Exploring How Accounting Firms Build Dynamic Capabilities in Artificial Intelligence-driven Analytics (AIDA) as They Pursue Digital Transformation

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ABSTRACT

This thesis investigates how accounting firms develop dynamic capabilities (DCs) in Artificial Intelligence-driven Analytics (AIDA) whilst pursuing digital transformation. Through qualitative multiple case studies involving 24 participants from 11 accounting firms across different size categories in Singapore—including Big 4s, Mid-tiers, and Boutiques—the research examines the processes through which accounting firms sense opportunities for AIDA adoption, seize these opportunities through strategic investments, and transform to effectively integrate these technologies.

By using the DCs framework as the main theoretical lens, supplemented by strategy-as-practice (SAP) and technologies-in-practice (TIP) perspectives, the study identifies distinct patterns in how accounting firms of different sizes build capabilities for AIDA adoption. The findings reveal that while accounting firms share common objectives of enhancing client service delivery, their approaches to developing DCs vary based on firm type, market position, and strategic priorities. Big 4s prioritise global integration with local flexibility, Mid-tiers focus on operational efficiency within resource constraints going with pragmatic and workflow-specific implementations, and Boutiques stay agile and emphasise client-specific customisation to specialise in niche areas.

The thesis makes three significant contributions to the organisational capabilities and digital transformation literature. Firstly, it uses the DCs framework to identify the micro-foundations through which digitally-orientated capabilities emerge in knowledge-intensive professional contexts. Secondly, the empirical findings lead to the ADAPT Model (Assess, Design, Align, Pilot, Transform), which describes the cyclical and iterative process through which accounting firms build DCs for AIDA adoption. This model provides accounting firms with theoretical insight and practical guidance on digital transformation. The ADAPT model identifies varying implementation emphases across firm types, with Big 4s focusing on *Assess* and *Transform*, Mid-tiers on *Design* and *Pilot*, and Boutiques on *Align* and *Design*, reflecting their distinct strategic contexts and resources capabilities.

Thirdly, the study's methodology illustrates the value of an interpretivist approach for understanding technology adoption as a socially embedded practice. By highlighting the practical challenges accounting firms encounter during digital transformation, it becomes evident that successful AIDA adoption demands not only technological investment but, also the reconfiguration of structures, processes, and practices.

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DEDICATION

This project is dedicated to my Heavenly Father, the God Almighty, for He gave me the wisdom and strength to endure and persevere till the end. He deserves the utmost praise for the great things He has done! Soli Deo Gloria! To God be the Glory!

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DECLARATION OF ORIGINALITY

"I hereby declare that this thesis has been composed by myself and has not been presented or accepted in any previous application for a degree. The work, of which this is a record, has been carried out by myself unless otherwise stated and where the work is mine, it reflects personal views and values. All quotations have been distinguished by quotation marks and all sources of information have been acknowledged by means of references including those of the Internet. **I agree that the University has the right to submit my work to the plagiarism detection sources for originality checks.**"

Benjamin Lee
20th April 2025

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LIST OF ABBREVIATIONS

ACRA	Accounting and Corporate Regulatory Authority of Singapore
ADA	Accounting Data and Analytics
ADAPT	Assess, Design, Align, Pilot, and Transform
AI	Artificial Intelligence
AIDA	Artificial Intelligence-driven Analytics
ANT	Actor-Network Theory
CoEs	Centres of Excellence
DCs	Dynamic Capabilities
GDP	Gross Domestic Product
GenAI	Generative Artificial Intelligence
IDP	Industry Digital Plan
IHL	Institute of Higher Learning
IMDA	Infocomm Media Development Authority of Singapore
ISCA	Institute of Singapore Chartered Accountants
ML	Machine Learning
MRA	Transparently.AI's Manipulation Risk Analyzer
NLP	Natural Language Processing
OC	Ordinary Capability
OCR	Optical Character Recognition
PSF	Professional Service Firm
RAG	Retrieval-Augmented Generation
RBV	Resource-Based View
ROI	Return on Investment
RPA	Robotic Process Automation
SAP	Strategy-as-Practice
SMU	Singapore Management University
SMU-SOA	SMU School of Accountancy
TAM	Technology Acceptance Model
TIP	Technologies-in-Practice
VRIN	Valuable, Rare, have imperfect Imitability, and Non-substitutable

CHAPTER 1. INTRODUCTION

1.1 Introduction

The accounting profession faces unprecedented disruption due to advancements in Artificial Intelligence (AI), which Davenport (2018) has defined as "a set of technologies that can perform cognitive tasks that only humans could perform previously". Among these technologies, machine learning (ML), a core subfield of AI, has played a central role (Haenlein and Kaplan, 2019; Jordan and Mitchell, 2015). ML, widely understood based on Mitchell's (1997) foundational definition, refers to algorithms or programs whose performance on specific tasks systematically improves as they gain experience from data.

