and innovation will shape education by 2030.	Analytical but speculative.	2018	Relevant for understanding long-term predictions on HE's future.	Suitable for inclusion, with acknowledgement of speculative nature.
Technological Universities Act (2018).	Published by the Government of Ireland, a credible authority.	Legislative document providing a framework for TUs in Ireland; highly reliable.	Outlines the establishment and operation of TUs in Ireland.	Clear and objective.	2018	Critical for understanding the legislative framework for TUs in Ireland.	Highly relevant and suitable for inclusion.
Bradley, C., de Jong, M., and Walden, W. (2019). Why your next transformation should be 'all in'.	Published in McKinsey Quarterly, a globally recognised consultancy publication.	Based on McKinsey's expertise; reliable but reflects consultancy perspectives.	Focuses on best practices for successful transformations in organisations, including HEIs.	Analytical but consultancy-driven.	2019	Relevant for understanding transformation strategies in HE.	Suitable for inclusion.

Source Document	Authority	Accuracy	Coverage	Objectivity	Date	Significance	Outcome
Future Jobs Ireland 2019.	Published by the Department of Business, Enterprise and Innovation, a trusted institution.	Evidence-based report on Ireland's future workforce needs; reliable.	Explores HE's role in preparing for future work trends.	Analytical and balanced.	2019	Useful for understanding HE's alignment with Ireland's future jobs strategy.	Suitable for inclusion.
HEA. (2019). Digital Transformation and Empowering Technologies in Higher Education	Published by the Higher Education Authority (HEA), a credible policymaker in Ireland.	Likely based on research; methodology not explicitly outlined but presumed reliable.	Focused on how digital transformation is shaping Irish higher education.	Informative but may reflect the HEA's priorities.	2019	Relevant for understanding pre-COVID digital transformation trends in Irish HE.	Suitable for inclusion, with acknowledgement of limited methodological details.
Amendment to the Ministers and Secretaries Acts 1924 to 2020.	Published by the Government of Ireland, a trusted legislative body.	Legislative document detailing the establishment of DFHERIS; highly reliable.	Covers restructuring of government departments to support HE and research.	Clear and objective.	2020	Key for understanding the structural changes in Irish HE governance.	Highly relevant and suitable for inclusion.
European Commission. (2020). The likely impact of COVID-19 on education	Published by the European Commission Joint Research Centre, a credible EU institution.	Based on existing literature and datasets (e.g., PISA, TALIS); highly reliable.	Explores the pandemic's potential impacts on global education systems.	Balanced and evidence-based.	2020	Significant for understanding early pandemic impacts on education.	Highly relevant and suitable for inclusion.
HolonIQ. (2020). Initial Insights. Higher	Published by HolonIQ, an authoritative source	Provides insights into digital capability trends in HE; reliable.	Explores how HEIs are adopting digital technologies globally.	Analytical and evidence-based.	2020	Important for understanding early digital trends in HE.	Highly relevant and suitable for inclusion.

Source Document	Authority	Accuracy	Coverage	Objectivity	Date	Significance	Outcome
Education Digital Capability 2020.	on global education trends.						
KPMG and Parker, S. (2020). The future of higher education in a disruptive world.	Published by KPMG, a respected consultancy, and Stephen Parker, Special Adviser on Education, KPMG Australia.	Evidence-based analysis of HE challenges during disruption; reliable.	Discusses global HE trends, challenges, and opportunities in a post-COVID world.	Analytical but may include a consultancy bias.	2020	Relevant for understanding HE challenges in a rapidly changing global landscape.	Suitable for inclusion.
LaBerge, L., O'Toole, C., Schneider, J., and Smaje, K. (2020). How COVID-19 has pushed companies over the technology tipping point.	Published by McKinsey, a globally respected consultancy firm.	Based on industry insights and global data; reliable but consultancy-focused.	Explores how COVID-19 accelerated digital transformation across sectors, including HE.	Analytical but consultancy-driven.	2020	Significant for understanding the pandemic's impact on digital acceleration in HE.	Suitable for inclusion.
Programme for Government 2020.	Published by the Government of Ireland, an authoritative source.	Outlines commitments to research, innovation, and workforce upskilling; reliable.	Provides a high-level overview of HE's role in national development goals.	Balanced and evidence-based.	2020	Important for understanding HE's role in broader national policy commitments.	Highly relevant and suitable for inclusion.
UNESCO (2020). COVID-19 and higher education: Today and tomorrow	Published by UNESCO, regarded as authoritative and credible internationally	Based on global data and expert analysis; credible and	Examines policy responses and global challenges in higher	Evidence-based and balanced.	2020	Critical for understanding global higher education trends	Highly relevant and suitable for inclusion.

Source Document	Authority	Accuracy	Coverage	Objectivity	Date	Significance	Outcome
	recognised United Nations agency.	methodologically sound.	education during COVID-19.			during the pandemic.	
DFHERIS. (2021). Funding the Future: Investing in knowledge and skills	Published by the Department of Further and Higher Education, an official body of the Irish state.	Policy-driven document with clear recommendations for funding reform.	Focuses on sustainable funding strategies for Ireland's knowledge economy.	Balanced and evidence-based.	2021	Critical for understanding Ireland's funding and policy priorities for higher education.	Highly relevant and suitable for inclusion.
European Commission. (2021). The impact of COVID-19 on higher education	Published by the European Commission, a globally recognised supranational political institution.	Evidence-driven analysis using international datasets; methodologically sound.	Focuses on teaching, equity, and mobility impacts in European HE during COVID-19.	Analytical and unbiased.	2021	Essential for understanding European HE challenges during the pandemic.	Highly relevant and suitable for inclusion.
HolonIQ. (2021). Higher Education Digital Capability (HEDC) Framework.	Published by HolonIQ, regarded as an authoritative source within education technology and related sectors	Based on global HE data and trends; methodologically robust.	Focuses on digital transformation and capability-building in HE.	Analytical and evidence-based.	2021	Significant for understanding HE digital transformation frameworks.	Highly relevant and suitable for inclusion.
OECD. (2021). The state of higher education: One year into the COVID-19 pandemic	Published by the OECD, known for global education policy research.	Provides an evidence-based review of pandemic impacts on HE globally.	Broad perspective on HE during COVID-19, including governance and equity.	Analytical and balanced.	2021	Critical for understanding the state of global HE during the pandemic.	Highly relevant and suitable for inclusion.

Source Document	Authority	Accuracy	Coverage	Objectivity	Date	Significance	Outcome
HEA. (2022). Draft Higher Education System Performance Framework 2023–2027	Published by the HEA, authoritative in higher education policy.	Draft document; methodology appears robust but not finalised.	Broad coverage of performance targets and future priorities.	Reflects HEA’s priorities while remaining balanced.	2022	Useful for understanding planned system objectives in Irish HE.	Suitable for inclusion, with acknowledgement of draft status.
Higher Education Authority Act 2022.	Published by the Government of Ireland, authoritative.	Legislative act reforming the HEA; highly reliable and detailed.	Focuses on governance, powers, and modernisation of the Irish HE sector.	Clear and objective.	2022	Critical for understanding governance reforms in the Irish HE system.	Highly relevant and suitable for inclusion.
HolonIQ. (2022). Annual Insights. Higher Education Digital Capability.	Published by HolonIQ, an authoritative source on global education trends.	Evidence-based analysis of HE digital innovation; reliable.	Explores annual trends and developments in HE digital capability.	Analytical and balanced.	2022	Useful for tracking recent digital developments in HE.	Suitable for inclusion.
KPMG. (2022). Digital Transformation - KPMG Ireland.	Published by KPMG, a reputable consultancy firm.	Based on global expertise and industry analysis; methodologically sound.	Focuses on how digital transformation reshapes HEIs globally.	Analytical but may reflect KPMG’s consultancy perspective.	2022	Important for understanding trends in HE digital transformation.	Suitable for inclusion.
UNESCO (2022). Resuming or reforming? Tracking the global impact of the COVID-19 pandemic	Published by UNESCO, a globally trusted organisation.	Based on extensive analysis of recovery trends; highly credible.	Focuses on post-pandemic recovery and reform in global higher education.	Balanced and evidence-based.	2022	Essential for understanding recovery and reform trends in	Highly relevant and suitable for inclusion.

Source Document	Authority	Accuracy	Coverage	Objectivity	Date	Significance	Outcome
						higher education after COVID-19.	
HEA. (2023). How we fund	Published by the HEA, authoritative on Irish higher education funding mechanisms.	Clearly explains funding models (RGAM); data is reliable and detailed.	Focuses on funding allocation processes and governance in HE.	Descriptive and factual.	2023	Essential for understanding HE funding and governance frameworks.	Highly relevant and suitable for inclusion.

The AACODS checklist provided a systematic framework for evaluating grey literature sources used in this study. The selected sources were deemed credible, accurate, and relevant to the research objectives, ensuring a balanced and robust foundation for the study.

Appendix C: Frameworks and Models Consulted for HEI-DT Conceptual Framework Development

Chronological list of conceptual frameworks and models identified in the literature review and consulted in the HEI-DT conceptual framework development process.

Table C.1 List of capability maturity frameworks and models identified in the literature review process

Publication Year	Title	Author
1988	Characterizing the Software Process: A Maturity Framework.	Humphrey, W.
1989	Toward a Conceptual Framework for Mixed-Method Evaluation Designs	Greene, J.; Caracelli, V; Graham, W.
1999	What Makes a Concept Good? A Criterial Framework for Understanding Concept Formation in the Social Sciences	Gerring, J.
2000	Communities of Practice: A framework for fostering coherence in virtual learning communities	Rogers, J.
2001	A Conceptual Framework for Analysis of Education Policy and Practices	Vidovich, L.
2003	Conceptual frameworks for health systems performance: a quest for effectiveness, quality, and improvement	Arah, O. A.
2004	Globalisation and higher education organisational change: A framework for analysis	Vaira, M.
2006	Theoretical Frameworks in Qualitative Research	Anfara, V; Mertz, N.
2007	A Leader's Framework for Decision Making	Snowden, D. J.; Boone, M. E.

Publication Year	Title	Author
2009	Building a Conceptual Framework: Philosophy, Definitions, and Procedure	Jabareen, Y.
2011	A worked example of “best fit” framework synthesis: A systematic review of views concerning the taking of some potential chemopreventive agents	Booth, A.; Carroll, C.; Cooper, K.
2011	Technology Enhanced Learning in Higher Education: results from the design of a quality evaluation framework	Casanova, D.; Moreira, A.; Costa, N.
2011	Mixed Methods Research: The Five Ps Framework	Cameron, R.
2012	Distributed leadership: a collaborative framework for academics, executives and professionals in higher education	Jones, S.; Lefoe, G.; Harvey, M.; Ryland, K.
2013	“Best fit” framework synthesis: refining the method	Booth, A.; Carroll, C.; Leaviss, J.; Rick, J.
2013	A conceptual framework for systematic reviews of research in educational leadership and management	Hallinger, P.
2014	Towards a Framework for Managing IT-Enabled Change, IT Sourcing and IT Governance	Pult, S.; Manwani, S.
2014	Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your “House”	University of Colorado-Denver; Grant, C.; Osanloo, A.; New Mexico State University
2015	Theoretical Framework of Leadership in Higher Education of England and Wales	Mukan, N.; Havrylyuk, M.; Stolyarchuk, L.
2015	IT Capability Maturity Framework (IT-CMF): The Body of Knowledge Guide	Curley, M.; Kenneally, J.; Carcary, M. (eds)

Publication Year	Title	Author
2015	The Unblocking Leadership for Effectiveness of Teachers as Knowledge Staff: A Theoretical Framework for School Management	Ozmusul, M.
2015	Theoretical Framework of Leadership in Higher Education of England and Wales	Mukan, N.; Havrylyuk, M.; Stolyarchuk, L.
2015	JISC Digital Capability Framework	JISC
2015	Towards a National Digital Skills Framework for Irish Higher Education: All Aboard! Enabling & Empowering Staff & Students to Flourish in the Digital Age	National Forum for the Enhancement of Teaching and Learning in Higher Education
2016	Academic leadership capability framework: a comparison of its compatibility and applicability in Australia, New Zealand, and Malaysia	Ghasemy, M.; Hussin, S.; Daud, M. A. K. M.
2016	Towards 2030: A Framework for Building a World-Class Post-Compulsory Education System for Wales	Hazelkorn, E.
2017	A Critical Review of the Use of Wenger's Community of Practice (CoP) Theoretical Framework in Online and Blended Learning Research, 2000-2014	Smith, S. U.; Hayes, S.; Shea, P.
2017	Governance Framework for the Higher Education System	Higher Education Authority
2017	A Digital Transformation Framework in the Irish Higher Education System	Higher Education Authority
2018	Educational leadership capability framework.	Wylie, C.; McKinley, S.; Education Council New Zealand
2018	Higher Education System Performance Framework 2018 – 2020	Higher Education Authority

Publication Year	Title	Author
2018	DigCompOrg Framework	European Commission
2018	Higher Education System Performance Framework 2018-2020	Higher Education Authority
2018	UNESCO ICT Competency Framework for Teachers	UNESCO
2018	Organisational Structure: Mintzberg's Framework	Lunenburg, F. C.
2019	A conceptual framework for leader and leadership education and development	Grunberg, N. E.; Barry, E. S.; Callahan, C. W.; Kleber, H. G.; McManigle, J. E.; Schoomaker, E. B.
2019	The NASSS framework for ex-post theorisation of technology-supported change in healthcare: worked example of the TORPEDO programme	Abimbola, S.; Patel, B.; Peiris, D.; Patel, A.; Harris, M.; Usherwood, T.; Greenhalgh, T.
2019	ACODE TEL Framework Pilot Pack 2019	Australasian Council on Open, Distance and e-Learning
2019	Quality Frameworks and Learning Design for Open Education	Stracke, C. M.
2019	Digital transformation: conceptual framework	Verina, N.; Titko, J.
2019	Leadership and governance frameworks driving transformational change in an entrepreneurial UK university	Purcell, W. M.; Chahine, T.
2020	A framework for digital transformation and business model innovation	van Tonder, C.; Schachtebeck, C.; Nieuwenhuizen, C.; Bossink, B.

Publication Year	Title	Author
2020	Health capital: toward a conceptual framework for understanding the construction of individual health	Schneider-Kamp, A.
2020	The Distinctions Between Theory, Theoretical Framework, and Conceptual Framework	Varpio, L.; Paradis, E.; Uijtdehaage, S.; Young, M.
2020	Digital Transformation in Higher Education: A Framework for Maturity Assessment	Marks, A.; AL-Ali, M.
2020	Higher Education System Performance Framework 2023-2028	Higher Education Authority
2020	The impact of Ireland's new higher education system performance framework on institutional planning towards the related policy objectives	O'Shea, S.; O'Hara, J.
2021	Higher Education Digital Capability (HEDC) Framework	HOLON IQ
2021	Future of e-Government: An integrated conceptual framework	Malodia, S.; Dhir, A.; Mishra, M.; Bhatti, Z.
2021	Microsoft's Higher Education Transformation Framework	Microsoft Inc.
2021	A Digital Transformation Framework in the Irish Higher Education System Pre and Post COVID-19	Higher Education Authority (HEA)
2021	Organisational Learning and Digital Transformation: A Theoretical Framework	Dörner, Olaf; R., S.
2022	A systematic review and framework for digital leadership research maturity in higher education	Jameson, J.; Rumyantseva, N.; Cai, M.; Markowski, M.; Essex, R.; McNay, I.
2022	Harnessing Digital-The Digital Ireland Framework	Dept of the Taoiseach

Publication Year	Title	Author
2022	Mastering the digital transformation through organisational capabilities: A conceptual framework	Konopik, J.; Jahn, C.; Schuster, T.; Hoßbach, N.; Pflaum, A.
2022	Funding for Digital in the 2021-2027 Multiannual Financial Framework Shaping Europe's digital future	Europa.eu
2022	European sustainability competence framework background document: literature review, analysis of frameworks and proposals.	European Commission. Joint Research Centre.

Appendix D: Mapping Findings to Conceptual Framework

Table D.1 Mapping Findings to Conceptual Framework

Source: Author's own work

HEI-DT Framework Component	Addressed in Findings?	How It Is Addressed / Gaps
1. External & Internal Change Forces		
E/I Continuous Background Forces	Yes	Globalisation, marketisation, and glocalisation are explicitly discussed as systemic drivers of digital transformation in Irish HEIs. Government education policy (e.g., IoT-to-TU mergers, HEA reforms, and strategic funding initiatives) and technological advancements are also highlighted. The analysis connects these forces to broader socio-economic objectives and institutional constraints.
E/I Disrupting Foreground Events	Yes	The findings specifically address major external catalysts like the COVID-19 pandemic (Type I exogenous sudden change), the Global Financial Crisis (GFC), and Brexit, framing them as accelerants of digital transformation. COVID-19, in particular, is discussed in depth as a punctuated equilibrium event that exposed vulnerabilities in Irish HEIs' digital readiness while driving rapid digital adaptation.
Elicit/Require	Yes	The findings discuss how external events and policies necessitate transformation by shaping institutional constraints and capabilities. For example, government mandates (e.g., <i>Technological Universities Act 2018</i>), funding structures, and external crises compel HEIs to adopt digital tools and processes. The absence of internally initiated rapid change (endogenous sudden change) highlights a reliance on external forces to drive transformation.

HEI-DT Framework Component	Addressed in Findings?	How It Is Addressed / Gaps
2. Institutional Enabling Constraints		
Strategy (Vision and Goals)	Yes	The findings highlight strategic plans in HEIs that articulate a vision for digital transformation. However, it critiques the gap between these plans and actual outcomes, pointing to performative change as a barrier.
Principles of Operation (Practices/Standards)	Yes	Operational constraints such as outdated systems, inflexible processes, and siloed decision-making are outlined as barriers to aligning practices with strategic goals.
Institutional Logics (Culture and Norms)	Yes	Cultural barriers, such as resistance to change and managerialism, are discussed in detail. Institutional norms that reinforce inertia and limit adaptability are highlighted.
Ethical Guidelines (Values/Responsibilities)	Partially	Ethical concerns are implied, such as critiques of managerialism undermining academic agency and public value creation. However, explicit discussion of ethical frameworks guiding digital transformation is missing.
Resources (Funding/Engagement/IP)	Yes	Chronic underfunding, resource dependence, and fragmented technology adoption are identified as major barriers. Marketisation and vendor-driven adoption strategies are also discussed.

HEI-DT Framework Component	Addressed in Findings?	How It Is Addressed / Gaps
3. Institutional Framework & Logics		
Strategic Plan (Vision and Goals)	Yes	Critiques the gap between HEI strategic plans' commitment to transformation and the limited, often symbolic, changes observed in practice.
Governance (Decision-Making)	Yes	Decision-making structures are critiqued, with leadership practices such as agenda control and rhetorical collegiality undermining collaborative transformation.
Administrative Model (Resource Allocation)	Yes	Inefficiencies in resource allocation, driven by funding models like the HEA's RGAM, are discussed as barriers to coordinated efforts toward digital transformation.
Legislation & Authority (Regulatory Frameworks)	Partially	While external accountability mechanisms and pressures are mentioned, the findings do not explicate how legislative and regulatory frameworks influence digital transformation.
Elicit/Require (Capabilities and Inertia)	Yes	Structural inertia, caused by inflexible processes and bureaucratic inefficiencies, is identified as a key barrier to transformation.
4. Organisational Capabilities		
Effectively Utilise Resources and Systems	Yes	The findings critique HEIs' limited ability to leverage resources effectively due to funding constraints and fragmented adoption of technologies.

HEI-DT Framework Component	Addressed in Findings?	How It Is Addressed / Gaps
Strategic Planning (SP)	Yes	Critiques the focus on performative metrics rather than substantive outcomes in HEI strategic planning.
Governance (GOV)	Yes	Governance weaknesses, such as top-down approaches and limited collaboration, are discussed as barriers to organisational development and transformation.
Organisational Design & Planning (ODP)	Yes	Addresses structural and cultural barriers, such as siloed decision-making and hierarchical power dynamics, that limit effective organisational design.
Reinforces (Structural Motion/Value Transformations)	Yes	Institutional conservatism and performative change are shown to reinforce structural inertia, limiting value transformations and the realisation of strategic goals.
5. Structural Adaptability		
Organisational Structure (Hierarchies)	Yes	Critiques hierarchical and bureaucratic structures that prioritise control over collaboration, limiting adaptability and transformative efforts.
Organisational Culture (Norms/Values)	Yes	Resistance to change, anxiety about autonomy, and professional identity concerns among staff are highlighted as key cultural barriers.
Leadership & Managership (Vision/Change)	Yes	Leadership practices, such as centralised control and rhetorical collegiality, are critiqued for undermining meaningful change.