AI and other cognitive technologies are rapidly transforming the ways in which accounting firms operate, enabling the automation of routine tasks, enhancing data processing capabilities, and providing more accurate and timely decision-making insights (Kokina and Davenport, 2017; Lee et al., 2019; Smith, 2020). The Institute of Chartered Accountants in England and Wales (ICAEW, n.d.) recognise cognitive technologies as "algorithms, robotic process automation, machine learning, natural language processing and natural language generation, reaching into the realm of AI". Therefore, using cognitive technologies like AI to carry out data analytics (which is refered to by Richardson et al. (2022) as "the process of evaluating data with the purpose of drawing conclusions to address business questions") is an example of what this research will subsequently refer to as AI-driven analytics (AIDA). The use of the term AIDA encompasses the adoption of tools that can carry out data analytics with AI-driven features to perform advanced analytics capabilities including automated data extraction, real-time data processing, data visualisation and dashboarding, predictive analytics, and dynamic report generation. AIDA would therefore be an umbrella term that includes ML, natural language processing (NLP), optical chracter recognition (OCR), robotic process automation (RPA) platforms (e.g. UiPath), visualisation and dashboarding tools (e.g., Tableau, Power BI), and data preparation and analytics software (e.g. Alteryx).

Adopting AIDA in accounting firms requires more than just upskilling individual accountants; it demands a transformation of organisational structures, strategies, and processes. Successful technology adoption involves developing Dynamic Capabilities (DCs)—the ability to sense emerging opportunities, seize those opportunities by mobilising resources, and reconfigure internal processes to integrate new technologies effectively (Teece, 2007). This DCs framework shifts the focus from individual competencies to firm-level capabilities, emphasising that technology adoption is a strategic process that affects the

entire firm (Helfat et al., 2007; Suddaby et al., 2020; Teece, 2018). These strategic processes are rarely straightforward or isolated as they are often shaped by the firm's historical development, embedded routines, and long-standing mechanisms of strategic alignment that demand capabilities evolving over time (Ferri and Takahashi, 2024; Yeow et al., 2018). Accounting firms must not only train their staff to use AIDA tools but also develop the strategic agility to continuously adapt to the rapidly evolving technological landscape.

As AI continues to revolutionise traditional accounting practices, it is critical for firms to adopt new strategies that leverage the benefits of these technologies while managing the inherent challenges of their integration (Goh et al., 2023). Yet, despite the significance of AI, much of the research on technology adoption in accounting remains focused on the individual, particularly the skills gaps and perceptions of accountants (Gulin et al., 2019; Moll and Yigitbasioglu, 2019; Rikhardsson and Yigitbasioglu, 2018). This focus on individual readiness, while important, overlooks the broader strategic and organisational challenges that firms encounter when adopting AI at scale.

1.2 Research Purpose

This research explores how accounting firms develop DCs for AIDA adoption, addressing a critical gap in current literature. While existing research has extensively explored individual-level factors in technology adoption, the firm-level capabilities essential for successful AIDA integration remain underexplored. The purpose of this research is to uncover the strategic and organisational processes through which accounting firms sense opportunities for AIDA adoption, seize these opportunities, and reconfigure/transform their operations to effectively integrate these technologies.

The pertinence of this research is accentuated by the transformative (and potentially disruptive) impact of AIDA on accounting work. Frey and Osborne (2013, 2017) initially sparked concern with their suggestion of a high probability (0.94) of accounting and auditing roles becoming computerised. However, subsequent studies have challenged this deterministic view. Arntz et al. (2017) and Stephany and Lorenz (2021) make a compelling case that the profession will likely be transformed rather than eliminated, with AI and robotics complementing rather than replacing human professionals. This perspective has been further substantiated by empirical evidence suggesting AI is primarily transforming the nature of accounting work by automating routine tasks while creating new opportunities for professionals to focus on higher-value activities requiring judgement, creativity, and interpersonal skills (Kokina et al., 2021; Yigitbasioglu et al., 2023).

Nevertheless, accounting firms still face numerous barriers to AIDA adoption, including skills gaps, cultural resistance, technical complexities, and strategic uncertainties (Boritz and Stratopoulos, 2023; Holmes and Douglass, 2022). These obstacles prove particularly challenging and critical for firms lacking the DCs needed to navigate through technological disruption. Such firms struggle in rapidly changing environments as they tend to be overly focused on pre-existing resources, are resistant to change, and prioritise efficiency over innovation (Teece, 2014b).