HEI-DT Framework Component	Addressed in Findings?	How It Is Addressed / Gaps
Commitment to Change (Stakeholder Buy-In)	Yes	Resistance to change among academic staff and HEI leadership is identified as a dominant barrier to stakeholder buy-in and readiness for transformation.
Enhances (Value Transformations/ Practices)	Partially	While some enabling constraints (e.g., peer networks, regional engagement) are discussed, the focus is predominantly on barriers. A more balanced discussion of opportunities for progress would enhance this component.
6. Value Transformations		
Student Experience	Yes	Highlighted through tailored education services like professional development programs, modular courses, and microcredentials, enabling high-quality, flexible learning.
Education Delivery	Yes	Efficiency and scalability are discussed in the context of hybrid and online education models (e.g., Rowan University using digital platforms to extend reach).
Research Capabilities	Yes	Applied research tailored to regional needs (e.g., Hazel TU's focus on agtech and Juniper University's biotech research) emphasises innovative practices.
Administration	Yes	Optimised processes are discussed, especially in relation to Horse Chestnut University's strategies for cost reduction and efficiency improvements.
Enables	Yes	Digital transformation is framed as a foundation for long-term sustainability and institutional viability.
7. Structural Inertia		
Isomorphism	Yes	Institutional conformity to external pressures (e.g., HEA performance agreements and state-driven strategies) is discussed in relation to balancing regional and national/global priorities.

HEI-DT Framework Component	Addressed in Findings?	How It Is Addressed / Gaps
Organisational Barriers	Yes	Structural inefficiencies, fragmented governance, and funding constraints are identified as barriers to digital transformation.
Belief Traps	Partially	Resistance to change and critiques of managerialism reflect cultural and ideological barriers, but belief traps are not explicitly discussed.
Resistance to Change	Yes	Explicitly mentioned, particularly in the resistance from academic staff and leadership to transformation efforts.
Affects	Yes	Discussed in terms of how barriers restrict adaptability and innovation but maintain stability (e.g., balancing regional engagement with global ambitions).
8. Impacts (Positive)		
Institutional Identity	Yes	Strengthened reputation and legitimacy are discussed, especially in the context of regional engagement and differentiation (e.g., TUs leveraging partnerships).
Operational Excellence	Yes	Efficiency improvements are a recurring theme, particularly through digital tools for administration and service delivery.
Agility and Innovation	Yes	The ability to adapt and innovate is highlighted, especially in how HEIs respond to local and global pressures through digital transformation (e.g., Rowan University's hybrid education model).
High Capability	Yes	Enhanced organisational competence is evident in HEIs' strategic use of digital platforms to strengthen operations and meet stakeholder needs.
Autonomy and Agency	Yes	HEIs' efforts to achieve greater independence through digital strategies are discussed, though often implicitly (e.g., leveraging regional partnerships for sustainability).

HEI-DT Framework Component	Addressed in Findings?	How It Is Addressed / Gaps
9. Impacts (Negative)		
State Capture	Yes	The risk of state-driven strategies undermining institutional autonomy is discussed in critiques of centralised policymaking and performance agreements.
Surveillance	Partially	While not explicitly mentioned, critiques of metrics-driven governance imply concerns about over-monitoring and loss of academic autonomy.
Performativity	Yes	Clearly addressed, with a focus on measurable outcomes (e.g., KPIs) at the expense of quality and broader educational goals.
People/Data Exploitation	Partially	Implicitly mentioned in critiques of vendor influence and resource constraints but not explicitly discussed as a distinct issue.
Commodification	Yes	Addressed through critiques of market-driven approaches, particularly in professional education and the alignment of public institutions with market logics.
Determinism	Partially	Discussed indirectly in relation to rigid systems and governance structures limiting flexibility.
10. Outcomes		
Public Value Creation	Yes	HEIs' role in creating public value is emphasised, particularly through regional engagement and digital transformation initiatives.
Social, Political, Economic ROI	Yes	Return on investment is highlighted in workforce development, regional innovation ecosystems, and economic renewal (e.g., TUs fostering applied research).
Institutional Futures	Yes	Long-term sustainability and readiness for future challenges are central themes, particularly in the strategic importance of digital transformation.
Continuous Improvement	Partially	Feedback loops and iterative improvements are implied in discussions of administrative efficiency and regional engagement but not explicitly framed as continuous improvement.

Appendix E: Online Survey

Higher Education Institution Digital Transformation Readiness Survey v1.0

Introduction

Thank you for taking part in this study.

This survey should take about 25 minutes to complete. You may wish to review the survey questions offline before completing it. [Please click here to download a printable PDF version of the survey.](#)

Click the 'Next' button when ready to continue.

Consent

Confidentiality and privacy policy

All information you provide will be handled in accordance with the data privacy policy of Maynooth University. Data and information submitted will be published in aggregate form only, so that it cannot be traced back to any individual or institution. You can decide to opt out of the study by withdrawing consent at any point to the data being anonymised in September 2022. If you have concerns about this study and wish to contact an independent person, please contact the Maynooth University data protection officer at dataprotection@mu.ie.

Informed Consent

The information you have submitted will be incorporated with other respondents' data and published as a report, and as part of a doctoral thesis. If you wish to receive a copy of the report please enter your email address in the text box. I will send you the report once it becomes available. Your email address will not be retained for other purposes. If you do not wish to receive a copy of the report, simply leave the email address box empty.

Please enter a valid email address.

By clicking the 'Yes, I consent' button below, you are confirming that you have signed and returned the Information and Consent Form sent to you by email. You are giving your consent to participate in this study. If you have not yet signed and returned the form, please do that now. If you chose not to participate in the study tick the 'No, I do not wish to participate' button and you will exit the survey. * *Required*

- ☐ Yes, I consent
- ☐ No, I do not wish to participate

How to complete the survey

The survey presents statements and questions under the following sections:

1. You and your institution
2. Digital transformation benefits
3. Digital transformation challenges
4. Strategic themes
5. Institution strategic planning and governance
6. Scope
7. Funding and budget
8. Service Delivery
9. Administrative services and processes for students
10. Staff support and professional development
11. Technology enabled institutional activities

The survey should take about 25 minutes to complete. You are free to omit any question you do not wish to answer.

NOTE: When you reach the end of the questionnaire, clicking on the 'Finish' button saves your responses as final. Please ensure that you are satisfied that your responses are complete before submission. Your responses will be considered final and complete once you click on the 'Finish' button.

About you and your institution

Please provide some information about you and your institution.

Your Name

Work email address

Please enter a valid email address.

Institution name

Position/Title

Duration of service in current role

Institution type as defined by the Higher Education Authority (HEA)

If you selected Other, please specify:

Digital transformation benefits

For your institution right now, what are the benefits of using digital technologies? Rate by importance.

Please don't select more than 1 answer(s) per row.

	Unimportant	Slightly Important	Moderately Important	Important	Very Important	I do not know/not applicable
Developing a culture of open communication and staff involvement	☐	☐	☐	☐	☐	☐
Developing a work climate supportive of innovation and collaboration	☐	☐	☐	☐	☐	☐
Creating new education service demand (e.g. for post-graduate or short-form/micro-credentialed education programme offerings)	☐	☐	☐	☐	☐	☐
Creating new business demand (e.g. research and development activities)	☐	☐	☐	☐	☐	☐
Creating new revenue streams (e.g. international markets, specialised student cohorts, IP licencing, and technology transfer)	☐	☐	☐	☐	☐	☐
Developing new business models	☐	☐	☐	☐	☐	☐
Developing new value propositions for service users	☐	☐	☐	☐	☐	☐

6 / 33

Keeping pace with/outperform competitors (e.g. public/private HEIs, online course providers)	☐	☐	☐	☐	☐	☐
Developing new value propositions for service users	☐	☐	☐	☐	☐	☐
Growing market share	☐	☐	☐	☐	☐	☐
National initiatives and/or targeted funding support	☐	☐	☐	☐	☐	☐
Institution business continuity (e.g. adhering to public health and safety guidelines and other unpredictable social, political, and economic events)	☐	☐	☐	☐	☐	☐
Launching new service offerings	☐	☐	☐	☐	☐	☐
Enhancing existing service offerings	☐	☐	☐	☐	☐	☐
Improving speed to market with new/enhanced service offerings	☐	☐	☐	☐	☐	☐
Exploiting new distribution models and channels	☐	☐	☐	☐	☐	☐
Developing new organisational operating models	☐	☐	☐	☐	☐	☐
Automating/reinventing operational processes	☐	☐	☐	☐	☐	☐

Improving operational efficiencies	☐	☐	☐	☐	☐	☐
Improving staff productivity	☐	☐	☐	☐	☐	☐
Improving internal communication	☐	☐	☐	☐	☐	☐
Improving data-informed decision-making through advanced analytics/artificial intelligence	☐	☐	☐	☐	☐	☐
Improving service user (e.g. students, staff) engagement, relationships, and service delivery	☐	☐	☐	☐	☐	☐
Improving stakeholders (e.g. government agencies, funding agencies, research partners, commercial enterprises, social and economic partners) engagement, relationships, and service delivery	☐	☐	☐	☐	☐	☐
Improving service administration	☐	☐	☐	☐	☐	☐
Improving service delivery	☐	☐	☐	☐	☐	☐
Improving institutional performance measurement and reporting	☐	☐	☐	☐	☐	☐
Improving business value realisation	☐	☐	☐	☐	☐	☐

Digital transformation challenges

What are the biggest transformation challenges facing your institution right now? Rate by importance.

Please don't select more than 1 answer(s) per row.

	Unimportant	Slightly Important	Moderately Important	Important	Very Important	I do not know/not applicable
Conservative academic culture	☐	☐	☐	☐	☐	☐
Risk-averse culture	☐	☐	☐	☐	☐	☐
Institutional resistance to change	☐	☐	☐	☐	☐	☐
Absence of institutional collegiality	☐	☐	☐	☐	☐	☐
Lack of institutional vision or strategy for digital	☐	☐	☐	☐	☐	☐
Centralised institutional management model	☐	☐	☐	☐	☐	☐
Absence of change leadership	☐	☐	☐	☐	☐	☐
Absence of change management	☐	☐	☐	☐	☐	☐
Absence of collaboration among peers	☐	☐	☐	☐	☐	☐
Absence of funding and investment	☐	☐	☐	☐	☐	☐
Legacy technology system limitations (e.g. technical debt)	☐	☐	☐	☐	☐	☐
Limited infrastructure and resources	☐	☐	☐	☐	☐	☐

Absence of technological resources	☐	☐	☐	☐	☐	☐
Service integration and manageability issues	☐	☐	☐	☐	☐	☐
Absence of technical support	☐	☐	☐	☐	☐	☐
Inadequate training resources/opportunities	☐	☐	☐	☐	☐	☐
Absence of first line manager endorsement/support	☐	☐	☐	☐	☐	☐
Unclear roles, responsibilities and accountabilities	☐	☐	☐	☐	☐	☐
Skills shortages/difficulty in finding talent with digital competencies	☐	☐	☐	☐	☐	☐
Unsatisfactory remuneration	☐	☐	☐	☐	☐	☐
Inadequate institutional administrative capabilities	☐	☐	☐	☐	☐	☐
Rigid/inflexible behavioural norms	☐	☐	☐	☐	☐	☐
Siloed/disconnected functional units	☐	☐	☐	☐	☐	☐
Inflexible business processes	☐	☐	☐	☐	☐	☐
Inadequate digital transformation business case	☐	☐	☐	☐	☐	☐
Competing priorities e.g. between traditional and digital business models	☐	☐	☐	☐	☐	☐

Data lifecycle management issues	☐	☐	☐	☐	☐	☐
Information security concerns	☐	☐	☐	☐	☐	☐
Personal data protection concerns	☐	☐	☐	☐	☐	☐
Intellectual property ownership concerns	☐	☐	☐	☐	☐	☐
Regulatory concerns	☐	☐	☐	☐	☐	☐

Strategic Themes

Have you instituted a technology management capability framework in your organization?

- ☐ Yes, we have fully implemented a capability framework
- ☐ We are in the process of implementing a capability framework
- ☐ We have partially implemented a capability framework
- ☐ We are planning to implement a capability framework in the near future
- ☐ No, we have not implemented a capability framework
- ☐ I'm not sure / I don't know what a capability framework is

Which of the following themes represent major focus areas for your institution's digital transformation activities over the next two years? Please indicate the importance of each item.

Please don't select more than 1 answer(s) per row.

	Unimportant	Slightly Important	Moderately Important	Important	Very Important	I do not know/not applicable
Innovation: Implementing wide-scale digitalisation of institution business processes	☐	☐	☐	☐	☐	☐
Innovation: Enabling continuous service innovation	☐	☐	☐	☐	☐	☐
Innovation: Generating richer service user insights	☐	☐	☐	☐	☐	☐

Innovation: Designing and building innovative services incorporating digital technologies	☐	☐	☐	☐	☐	☐
Innovation: Supporting adaptive or dynamic business models	☐	☐	☐	☐	☐	☐
Value Management: Developing differentiated service user value propositions (e.g. for undergraduate, post-graduate, international, mature students)	☐	☐	☐	☐	☐	☐
Value Management: Enhancing collaboration between institution stakeholders including students, staff, business and social partners	☐	☐	☐	☐	☐	☐

Digital Transformation: Planning strategies around digitisation	☐	☐	☐	☐	☐	☐
Digital Transformation: Creating digital teams and leadership	☐	☐	☐	☐	☐	☐
Digital Transformation: Designing and building innovative services incorporating digital technologies	☐	☐	☐	☐	☐	☐
Digital Transformation: Streamlining with digital services such as cloud, mobile and analytics	☐	☐	☐	☐	☐	☐
Digital Transformation: Engaging service users via digital initiatives (e.g. online learning)	☐	☐	☐	☐	☐	☐
Digital Transformation: Selling services via digital channels	☐	☐	☐	☐	☐	☐

14 / 33

Digital Transformation: Providing content to service users via digital self-service	☐	☐	☐	☐	☐	☐
Digital Transformation: Linking digital/IT architecture, infrastructure and capabilities	☐	☐	☐	☐	☐	☐
Digital Transformation: Improving operating efficiency and productivity via digital deployment	☐	☐	☐	☐	☐	☐

Institution strategic planning and governance

Directing and monitoring the use of digital resources in support of institutional strategic objectives.

To what extent do you agree or disagree with the following statements in relation to your institution?

Please don't select more than 1 answer(s) per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I do not know/not applicable
The institution has clear policies and processes for selecting new technologies	☐	☐	☐	☐	☐	☐
The institution has a budget to support digital transformation initiatives	☐	☐	☐	☐	☐	☐
The institution appropriately invests in essential technology assets (infrastructure, hardware, software)	☐	☐	☐	☐	☐	☐

The institution's leadership and governance structures can effectively direct, monitor, and evaluate the use of digital technology resources in support of the institution's strategic goals and objectives	☐	☐	☐	☐	☐	☐
Governance of digitalisation includes representation from key stakeholders (teaching and administrative staff, external stakeholders)	☐	☐	☐	☐	☐	☐

How would you describe your institution's attitude to digitally mediated teaching and learning?

Please don't select more than 1 answer(s) per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I do not know/not applicable
It is a strategic priority for the institution	☐	☐	☐	☐	☐	☐
It is widely used throughout the institution	☐	☐	☐	☐	☐	☐
Staff have a positive attitude towards it	☐	☐	☐	☐	☐	☐
Students have a positive attitude towards it	☐	☐	☐	☐	☐	☐

It brings measurable benefits to the teaching and learning experience	☐	☐	☐	☐	☐	☐
---	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Does your institution have a strategic plan for digitalising teaching and learning?

- ☐ Any strategic planning that is performed is informal and ad hoc, with no formal input from or into overall institutional strategy planning
- ☐ A strategy is emerging but it is developed largely independently of overall institutional strategy planning
- ☐ The strategy is developed increasingly in consultation with other institutional units
- ☐ The strategy is incorporated into the overall institutional strategy planning process
- ☐ The strategic plan is continually reviewed for improvement and alignment with the institution's goals

How does your institution support the development of digitally mediated teaching and learning?

- ☐ There is a central unit to specifically support digitally mediated teaching and learning
- ☐ There is a central unit that supports all teaching and learning modalities including digitally mediated teaching and learning
- ☐ Responsibility for supporting digitally mediated teaching and learning is shared between the central and faculty-based departments
- ☐ Digitally mediated teaching and learning is supported at faculty or departmental level only
- ☐ Other

If you selected Other, please specify:

Does your institution have policies and measures for:

Please don't select more than 1 answer(s) per row.

	No	Yes, beginning	Yes, developing	Yes, maturing	Yes, established and maintained	I do not know
Plagiarism management	☐	☐	☐	☐	☐	☐
Data protection management	☐	☐	☐	☐	☐	☐
Ethics and academic integrity support	☐	☐	☐	☐	☐	☐
Examination and testing (identification, verification etc.)	☐	☐	☐	☐	☐	☐
Cyber security management	☐	☐	☐	☐	☐	☐
Intellectual property management	☐	☐	☐	☐	☐	☐

Scope

'Scope' refers to the breadth or reach of digitisation (e.g. the number of organisational or functional units that use digital technologies) in an organisation.

To what extent do you agree or disagree with the following statements in relation to your institution?

Please don't select more than 1 answer(s) per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I do not know/not applicable
The institution's digital strategy transcends traditional institutional structures and functions	☐	☐	☐	☐	☐	☐
Administrative processes are digitally enabled across the institution.	☐	☐	☐	☐	☐	☐
Institution ecosystem partners can easily conduct business in a digital manner with the institution.	☐	☐	☐	☐	☐	☐
The institution's business model enables the integration of complementary digital capabilities of business ecosystem partners.	☐	☐	☐	☐	☐	☐

Service delivery

'Service delivery' refers to a business framework that supplies services from a provider to a client. It also includes the constant interaction between the two parties during the duration of the time in which the provider supplies the service and the customer purchases it.

Estimate the percentage of students that participate in learning activities using the delivery channels listed below.

Please don't select more than 1 answer(s) per row.

	<25%	26-50%	51-75%	>75%	I do not know/not applicable
On-campus (physically present for participation in learning activities)	☐	☐	☐	☐	☐
Off-campus (digital mediated or remote participation in learning activities)	☐	☐	☐	☐	☐
Combining both on- and off campus participation in learning activities	☐	☐	☐	☐	☐

Does your institution offer the following delivery modalities?

Please don't select more than 1 answer(s) per row.

	No	Not yet, but we are planning to	Yes, in some faculties	Yes, throughout the institution	I do not know/not applicable
Fully on-campus academic education programmes	☐	☐	☐	☐	☐

Blended/hybrid academic education programmes	☐	☐	☐	☐	☐
Fully online academic education programmes	☐	☐	☐	☐	☐
Online short-form non-degree academic education programmes that earn ECTSs, certificates, micro credentials, badges or similar	☐	☐	☐	☐	☐

Other, *please specify*

--	--

Do your educational offerings incorporate transversal skills (including digital skills) development?

Please don't select more than 1 answer(s) per row.

	No	There is an elective/voluntary offering	Only in specific study programmes	In all or most study programmes	I do not know/not applicable
Discipline/field-of-study specific	☐	☐	☐	☐	☐
General digital literacy	☐	☐	☐	☐	☐
Ethics and behaviour in digital environments	☐	☐	☐	☐	☐

Data protection and information security	☐	☐	☐	☐	☐
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Other, *please specify*

--	--

Does your institution use microlearning and/or digital badges? (*choose all the applicable options*)

- ☐ Yes, for recognition of extracurricular learning
- ☐ Yes, in curricular learning
- ☐ Yes, as a learning opportunity offered to learners in- and outside of the institution
- ☐ No

Are you aware of a trend towards using digitally facilitated assessment at your institution?