AIDA adoption also presents unique challenges that extend beyond those associated with previous technological changes in accounting (Holmes and Douglass, 2022). AIDA technologies bring forth different approaches to data analysis, decision-making, and client interaction (Cong et al., 2018; Richins et al., 2017). Their effective implementation requires accounting firms to develop capabilities in areas and domains traditionally foreign to accounting practice such as data science, algorithm design, and computational thinking (Al-Htaybat and von Alberti-Alhtaybat, 2017; McKinney et al., 2017; Seow et al., 2024).

This research aims to advance theory in two key ways. First, it extends the DCs framework by demonstrating how sensing, seizing, and transforming capabilities are developed for and in the specific context of AIDA adoption, revealing context-dependent variations that existing theory has not adequately addressed. Second, it integrates DCs with the practice-based perspectives of SAP and TIP, a synthesis that is not commonly explored, offering a more comprehensive understanding of organisational adaption to technology disruption by bridging macro-level strategic capabilities with micro-level organisational practices. By examining how accounting firms of varying sizes (Big 4s, Mid-tiers, and Boutiques) build DCs for AIDA adoption, this research provides valuable insights for both theory and practice in an increasingly AI-driven accounting profession.

1.3 Context Setting

Singapore, renowned for its innovation-friendly business environment and ranked second in the world in terms of AI readiness as of 2024 (Oxford Insights, 2024), provides an ideal context for studying how accounting firms develop DCs for AIDA adoption. Singapore's robust technological infrastructure, regulatory landscape, and role as a regional hub for financial and professional services provide a fertile ground for understanding how firms ride the waves of digital transformation (Gan, 2020). This is driven by the Smart Nation Singapore initiative, which includes the AI Singapore programme aimed at developing national capabilities in AI (Frana, 2024).

The diverse landscape of accounting firms in Singapore—comprising of Big 4s with a strong global network, Mid-tiers with a slightly less extensive global network but finds their strengths in regional and mid-market expertise, and independent Boutiques with a primary focus on expanding their local reach—provides a rich context for exploring how organisations of varying sizes and structures build DCs for AIDA adoption. The transformation trajectories of these firms have shown notable differences, with Big Four firms typically pioneering advanced AIDA implementations whilst smaller practices adopt more targeted approaches aligned with their resource constraints and client profiles.

Given its openness to new technologies, coupled with stringent data security and compliance requirements, Singapore makes for a relevant and generalisable example to study how AIDA adoption unfolds in accounting firms, particularly those with similar commitments to technological advancement and professional service excellence. The findings from this research can inform accounting firms globally on how to develop the capabilities required to adopt AIDA technologies effectively.

1.4 Theoretical Framing

This research employs Teece's DCs framework as its primary theoretical lens, supplemented by insights from the strategy-as-practice (SAP) (Golsorkhi et al., 2010; Jarzabkowski, 2004; Whittington, 1996) and technologies-in-practice (TIP) (Orlikowski, 2000) perspectives. This integrated theoretical approach enables a detailed examination of how accounting firms build capabilities for AIDA adoption at both strategic and operational levels.

The DCs framework, as developed by Teece et al. (1997) and further elaborated by Teece (2007), provides a theoretical foundation for understanding how organisations adapt to rapidly changing environments. Teece defines DCs as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997, p. 516). These capabilities are further categorised into three key components: sensing (identifying opportunities and threats), seizing (mobilising resources to address opportunities and capture value), and transforming (continuous renewal and reconfiguration of assets and organisational structures) (Teece, 2007).

This framework is particularly relevant for understanding how accounting firms navigate technological disruption. Unlike traditional approaches that focus primarily on static resource configurations, the DCs framework emphasise the processes through which firms develop and deploy capabilities to adapt to environmental changes (Barreto, 2010); Eisenhardt and Martin, 2000; Helfat and Peteraf, 2003, Teece et al., 1997; Teece, 2007).

This shifts attention from individual competencies to firm-level strategic capabilities, which are essential for successful technology integration. Recent empirical studies such as Yeow et al. (2018) and Matarazzo et al. (2021) have demonstrated that strategic alignment and customer value creation during digital transformation rely heavily on the development of dynamic sensing and learning capabilities.