Please don't select more than 1 answer(s) per row.

	No	Not yet, but we are planning to	Yes, in some faculties	Yes, throughout the institution	I do not know/not applicable
For all types of courses	☐	☐	☐	☐	☐
For online courses only	☐	☐	☐	☐	☐

In your view, where will digital transformation affect your institution's education service delivery capability most in the coming two years?

Please don't select more than 1 answer(s) per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I do not know/not applicable
Service User Engagement	☐	☐	☐	☐	☐	☐
Service Innovation and Delivery	☐	☐	☐	☐	☐	☐
Educational Technology Utilisation	☐	☐	☐	☐	☐	☐
Operational Excellence and Agility	☐	☐	☐	☐	☐	☐
Administrative Efficiency	☐	☐	☐	☐	☐	☐

Other, please specify

How consistently are benefits reviews carried out during and after completion of projects with a digital component?

- ☐ I do not know
- ☐ Benefits reviews are carried out in an ad hoc manner, or non-existent.
- ☐ Benefits reviews are carried out on some projects on their completion, typically with a focus on technology delivery.
- ☐ Benefits reviews are carried out at the end of most projects with a clear focus on benefits measurement.
- ☐ Benefits reviews are proactively used throughout the project life cycle, addressing both

planned and unexpected benefits realisation.

- Benefit reviews are actively used to promote further improvements and opportunities, and also to share learning across the institution portfolio to help enhance the quality of benefits planning of business cases.

Administrative services and processes for students

Which of the following online services does your institution provide for students?

Please don't select more than 1 answer(s) per row.

	No	Not yet, but we are planning to	Yes, in some faculties or departments	Yes, throughout the institution	I do not know/not applicable
Online registration	☐	☐	☐	☐	☐
Online course admissions	☐	☐	☐	☐	☐
Personalised study portal (e.g. courseware, transcripts, grades, study plan, student portfolio etc.)	☐	☐	☐	☐	☐
Online information for prospective students	☐	☐	☐	☐	☐
Online bridging courses for prospective students	☐	☐	☐	☐	☐

Other: *please specify*

Which of the following digital resources can students access at your institution? Select all that apply.

☐ Campus licenses for software that students need for their studies

- ☐ Wireless internet (e.g. eduroam)
- ☐ Virtual Learning Environment (VLE)/online labs
- ☐ Open library access, research databases, e-journals
- ☐ Online repositories for educational material
- ☐ Personalised study portal (e.g. registration, transcripts, grades, study plan, etc.)
- ☐ Online information for prospective students
- ☐ Online bridging courses for prospective students
- ☐ Other

If you selected Other, please specify:

Staff support and professional development

Does your institution support staff with:

Please don't select more than 1 answer(s) per row.

	No	Not yet, but we are planning to	Yes, in some faculties	Yes, throughout the institution	I do not know/not applicable
Digital skills training opportunities	☐	☐	☐	☐	☐
Online communications platform to support knowledge exchange and collaboration for teachers	☐	☐	☐	☐	☐
Online repositories for educational materials	☐	☐	☐	☐	☐
A centre/unit that supports teachers on all technical issues	☐	☐	☐	☐	☐
A centre/unit that supports teachers on digitally enhanced teaching and learning	☐	☐	☐	☐	☐

What measures have been useful at your institution for improving staff engagement with digitally enhanced teaching and learning?

Please don't select more than 1 answer(s) per row.

	Not at all useful	Slightly useful	Moderately useful	Very useful	Extremely useful	I do not know/not applicable

National or international training opportunities for staff in charge of digital transformation	☐	☐	☐	☐	☐	☐
Collaboration with other HEIs to develop digital teaching and learning capability maturity	☐	☐	☐	☐	☐	☐
A digital readiness audit-like process, to better understand strengths and weaknesses of the institution's digital teaching and learning capability maturity	☐	☐	☐	☐	☐	☐
Institution-led professional development needs assessment for staff	☐	☐	☐	☐	☐	☐
Community of practice within the institution enabling staff to learn from each other	☐	☐	☐	☐	☐	☐

Other (please specify)

--	--

Technology enabled institutional activities

Over the past five years, has digitalisation at your institution contributed to transformations regarding:

Please don't select more than 1 answer(s) per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I do not know/not applicable
Diversifying teaching and learning delivery modalities	☐	☐	☐	☐	☐	☐
New pedagogical approaches to teaching and learning	☐	☐	☐	☐	☐	☐
Improving the quality of teaching and learning	☐	☐	☐	☐	☐	☐
Widening access (e.g. for lifelong learning, disadvantaged learners)	☐	☐	☐	☐	☐	☐
Provision of open learning opportunities	☐	☐	☐	☐	☐	☐
Collaboration with other HEI at national level	☐	☐	☐	☐	☐	☐
Collaboration with other HEI at international level	☐	☐	☐	☐	☐	☐
Collaboration with employers / industry	☐	☐	☐	☐	☐	☐
Collaboration with society	☐	☐	☐	☐	☐	☐

Research collaboration	☐	☐	☐	☐	☐	☐
Outreach and learning provision for international students	☐	☐	☐	☐	☐	☐
Replacement of physical mobility by virtual mobility and online meetings	☐	☐	☐	☐	☐	☐
Improved organisation and administration of the institution	☐	☐	☐	☐	☐	☐

Other, *please specify*

--	--

Final page

Complete the Survey

You are now at the end of the survey. When you click the 'Finish' button, your responses will be submitted. **The submission of your responses is final — you will no longer be able to go back and change your answers once you do this.** If you wish to review your answers, please do this now.

To review or change your answers, use the navigation bar to take you to a previous section of the survey. When you're satisfied with your responses, simply return to this page and click 'Finish' to complete the survey.

Thank you for taking the time to complete the survey. You will receive a summary of the survey results in due course, if you provided your email address for this purpose.

Key for selection options

7 - Duration of service in current role

- Less than 1 year
- 1-2 years
- 3-5 years
- 6-10 years
- More than 10 years

8 - Institution type as defined by the Higher Education Authority (HEA)

- University
 - Technological University
 - Institute of Technology
 - Other, please specify
-

Higher Education Institution Digital Transformation: Semi- Structured Interview Script

Michael Hanley

Final

Table of Contents

<i>About you, your role, and the concept of digital transformation</i>	<i>2</i>
<i>Impact of digital transformation</i>	<i>3</i>
<i>Sect A: Current strengths & areas for improvement</i>	<i>3</i>
<i>Sect B: Target future state for Institution</i>	<i>4</i>
<i>Sect C: Business Model.....</i>	<i>6</i>
<i>Sect D: Value Realisation</i>	<i>8</i>
<i>Concluding.....</i>	<i>8</i>

Interview Notes

Researcher:	
Interviewee	
Date:	
Location:	

Institution Name		
Institution Type (as defined by the Higher Education Authority)	University	
	Technological University	
	Institute of Technology	
	Other College (specify)	

About you, your role, and the concept of digital transformation

Looking to understand context of how you engage with digital technology in your Higher Education Institution (HEI)

Briefly describe your role and responsibilities in the organisation	
Duration of service in current role (how long have you been in this job?)	
What specific tasks and areas of responsibility does your position encompass? (e.g., strategic/ops planning/org change management)	
How do you characterise 'digital transformation'? (What does digital transformation mean to you?)	
Are you currently involved in any digital transformation related initiatives? Tell me about them	

Impact of digital transformation

Sect A: Current strengths & areas for improvement

What works very well in digital technology currently? (What does the HEI pride itself on doing well?) e.g., digital capabilities related to new technology

	Comment	Critical Capability Identifier
A1		
A1		
A1		
A1		

What could work better in digital technology? (Areas that are currently constraining the HEI from excelling?) e.g., Process and structure changes: cost and resistance; Lack of clear / standardised staff responsibilities, processes and policies regarding technology use and management

	Comment	CC id
A2		
A2		
A2		
A2		

Which trends or developments do you think will have a substantial influence on the adoption of Digital Transformation in your HEI? e.g., Develop new offering types to increase the attractiveness (e.g., on-demand, micro-credentials); Develop new promotional strategies to reach international markets; Cost savings through service digitalization; Establish clear technological model, prioritising data driven decisions, monitoring, and automating as much as possible.

	Comment	CC id
A4		
A4		
A4		
A4		

Sect B: Target future state for Institution

What do people (institution leaders, academics, administrators, students) want from digital technology? For example, what would good performance for digital technology look like in 2-3 years' time? e.g., market growth; Opportunity to experiment (and fail) doing pilots to experiment with new offering types to expand the offering; Develop a customer-centric mentality to design an attractive offering and experience; Technology investments and new organisational design; Individualised and modular information and resources.

○ Leaders/Administrators expectations of future for digital technology

	Comment	CC id
B1		
B1		
B1		
B1		

○ Academics expectations of future for digital technology

	Comment	CC id
B2		
B2		
B2		
B2		

○ Students expectations of future for digital technology

	Comment	CC id
B3		
B3		
B3		
B3		

What would people say about challenges towards achieving this vision? (What tensions or blockers are stopping them from embracing change?) e.g., Self-limited regional focus due to traditional offering; institutional cultural inertia; Uncertainty about new offerings, due to evolving students' preferences; Technical inf and service delivery limitations to expand the offering; traditional work practices/culture, behaviours

	Comment	CC id
B4		
B4		
B4		
B4		

What change/improvement initiatives are currently in-progress towards achieving this digital technology vision? How are things going? (positive and negative, embraced / resistance to change etc.) e.g., Pilot/lighthouse projects; adopting agile and lean methods, HCI funded programmes

	Comment	CC id
B5		
B5		
B5		
B5		

Sect C: Business Model

Briefly describe your business model. Which of its elements have remained constant and which have undergone changes recently? (e.g., from components of BMC)

	Comment	CC id
C1		
C1		
C1		
C1		

Have you seen or do you expect digital transformation-driven changes to your business model? Can you describe those changes?

	Comment	CC id
C2		
C2		
C2		
C2		

How does the institution allocate resources for the purpose of innovating or improving the business model? (e.g., business case, PMO, pilot / lighthouse project)

	Comment	CC id
C3		
C3		
C3		
C3		

Does the institution follow a certain pattern or process when planning and implementing business model improvements or innovations?

	Comment	CC id
C4		
C4		
C4		
C4		

Would you say the institution follows a certain pattern or process when planning and implementing business model improvements or innovations?

	Comment	CC id
C5		
C5		
C5		
C5		

How does the institutional culture regard experiments and mistakes? Why is that?

	Comment	CC id
C6		
C6		
C6		
C6		

Do you feel that your institution is internally driving changes to your business model, or that these changes are external (required by the market)? Explain why this is so.

	Comment	CC id
C7		
C7		
C7		
C7		

Is Digital Transformation affecting your value proposition? What additional value do digital technologies bring to your users/stakeholders?

	Comment	CC id
C8		
C8		
C8		
C8		

Sect D: Value Realisation

How does your institution measure value? (e.g., benefits of teaching and learning, research outputs, civic engagement, return on knowledge transfer to partners, IP licencing etc.).

	Comment	CC id
D1		
D1		
D1		
D1		

Are there any trends which might change how you measure value and benefits realisation over the next 2-5 years? e.g., Reduction of old sources of revenues; Difficult capture of new sources of revenues; Face global competition; Cost escalation and technological dependence

	Comment	CC id
D2		
D2		
D2		
D2		

Are you finding Digital is altering your stakeholders' expectations of what value looks like? Can you describe this / is it different for each category of stakeholder? (e.g., value offer, value capture, value creation)

	Comment	CC id
D3		
D3		
D3		
D3		

Concluding

Finally, is it anything regarding your institution and digitalization you would like to highlight? Anything about your institution circumstances you'd like to add?

Would it be alright if we contact you again by email for clarification or if further questions arise?

Other Notes

Add additional notes as needed...

That concludes the interview. Thank you for participating. I will be pleased to send you a copy of the report once the work is completed. A reminder that you may withdraw from the study at any time up to the point when the data is anonymised. From that point onwards data aggregation will likely render it impossible to extract your contributions from the master dataset.

Appendix G: Information Sheet and Consent Form for Research Participants



INFORMATION SHEET FOR RESEARCH PARTICIPANTS

About this Study. I am Michael Hanley, a doctoral student in Maynooth University. As part of the requirements for the Doctor of Education degree, I am undertaking a research study under the supervision of Dr. Maija Salokangas and Dr. Rose Dolan in the University's School of Education.

Purpose of the Study. The study is concerned with the impact of digital disruption and leading organisation transformation in higher education institutions in Ireland. In particular I am examining the factors that influence changes in a higher education institution business models and value propositions.

What will the study involve? The study will involve an online survey and an interview on Microsoft Teams exploring various aspects of the topic. The survey should take about 25 minutes to complete; the interview will take about an hour to complete.

Who has approved this study? This study has been reviewed and received ethical approval from Maynooth University Research Ethics committee. You may have a copy of this approval if you request it.

Why have you been asked to take part? You have been asked to participate because you have critical role in leading organisation change and digital transformation initiatives in your higher education institution. I am convinced your insights would make a valuable contribution to my research findings.

Do you have to take part?

No, you are under no obligation whatsoever to take part in this research. However, I hope that you will agree to take part and give me some of your time to complete the online survey and participate in the interview with me. It is entirely up to you to decide whether or not you would like to take part. If you so decide, you will be asked to sign a consent form. You will be given a copy of the signed form, and the accompanying information sheet for your records. You are free to withdraw from the study at any time without giving a reason, and/or to withdraw your information up until such time as the research findings are anonymised in September 2022. A decision to withdraw at any time, or a decision not to take part, will not affect your relationship with Maynooth University.

What information will be collected? The research techniques (data gathering by online survey and semi-structured interview) will be used to gather non sensitive information from adults regarding their views on aspects of their professional activities as senior leaders in Irish higher education institutions with regard to organisation change, digital transformation, business model innovation, and value proposition formation. Gathered research data will adhere to the provisions in the Maynooth University Online Surveys User Policy, and comply with relevant Irish Data Protection legislation, and the General Data Protection Regulation.

Will your participation in the study be kept confidential? Yes, all information that is collected during the course of the research will be kept confidential. No names will be identified at any time. All physical copy information will be held in a locked cabinet at Michael Hanley's place of work in Maynooth University.

*Information Sheet and Consent Form
Please return to michael.hanley.2020@mumail.ie*

1

Electronic information will be encrypted and held securely on MU computers or servers and will be accessed only by Michael Hanley.

No information will be distributed to any other unauthorised individual or third party. If you so wish, the data that you provide can also be made available to you at your own discretion.

It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.

What will happen to the information which you give? All the information you provide will be stored at Maynooth University in such a way that it will not be possible to identify you. Upon completion of the research, all data will be destroyed by Michael Hanley. Physical data will be shredded using the university's confidential document disposal service, and electronic data will be purged in such a manner as it will be irretrievable.

What will happen to the results? The research will be written up and presented as a doctoral dissertation, a summary report, discussed at internal group meetings, presented at national and international conferences. Some research findings may be published in academic journals. A copy of the research findings will be made available to you upon request.

What are the possible disadvantages of taking part? I don't envisage any negative consequences for you in taking part.

What if there is a problem? At the end of the interview, I will discuss with you how you found the experience. You may contact my supervisor Dr. Maija Salokangas (maija.salokangas@mu.ie) if you feel the research has not been carried out as described above.

Any further queries? If you need any further information, you can contact me: Michael Hanley, +353 (1) 708 4541, or michael.hanley.2020@mumail.ie.

If you agree to take part in the study, please complete, sign, and return the accompanying Consent Form to Michael Hanley michael.hanley.2020@mumail.ie.

Thank you for taking the time to read this

Please continue to read and sign the Consent Form



CONSENT FORM FOR RESEARCH PARTICIPANTS

I.....agree to participate in Michael Hanley's research study titled 'The Impact of Digital Transformation on Higher Education Institutions in Ireland'.

Please tick each statement below:

The purpose and nature of the study has been explained to me verbally and in writing. I've been able to ask questions, which were answered satisfactorily. ☐

I am participating voluntarily. ☐

I give permission for my interview with Michael Hanley to be audio/video recorded. ☐

I understand that I can withdraw from the study, without repercussions, at any time, whether that is before it starts or while I am participating. ☐

I understand that I can withdraw permission to use the data right up to anonymisation in September 2022. ☐

It has been explained to me how my data will be managed and that I may access it on request. ☐

I understand the limits of confidentiality as described in the information sheet. ☐

I understand that my data, in an anonymous format, may be used in further research projects and any subsequent publications if I give permission below: ☐

I agree to quotation/publication of extracts from my interview. ☐

I agree for my data to be used for further research projects. ☐

Signed..... Date.....

Participant Name in block capitals

I the undersigned have taken the time to fully explain to the above participant the nature and purpose of this study in a manner that they could understand. I have explained the risks involved as well as the possible benefits. I have invited them to ask questions on any aspect of the study that concerned them.

Signed.....

Date.....

Researcher Name in block capitals

If during your participation in this study you feel the information and guidelines that you were given have been neglected or disregarded in any way, or if you are unhappy about the process, please contact the Secretary of the Maynooth University Ethics Committee at research.ethics@mu.ie or +353 (0)1 708 6019. Please be assured that your concerns will be dealt with in a sensitive manner.

For your information the Data Controller for this research project is Maynooth University, Maynooth, Co. Kildare. Maynooth University Data Protection officer is Ann McKeon in Room 17, Humanity House, South Campus, Maynooth University, who can be contacted at ann.mckeon@mu.ie. Maynooth University Data Privacy policies are available online at <https://www.maynoothuniversity.ie/data-protection>.

Two copies to be made: 1 for participant, 1 for researcher

Appendix H: Codebook for Thematic Analysis of Senior Manager Perspectives on Digital Transformation in Irish HEIs

This appendix details the method used to interpret qualitative interview data from 14 study participants, including senior managers in Irish higher education institutions and other stakeholders in the Irish higher education ecosystem. Template Analysis (Brooks *et al.*, 2015; King, 2012) was employed to develop a hierarchical coding template of the data. Initial data analysis involved generating descriptive codes directly from the interview transcripts. A systematic review of each transcript excerpt identified key concepts relevant to the research questions.

The coding template was constructed to distinguish between semantic codes (which capture the explicit, surface-level content of each excerpt) and latent codes (which reflect the underlying meanings, patterns, or broader conceptual themes present in the data). Each excerpt was first assigned a semantic code summarizing its overt content, followed by a latent code that interprets the deeper significance or theoretical implication of the statement. (Table H.1).

Table H.1 Extract from spreadsheet used for initial code generation phase

Source: Author's own work

Code Reference	Excerpt	Semantic Code	Latent Code
R328	The shift to blended learning and online teaching has profoundly transformed teaching and learning.	Blended Learning	Digital Transformation
R329	Institutional processes and efficiencies have undergone digital transformation through business process changes and centralization over the past decade.	Process Centralisation	Efficiency
R330	More changes are expected for greater efficiency and centralised oversight.	Process Centralisation	Efficiency
R331	The spatial implications of the digital transformation relate to questions around the purpose of physical campuses and buildings, and connect to wider digital transformation of cities and sustainability.	Role of Campus in Digital Age	Regional Engagement
R332	Developing a shared vision for regional innovation across stakeholders will be key for the new university. Rather than just meeting stakeholder demands, the university aims to lead stakeholders in understanding opportunities.	Value Proposition Development	Strategic Planning
R333	Divisions of labour are emerging amongst academics - professional educators focused on teaching, 'academic capitalists' focused on securing research funding, and hybrid academics with blended responsibilities. The university will need to balance demands at undergraduate and postgraduate/research levels.	Academic Division of Labour	Professionalism
R334	Restructuring to establish research institutes and centres of excellence is expected to help build research intensity. Performance metrics beyond traditional university rankings will likely align with SDGs in the future.	Research Focus and SDG Alignment	Managerialism