The DCs framework is closely aligned with the notion that digital transformation is not a one-time event but a continuous process requiring firms to sense technological opportunities, seize them through strategic investments, and transform their organisations accordingly (Warner and Wäger, 2017). This is further supported by findings from Ellström et al. (2021) and Feroz et al. (2023) showing that digital transformation routines are enabled by adaptive reconfiguration and sustainability-aligned innovation, which expand the operationalisation of DCs across firm contexts. Ferri and Takahashi (2024) further argue that organisations draw on their own historical narratives to make sense of technological change, contributing to the transformation component of dynamic capabilities. Applying this to accounting firms pursuing digital transformation, the DCs framework helps explain why some successfully adapt to technological disruption while others struggle, despite having access to similar technologies and individual expertise.

While the DCs framework helps explain how firms adapt to technological change, it can be complemented by practice-based perspectives that focus on how strategy is carried out through day-to-day practices within firms. SAP, as developed by scholars such as Jarzabkowski (2005) and Whittington (2003), focuses on strategy not as something organisations have but as something organisational members do. This approach emphasises the concrete activities, interactions, and practices through which strategic decisions about AIDA adoption take shape and are implemented. Similarly, Orlikowski's (2000) TIP examines how technologies become enacted in everyday organisational routines. This perspective emphasises that technology's impact depends not on its inherent properties but on how it is used in specific organisational contexts. These practice-based perspectives provide valuable insights into the micro-level activities through which accounting firms integrate AIDA technologies into their operations and service offerings.

By combining these theories together, this research develops an integrated framework for understanding how accounting firms build capabilities for AIDA adoption. The DCs framework provides insight into the strategic capabilities firms need to develop to adopt AIDA technologies, while the practice-based perspectives reveal how these capabilities manifest in everyday organisational activities as they pursue digital transformation. This

integrated approach addresses the limitations of existing research, which has often focused either on individual competencies or on technological implementation without considering the organisational capabilities that bridge these levels (Gulin et al., 2019; Moll and Yigitbasioglu, 2019; Rikhardsson and Yigitbasioglu, 2018).

To adequately capture the integration of strategic and macro-level capability development with micro-level organisational practices, a qualitative research methodology is required. Specifically, case studies allow for the use of the DCs framework to do an in-depth exploration of how firms sense, seize, and transform over time. Likewise, examining everyday activities and technology enactments through the practice-based perspectives of SAP and TIP are best understood through case studies.

Furthermore, integrating multiple theoretical perspectives to understand AIDA adoption among accounting firms is a complex process. Case studies are especially appropriate for this, as they enable thorough analysis of organisational phenomena within real-world contexts. Additionally, they facilitate cross-case comparisons, which are essential for identifying patterns across different firm types.

1.5 Research Aim, Objectives, and Questions

Building on the research problem identified and drawing on the theoretical foundations established above, the overarching aim of this thesis is:

To explore how accounting firms build dynamic capabilities in Artificial Intelligence-driven Analytics (AIDA) as they pursue digital transformation.

To achieve this aim, the research addresses four specific objectives through corresponding research questions:

Objective 1: To **identify** the activities through which accounting firms sense and seize opportunities for adopting AIDA technologies.

RQ1: How do accounting firms sense and seize opportunities for adopting AIDA technologies?

This objective corresponds to the "sensing" and "seizing" components of Teece's DCs framework. It seeks to understand how accounting firms identify potential applications of AIDA technologies, evaluate their strategic implications, and make decisions on how various technologies are subsequently deployed. Understanding sensing and seizing capabilities are

therefore fundamental to explaining how accounting firms initially recognise AIDA technologies' potential and then devote adequate resources for their implementation.

Objective 2: To **examine** the changes in organisational structure, processes, and practices that enable the integration of AIDA technologies in accounting firms.

RQ2: How do accounting firms reconfigure their structures, processes, and practices to facilitate the integration of AIDA technologies?

This objective addresses the "reconfiguring/transforming" component of Teece's framework, focusing on how accounting firms adapt their organisations to effectively leverage AIDA technologies. The TIP perspective supplements this by examining how AIDA technologies become enacted in everyday organisational routines and how these enactments reshape organisational structures, processes, and practices. Reconfiguring/Transforming capabilities are essential for the full integration of AIDA technologies into the firm's operations instead of remaining isolated initiatives.

Objective 3: To investigate the rationale behind **why** accounting firms adopt specific AIDA technologies over others.

RQ3: Why do accounting firms adopt specific AIDA technologies over others?

This objective explores the strategic considerations guiding accounting firms' decisions regarding which AIDA technologies to adopt and how to implement them. It incorporates both the DCs framework (particularly the "sensing" aspect) and SAP to examine how firms assess various technology alternatives and align their choices with overarching strategic objectives. Understanding the rationale behind AIDA adoption decisions sheds light on how firms align technological investments with their strategic objectives.

Objective 4: To assess **how** accounting firms overcome barriers and cultivate enablers to drive digital transformation through AIDA technologies.

RQ4: How do accounting firms overcome barriers and cultivate enablers for digital transformation driven by AIDA technologies?

This objective focuses on the challenges accounting firms face in adopting AIDA technologies and the strategies they employ to circumvent these obstacles. It synthesises perspectives from all three theories to analyse the structural impediments to AIDA adoption and practical approaches for resolving them. Identifying barriers and enablers is crucial to

understanding the circumstances that allow DCs for AIDA adoption to be effectively developed and deployed.

By addressing these research objectives and questions, this thesis contributes to a deeper understanding of how accounting firms of varying sizes and structures navigate the challenges and opportunities of AIDA adoption as they pursue digital transformation.

1.6 Thesis Structure

The remainder of this thesis is organised as follows:

Chapter 2: Dynamic Capabilities provides the theoretical foundation for this research, discussing the DCs framework and its relevance to AIDA adoption within the accounting profession. It traces the evolution of strategic management theory from early approaches to the development of the DCs framework, with particular attention to how this framework helps explain organisational adaptation to technological disruption.

Chapter 3: Practice-Based Perspectives: Strategy-as-Practice and Technologies-in-Practice introduces complementary theoretical perspectives that focus on the micro-level practices through which organisational adaptation unfolds. It examines how these practice-based theoretical lens provide insight into the concrete activities through which strategic decisions are made and technologies are integrated into everyday organisational routines.

Chapter 4: Digital Transformation and AIDA Adoption in Accounting Firms examines digital transformation as a strategic imperative reshaping organisational structures, processes, and capabilities across industries. It focuses specifically on how AIDA technologies are transforming accounting firms, exploring the challenges and opportunities these technologies present for the profession.

Chapter 5: Conceptualisation and Problem Statement presents the aim, objectives, and research questions in detail, developing an integrated theoretical framework that brings together insights from the preceding literature review chapters. This framework guides the empirical investigation that follows. The research problem statement is also presented here.

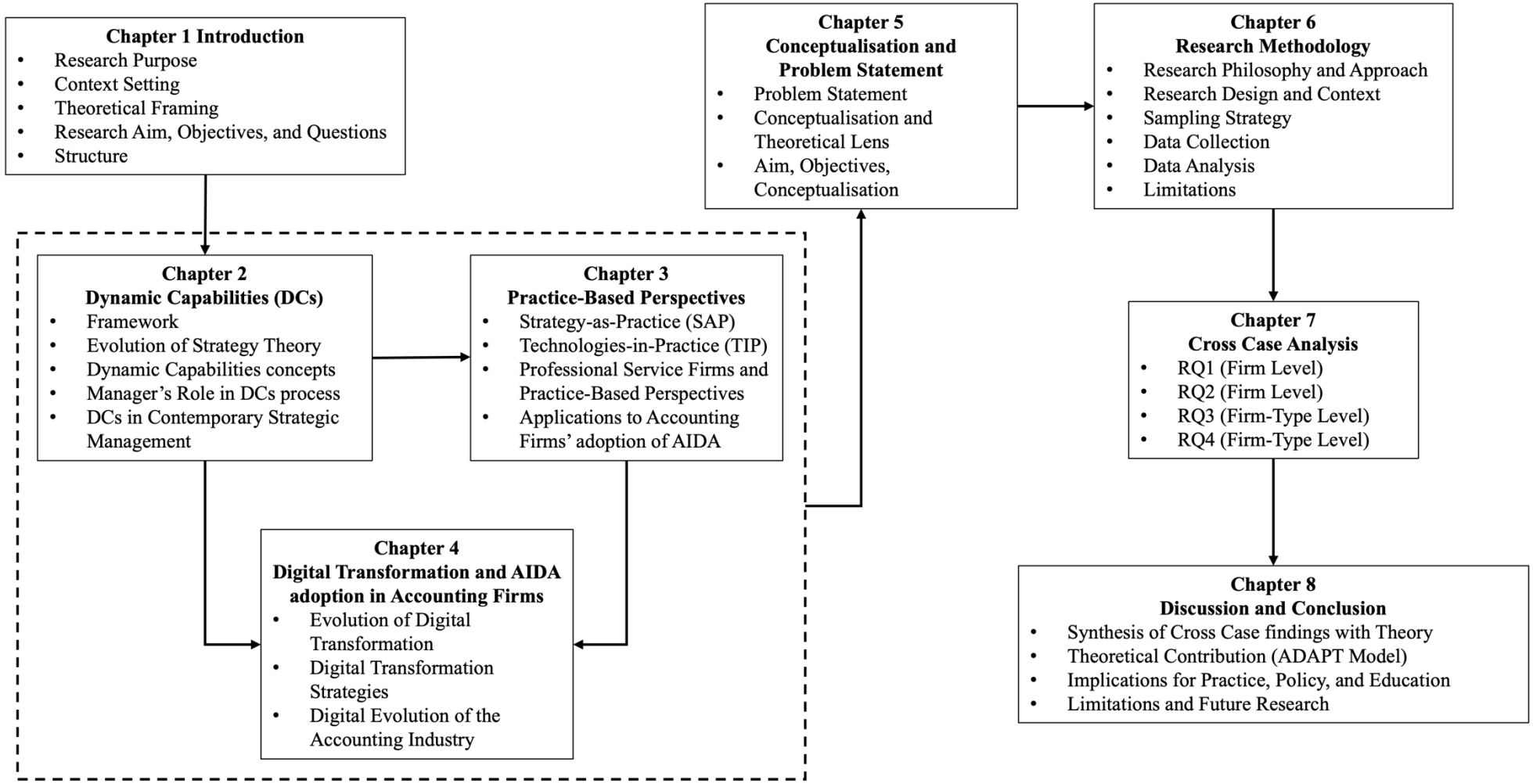
Chapter 6: Research Methodology outlines the philosophical foundations, methodological approach, sampling strategy, data collection methods, analytical procedures, and ethical considerations of the research. It explains and justifies the interpretivist qualitative approach taken for this research, with particular attention to the multiple case study design.