Code Reference	Excerpt	Semantic Code	Latent Code
R335	The second thing is I was I've been responsible for what you might call the institutional intelligence activities. Uh, the data gathering and analysis of data provision of certain management reports. Performance Monitoring, development, KPI's, rankings, all of that sort of stuff I've been involved and that's been in my area.	Institutional Metrics	Managerialism
R336	I've been involved as a kind of a. And what would you call it? I I've been involved as and sort of monitoring policy relevant to the institution and coordinating institutional responses to policy.	Policy Monitoring and Enactment	Managerialism
R337	The digital transformation of teaching and learning has been profound in the last few years and has rapidly accelerated what was already a kind of a trend.	Accelerated Digital Transformation in Teaching	Digital Transformation
R338	I don't think we have yet got to the bottom of the of the implications of the shift to the blended learning environment. And all of the opportunities that that opens up and all of the potential difficulties that that are created by the online teaching and learning environment.	Blended Learning Opportunities and Challenges	Digital Transformation
R339	You're looking at micro credentials, you know, and all of that sort of bite-size, learning pieces that can be done online. And that opens up questions around competition with. Solely online providers who can deliver programs remotely and all that kind of thing from San Diego, or from Mexico City, wherever.	International Competition and Microcredentials	Globalisation
R340	Institutional processes and efficiencies have been quietly, I'd say under the radar, kind of engaged in a massive digital transformation in the recent past. And in the last decade, particularly around business processes and all of that.	Process Centralisation	Digital Transformation
R341	We have a level of deep engagement with the local authorities, the Regional Assembly, which are very important entity. Uh, the Regional	Multi-Stakeholder Regional Engagement	Regional Engagement

Code Reference	Excerpt	Semantic Code	Latent Code
	Skills Forum and various others - LEOs, the Chambers of Commerce, IBEC, you know, there's a multi actor network of people that we engage with regularly and I suppose our attempt is has been to lead all of those actors who are in our region.		
R342	Trying to convince the stakeholders that the knowledge economy is a long-term investment that starts with kind of 'blue sky bullshitty stuff' that they don't see how any of this relates to anything that they do. Like we have guys working on nano robots and stuff like that and people are looking at why? "I'm working in Bausch and Lomb, we invented contact lenses. What has it got to do with nano robots?"	Stakeholder Resistance to Long-Term Vision	Resistance to Change
R343	We wanted to engage in a process of actually identifying what value meant for the organisation in terms of not, not quite, uh, what's the value add, but what do we value as an organisation?	Identifying Organisational Values	Culture
R344	I think the SDG's represented, I think, a very useful framework, however, within which to develop a new set of KPIs, the Sustainable Development Goals, you know.	SDGs as KPI Framework	Managerialism
R345	The engaged researcher is the person who's sort of. And looking at knowledge transfer commercialisation. And dissemination public dissemination. Getting involved in citizen science and all of that sort of outward facing stuff and that same person is getting involved in collaborative projects, big funding submissions with Europe and all that kind of thing.	Engaged Researcher and Knowledge Transfer	Regional Engagement

While concise, the initial codes contained sufficient descriptive elements (e.g., ‘Blended Learning’ for excerpt R328) to capture the depth and diversity within the dataset. MAXQDA’s code referencing system was used for code management and candidate theme tagging. Following the initial coding stage, themes were generated inductively by clustering similar semantic codes together with related latent codes. A mind map (Figure H.1) was developed to visually represent the inductive themes and sub-themes produced through the analysis.

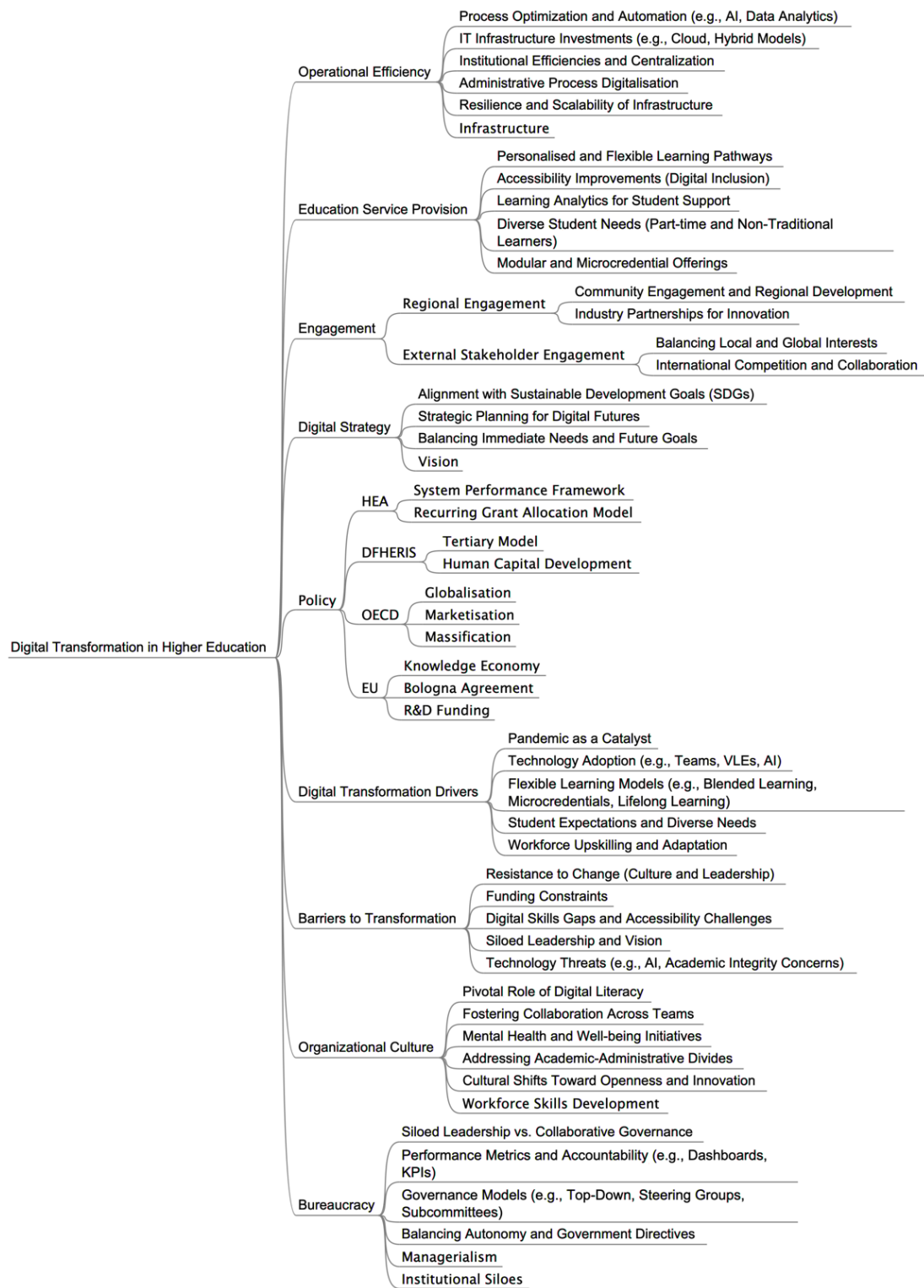


Figure H.1 Mind map of theme interpretation from analysis process

Source: Author's own work

Key themes identified through this process are shown in Table H.2. The next stage involved iterative refinement of the inductive themes. Related sub-themes were clustered into broader,

overarching themes, and precise definitions were developed for each theme to ensure clarity for analysis. For example, sub-themes such as ‘Process Optimisation and Automation’ and ‘IT Infrastructure Investments’ were grouped under the inductively generated theme called ‘Operational Efficiency’.

A frequency analysis of the inductive themes enabled further refinement and stratification of the thematic areas. The nine inductive themes—accounting for 68 per cent of the total inductive codes—are presented in Table H.2 below, indicating a strong concentration of meaning around these key thematic clusters.

Table H.2 An Inductive theme frequency count based on latent codes produced in the TA process

Source: Author’s own work

Inductive Theme	Count	Per cent of Total Codes
Digital Transformation Initiatives	64	32%
Education Service Provision	48	15%
Operational Efficiency	43	11%
Organisational Culture	42	10%
Engagement	33	10%
Digital Strategy	24	8%
Policy	20	5%
Bureaucracy	15	5%
Barriers to Transformation	7	3%
Total	296	68%
All other minor themes not mapped above	142	32%

Finally, the refined thematic framework was mapped to the research questions to ensure analytic alignment and relevance (Table H.3).

Table H.3 Iteration of themes mapped to research questions. Subsequent refinement aligned themes to specific questions
Source: Author's own work

Research Question	Relevant Themes
1. Drivers of Digital Transformation	Digital Transformation Drivers, Policy, Regional and External Stakeholder Engagement, Barriers to Transformation
2. Influence of Operational Capabilities and Organisational Culture	Barriers to Transformation, Operational Efficiency and Infrastructure, Organisational Culture and Workforce Transformation, Governance and Bureaucracy
3. Impact of Digital Transformation	Education Provision, Regional and External Stakeholder Engagement, Sustainability and Long-Term Vision, Organisational Culture and Workforce Transformation

Thematic analysis thus enabled a systematic, rigorous, and transparent examination of the interview data. The resultant thematic framework provided the narrative structure for the study's findings (see Chapter 5) and discussion (see Chapter 6), ensuring that the analysis remained both evidence-based and closely aligned with the research questions and objectives.

Appendix I: Gap Analysis

Gap Analysis

A gap analysis was conducted on the findings using the HEI-DT conceptual framework. The analysis synthesised findings from survey data and interviews, For ease of interpretation and to enhance readability, tables highlighting the gaps, and summaries of the gaps are presented below. The analysis revealed several key findings that help contextualise the digital transformation challenges and opportunities facing Irish HEIs.

Gap Analysis for Research Question 1

This section addresses the research question: “What change forces drive digital transformation in Irish HEIs, from the perspective of senior managers responsible for these initiatives?”. The analysis uses the Zone of Current State (ZCS) components from the HEI-DT conceptual framework as the reference point.

Table I.1 Gap analysis for Research Question 1

Source: Author's own work

HEI-DT Zone of Current State Component	Ideal Type	Current State (Findings)	Gap
External & Internal Change Forces	Anticipate and adapt to global, national, and regional forces.	Many Irish HEIs seem to respond to external pressures in a reactive manner. Excelling during crises but lacking proactive digital strategies. One participant noted the pandemic accelerated progress beyond what was forecast, but this was crisis-driven rather than planned. It was observed that some HEIs have since reverted to previous practices	Irish HEIs demonstrate strengths in responding to external pressures. Responses tend to be reactive rather than proactive. Strategic priorities are primarily domestic, with less emphasis on global ambitions, creating a contrast with the ideal type's balance of global, national, and regional focus. Enhancing proactive strategies and global engagement could better align HEIs with the ideal type.
Institutional Enabling Constraints	Reduce barriers, align resources, and support transformation goals.	HEIs face major resource constraints, including funding deficits, technical debt, and limited staffing. Tomás (Blackthorn University) stressed the need for efficiency and automation, but fragmented IT systems hinder progress. Ann (Hazel TU) noted struggles with document accessibility, and Padraig (Beech TU) highlighted difficulties in aligning payroll systems across merged institutions.	Irish HEIs face funding deficits, technical debt, and limited staffing, hindering digital transformation. Fragmented IT systems, outdated infrastructure, and reliance on government funding create vulnerabilities. Tensions between marketisation and traditional HEI missions further challenge resource alignment and transformation goals.
Institutional Framework & Logics	Promote flexibility, innovation, and alignment with transformation objectives.	Governance structures in HEIs are slow and compliance-driven, reducing agility. Liam (Birch TU) highlighted a lack of stakeholder understanding of HEIs' broader value, with demands for immediate results, such as rapid workforce training. Mimetic pressures, like adopting standardised platforms such as Moodle, reinforce this rigidity, with Fionn (Willow University) describing it as a "safe but limited choice".	Structural inertia and compliance-driven governance frameworks are perceived as limiting innovation. HEIs rely on mimetic isomorphism (e.g., adopting widely used technologies without critical evaluation). Normative pressures, such as the need for staff digital literacy, are inadequately addressed. Sinéad (IUA Programme Manager) observed that students now demand more flexible learning options, but HEIs struggle to adapt their rigid structures.

Summary

Irish HEIs have demonstrated strong adaptability in responding to external forces, such as the COVID-19 pandemic, despite constraints such as structural inertia, resource limitations, and fragmented governance frameworks. This highlights their capacity to quickly pivot and implement change under pressure. However, their approach remains largely reactive, with limited evidence of proactive, long-term strategic planning for digitally aligned institutional strategies, which is required to thrive in an increasingly competitive and globalised higher education ecosystem. Whilst pragmatic, prioritising regional and national factors reflects a commitment to local stakeholder engagement, but may come at the expense of global ambitions and broader competitiveness. Some participants expressed concerns that Irish HEIs' focus on regional and national strategies may limit their ability to compete globally. These findings suggest there is a need to balance their domestic focus with how they approach resource management, strategy, and organisational change.

Gap Analysis for Research Question 2

This section addresses the research question, 'How do operational capability and organisational culture influence the implementation and effectiveness of digital transformation initiatives in Irish higher education institutions?'. The analysis uses the Zone of Proximal Digital Transformation (ZPDT) components from the HEI-DT conceptual framework as the reference point.

Table I.2 Gap analysis for Research Question 2

Source: Author's own work

HEI-DT ZPDT Component	Ideal Type	Current State (Findings)	Gap
Organisational Capabilities	Proactive strategic planning, transparent governance, and scalable organisational design, fostering collaboration, innovation, resource optimisation, and alignment with stakeholder needs to achieve sustainable digital transformation.	Most Irish HEIs lack explicit digital strategies, treating digital transformation as operational rather than strategic. The pandemic prompted short-term, reactive digital adoption. HEIs emphasise incremental improvements, such as digitising administrative processes, over transformative changes like adapting business models or fostering digital leadership. This inconsistent and conservative approach limits ability to achieve systemic innovation and long-term sustainability, leaving HEIs unready to fully leverage the opportunities afforded by digital transformation.	HEI operations are reactive rather than strategically planned. Governance frameworks are siloed, compliance-driven, and risk-averse, hindering innovation and cross-functional collaboration. Chronic resource constraints, skills gaps, and structural inertia prevent HEIs from aligning their organisational structures with the demands of modern higher education needs..
Structural Motion	HEIs adapt proactively to external and internal forces by implementing planned, future-oriented digital strategies.	HEIs are reactive, responding well to crises like COVID-19 but lacking proactive strategies for lasting transformation. It was noted that exogenous catalyst events triggered change initiatives, replacing strategically planned change. Leadership-driven attempts to revert to older practices post-crisis (e.g., 'back to campus') were observed. It was also emphasised that HEIs tend to respond to external forces by changing current processes, rather than leveraging new technologies to innovate more appropriate ways of working.	Irish HEIs rely heavily on emergent catalyst events and other exogenous forces (e.g., COVID-19) to drive change. Strategic plans are quite aspirational. They generally lack future-oriented, actionable strategies.
Value Transformations	HEIs align digital transformation with institutional missions, stakeholder needs, and long-term societal impact.	HEIs favour established on-campus teaching models, with limited confidence in hybrid and fully online approaches, as reflected in survey data. Some study participants stressed the relational and dynamic nature of learning, arguing it "can't all happen online." Nevertheless, it was observed that	HEIs' conservative approach to education delivery methods, and normative and mimetic isomorphism have constrained their capability to align digital transformation efforts with institutional goals, adapt to evolving learner needs, and

HEI-DT ZPDT Component	Ideal Type	Current State (Findings)	Gap
		in some cases, hybrid education provision models have better addressed undergraduate engagement challenges. It was also noted that HEIs are often influenced by technology solutionism, rather than focusing on optimising digital technologies for a given HEI's long-term needs.	fully leverage the potential of innovative pedagogical approaches.
Structural Inertia	HEIs overcome resistance to change by fostering innovation, collaboration, and alignment across organisational units.	HEIs face resistance to change, reinforced by strict hierarchical power asymmetries and bureaucratic silos. Survey data highlight institutional resistance to change and conservative academic culture as key barriers to change. In particular, A divisive “us versus them” dynamic between academics and administrative staff was described. Poor digital literacy across the sector has led to reluctance to engage with digital technologies, with few formal opportunities to develop the necessary skills or confidence to integrate these tools effectively into pedagogical and administrative processes..	Structural inertia, driven by cultural conservatism, hierarchical power asymmetries, and resistance to innovation, hinders HEIs' ability to adapt.

Summary

Irish HEIs have made significant progress in leveraging digital tools in response to external catalyst events, demonstrating resilience and adaptability in challenging circumstances. Additionally, there is a growing emphasis on stakeholder engagement and continuous service innovation, both of which have been prioritised in survey responses. However, chronic underfunding, persistent resource constraints and siloed systems limit the scalability and sustainability of these efforts. Participants frequently highlighted challenges such as limited resources and fragmented systems, which they felt hindered digital transformation efforts. While the sector has made strides in embedding digital initiatives, resistance to change and a conservative institutional culture remain as barriers, ensuring that any progress made is made incrementally and is unevenly distributed across HEIs and the Irish HE ecosystem. The current trajectory of HEIs in Ireland suggests significant challenges in adapting to the demands of modern higher education, with limited evidence indicating progress toward achieving meaningful digital transformation in the near future.

Gap Analysis for Research Question 3

This section addresses the research question, “What is the impact of digital transformation on Higher Education Institutions in Ireland?”. The analysis uses the Zone of Distal Digital Transformation components from the HEI-DT conceptual framework as the reference point.

Table I.3 Gap analysis for Research Question 3

Source: Author's own work

HEI-DT ZDDT Component	Ideal State	Current State (Findings)	Gap
Positive Impacts	HEIs develop sustainable strategies and flexible, inclusive service models by leveraging regional ecosystems and digital innovation.	HEIs like Hawthorn TU and Birch TU prioritise regional engagement, with strategies to support local economies and communities. Initiatives such as lifelong learning and regional partnerships are being expanded. However, these remain inconsistent across institutions, and digital transformation is not fully integrated into their broader strategies.	Digital transformation is inconsistently aligned with regional priorities, and many HEIs struggle to scale inclusive service models to address diverse learner and community needs.
Negative Impacts	HEIs balance accountability, cohesion, and public-good missions without over-commercialisation or undermining regional commitments.	Governance fragmentation, over-reliance on KPIs, and market pressures create tensions between financial imperatives and public-good missions. Some HEIs, such as Birch TU, report the erosion of their competitive position in online education due to heightened competition. In some cases, regional needs are deprioritised in favour of income-driven or globalised growth strategies.	Governance challenges, globalisation, and marketisation pressures risk compromising Irish HEIs' ability to balance regional commitments with financial sustainability and public-good missions.
Outcomes	HEIs achieve sustainable and scalable education models that address regional demands while enhancing national and global competitiveness.	HEIs are exploring flexible education models like microcredentials, blended learning, and lifelong learning programs. However, scalability and regional accessibility remain challenges. Limited collaboration with stakeholders (e.g., local governments, industries) further impedes HEIs' ability to fully leverage digital transformation for systemic innovation and regional development.	Weak stakeholder engagement, scalability issues, and fragmented governance limit HEIs' ability to achieve inclusive regional and national outcomes.

Summary

The findings show that Irish higher education institutions operate within a complex, highly regionalised socioeconomic and political ecosystem, substantively influenced by Irish national education policy. Funding and resource provision are broadly within the gift of the state's higher education regulatory and governance body. While HEIs have made strong foundations in their geographical hinterland, as evidenced by a commitment to strengthen already well-established regional partnerships. Exploration of flexible education models, such as microcredentials and hybrid learning, demonstrates a commitment to meeting diverse learner needs, addressing stakeholders' human capital development needs, and adapting to changing societal demands. However, uneven integration of digital transformation plans with overall institutional strategic goals and resource constraints continues to present barriers to progress. Scalability challenges, governance fragmentation, and tensions between public-good missions and market-driven approaches further complicate Irish HEIs' attempts to develop differentiated value propositions, notwithstanding some notable exceptions. Whilst national policy-based funded change programmes (such as the Human Capital Initiative) provide opportunities for HEIs to undertake targeted projects, greater cohesion and alignment are required to achieve systemic and sustainable outcomes. Additionally, intensified global competition, and the disruptive influence of new technologies like AI have intensified pressures on higher education institutions in Ireland. Despite these challenges, there are emerging signs of progress, such as the exploration of more flexible education models, though these efforts require greater cohesion to achieve sustainable outcomes. Overall, Irish HEIs are in a transitional stage, committing to regional engagement ahead of national priorities and global competitiveness.