Chapter 7: Cross-Case Analysis and Emergent Findings presents the findings of the empirical investigation, organised around the four research questions. It examines how accounting firms of different types (sizes) sense and seize AIDA opportunities, reconfigure their structures and practices, select specific technologies, and overcome barriers to transformation.

Chapter 8: Discussion and Conclusion synthesises the empirical findings with the theoretical frameworks established in earlier chapters, proposing the ADAPT Model. The five stages of *Assess, Design, Align, Pilot, and Transform* is indicative of an adaptive and cyclical process of how accounting firms iteratively build DCs for AIDA adoption. Following that, it discusses the theoretical and practical implications of the findings, acknowledges limitations, and suggests directions for future research.

Figure 1-1 is a visual representation of the structure of this thesis. It depicts the progression of this research from theoretical foundations to empirical investigation, and culminates in theoretical synthesis, presenting a thorough analysis of how accounting firms build DCs for AIDA adoption as they pursue digital transformation.

Figure 1-1: Thesis Structure Flowchart



CHAPTER 2. DYNAMIC CAPABILITIES

2.1. Introduction: Foundations of Strategic Adaptation through Dynamic Capabilities

To maintain their competitive advantage, enhance business performance, and sustain long-term growth in increasingly dynamic environments, firms need to possess and continuously develop their dynamic capabilities (DCs). These capabilities include distinctive skills, protocols, procedures, and organisational structures that facilitate the implementation of practical business models (Teece, 2007). There is an increasing and urgent need for such capabilities due to rapid technological advancement and market volatility creating what Schumpeter (1934) described as "perennial gales of creative destruction" that constantly reshape competitive landscapes.

This chapter presents the theoretical foundation of dynamic capabilities (DCs), beginning with their origins and core concepts. The chapter then explores how strategic management theory evolved from early approaches to the development of the DCs framework, examining key perspectives including the Theory of Firm Growth, Core Competences, Resource-Based View, and Organisational Routines. Following this, the chapter examines DCs concepts in detail, including various definitions, capability hierarchies, and Teece's (2007) sensing-seizing-reconfiguring typology. After which, the chapter briefly explores how managers influence the DCs process, with a focus on the role of their decision-making in driving capability development. Finally, the chapter closes by drawing parallels between the DCs framework and contemporary strategic management discourse, underlining its significance for how organisations adapt to technology-driven change.

2.2. The Dynamic Capabilities framework

2.2.1. Origins and Development of DCs

Built on the concept first introduced in Teece and Pisano's (1994) seminal work, the framework that Teece, Pisano, and Shuen (1997) proposed is often regarded as the work that opened the floodgates to the wide range of research in DCs today, which continues to influence the understanding of organisational adaptation and competitive advantage (Barreto, 2010; Helfat and Peteraf, 2009; Schilke et al., 2018). Firms' competitive advantages derived from their resources are eroded away by dynamic market environments often typified by

globalised competitive markets and accelerated technological progress driving new product developments (Teece, 2007; D'Aveni et al, 2010). As a sharp contrast to the static view of competitive advantage from before, the DCs framework suggests that firms with DCs are able to respond to these fast-paced changes by adapting, reconfiguring their resources or developing new ones to stay competitive (Teece et al., 1997; Eisenhardt and Martin, 2000). They define DCs as: "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments."

Teece et al. (1997) elaborates further that the basis of their DCs are three interrelated elements that establishes firms' competitive advantages: their asset positions, their evolutionary paths, and their organisational and managerial processes. These elements collectively form the foundation of DCs, enabling firms to reassess their market positions and adapt more rapidly than competitors when market environments undergo significant changes (Teece et al., 1997). When market environments are either undergoing changes or have changed drastically, DCs enable firms to reassess their positions in the market by adapting quicker than their competitors through the transformation of processes that then alter the paths of how they go about doing business (Eisenhardt and Martin, 2000; Teece, 2007; Zollo and Winter, 2002).

2.2.2. Strategic Positions, Path Dependencies, and Evolutionary Processes

Firms' strategic positions are based on their assets and their resource configuration (Teece et al., 1997). Specifically, the DCs framework emphasises that competitive advantage comes from how firms refresh their resource pool rather than merely accumulating resources (Ambrosini and Bowman, 2009; Helfat et al., 2007). This is a crucial distinction as it highlights the move from static towards dynamic conceptualisations of competitive advantage.

The paths that firms embark on, consisting of either their trajectory based on the present and future strategic direction or their technological opportunities both externally procured and internally developed, have a significant impact on their organisational and managerial processes (Teece et al., 1997: Helfat et al., 2007). When triggered by fast-paced changes in market environments, these processes and operating routines tapping on firm resources are modified to respond to those changes (Eisenhardt and Martin, 2000; Zollo and Winter, 2002).

2.2.3 Core Premise and Relevance of DCs

The fundamental premise of DCs is that they enable firms to combine their processes, positions, and paths effectively with the ultimate aim of preserving their competitive advantage amid fluctuating market conditions (Teece et al., 1997). This combination occurs through "asset orchestration", a term which Helfat et al. (2007) uses to refer to the deliberate coordination and reconfiguration of organisational assets to align with strategic goals and respond to environmental change. Given the accelerating pace of technological advancements driving modern business environments (Smith, 2020), the DCs framework provides an increasingly relevant theoretical lens for examining how organisations adapt to rapidly evolving landscapes (Warner and Wäger, 2019; Yigitbasioglu et al., 2023).

2.3. Evolution of Strategy theory

2.3.1. Early theories and "best practices"

The academic lineage of strategic management theories originates from the applied area of business policy (Hoskisson et al., 1999; Learned et al., 1965/1969). The predominant concern for strategic management research in the 60s was with identifying firm's "best practices" contributing to firm success, emphasising on internal competitive resources (Hoskisson et al., 1999). However, due to the over-specific nature of the early strategy case studies, insights derived from them were not easily generalisable to other firms (Learned et al., 1965/1969).

Penrose's (1959) theory of firm growth argues for firms' continued success being primarily a function of their internal and unique competitive resources. Similarly, Chandler's (1962) Strategy and Structure as well as Ansoff's (1965) Corporate Strategy suggest that firm performance was shaped by internal organisational processes and structures rather than purely by external market forces. Characterised by their emphasis on firm-specific internal factors and qualitative methodologies, these foundational works were termed as the "first wave" of strategic management research by Hoskisson et al. (1999).

2.3.2. Theory of Firm Growth

Edith Penrose is widely regarded as the pioneer of recognising firms as bundles of productive resources in The Theory of the Growth of The Firm (1959). These resources internal to the firm went beyond just the tangible and included intangibles like managerial capacities and

capabilities (Hoskission et al., 1999; Rumelt, 1984; Wernerfelt, 1984). As bundles of productive and unique resources that differentiated one from the other, firms relied upon their internal resources to grow and diversify in the face of changes in the external market environment (Hoskisson et al., 1999; Penrose, 1959). In fact, the Penrose's conceptualisation of organisational resources laid the foundations for later strategy theory developments in the Resource-Based View (Barney, 1991; Wernerfelt, 1984)

While some studies have suggested that resources become a limiting factor for larger firms as they are less able to tap on opportunities for sustained growth, the evidence suggests otherwise as large firms increase their dominance as they grow rather than suffering from diseconomies of size (Penrose, 2009). Instead, it is argued that economies of growth are present in all firms, regardless of size. Furthermore, irrespective of how large they grow to be, firms will still have access to economies of growth. Despite that, there are some limits on the amount of growth firms can undertake, such as time constraints and management capacity limits (Baum and Dahlin, 2005; Penrose, 2009). This suggests that insights from Penrose remain relevant for contemporary strategic management research.

2.3.3. Beyond Internal Determinants of Growth

As the strategic management field evolved, attention began shifting from a primarily internal view of the firm towards an expanded view that takes internal resources and the external market environment into account. This was evident during the 80s-shift towards an outside-in approach to strategy that gave rise to Porter's Five Forces framework. Porter's (1980) framework became popular and achieved widespread acceptance due to its perceived generalisability to every industry. The shift was the result of an increasing awareness that strategy has to also involve responding to external competitive environment because firms do not operate in isolation and thus, theories that tended to focus on what was internal to firms could not adequately explain how firms adapt to change. However, the deterministic approach of focusing on internal resources overlooks the strategic choices firms make as a key contributor to firm growth (Barney, 2001). Others highlighted that firms were not just passively accumulating resources, but actively recombine and deploy them in response to changing market demands and strategic priorities (Hoskisson et al., 1999).

Earlier strategy models were also perceived as static, assuming a stable environment that did not account for the uncertainty and volatility of constantly changing economic markets or the dynamic and evolving nature of resources (Conklin and Tapp, 2000; D'Aveni et al., 2010;

Schreyögg and Kliesch-Eberl, 2007). This static perspective also does not consider how organisational history could be intentionally tapped on to build transformation narratives that drive change while preserving organisational identity (Ferri and Takahashi, 2024). Building on this broader line of thought, Priem and Butler (2001) highlighted the importance of considering how firm resources and capabilities are shaped not only internally but also through interaction with external market conditions. This supported a growing consensus that internal and external factors should not be viewed as mutually exclusive from one another but as interdependent and important to the development of firm resources and capabilities to drive firm growth (Dierickx and Cool, 1989; Priem and Butler, 2001; Teece, 2007). Given this, a more comprehensive approach was needed to better understand the factors driving firm growth, especially in the face of an increasingly globalised market that brought about radical changes across many industries (Hitt et al., 1998; Hoskisson et al., 1999).

2.3.4. Core Competences

Rapid innovations in technology and increasing globalisation brought with them an intensified demand for strategic flexibility, a shift that compelled firms to enhance their outside-in approach by first observing external conditions before crafting strategic solutions (Hitt et al., 1998). This perspective gave rise to the prominence of core competencies theory in the 1990s, which proposed that a firm's ability to identify, cultivate, and deploy its core competencies was essential to ensuring growth (Prahalad and Hamel, 1990, 1997). The theory primarily focused on implementing diversification strategies through the adaptation of best practices to new products and markets (Bakker et al., 1994; Ljungquist, 2013; Prahalad and Hamel, 1990, 1997).

At the heart of competitive advantage, core competencies theory asserts that management's capacity to integrate firm-wide technologies with production proficiencies represents the true source of advantage when changing circumstances compel firms to adapt (Prahalad and Hamel, 1990, 1997). Core competencies emerge from the integration of skills and knowledge shared across business units throughout the organisation (Javidan, 1998). These competencies develop through collective and continuous organisational learning, requiring ongoing refinement to maintain their effectiveness (Lei et al., 1996). While resources constitute key inputs in a firm's value chain, they contribute minimal value unless leveraged across the organisation in the form of core competencies (Javidan, 1998). Consequently,

when firms successfully identify their core competencies, they can achieve competitive advantage by utilising their resources effectively (Prahalad and Hamel, 1990, 1997).

However, with the increase in technological breakthroughs that came with and also accelerated globalisation, competition intensified across many industries (Hoskisson et al., 1999). This development led to criticism of the core competencies theory not accounting for market dynamism, thereby losing its relevance (Ljungquist, 2013). Moreover, organisations often faced difficulties when trying to implement core competences practically due to the theory's ambiguity and lack of clarity (Javidan, 1998; Torkkeli and Tuominen, 2002; Ljungquist, 2013). What resulted then was a tendency to focus narrowly on their established strengths in hopes of succeeding. Unfortunately, this oversimplified approach sometimes resulted in what Leonard-Barton (1992) identified to be paradox where core competencies, instead of fostering development actually inhibited the firm, transforming into core rigidities.

2.3.5. Resource-Based View (RBV)

Concurrent with the rise of core competencies theory is the notion that resources play a big part in enabling firms to gain competitive advantage (Prahalad and Hamel, 1990, 1997). The Resource-Based View (RBV) emerged as a dominant paradigm during the 1990s, seeking to explain the role that internal resources and capabilities play in sustaining competitiveness (Hoskisson et al., 1999; Peteraf, 1993). With Birger Wernerfelt's (1984) "A Resource-based View of the Firm", the RBV seemingly emerged as a new conceptualisation within strategic management research (Zajac, 1995). The concept of firms as bundles of resources, however, was not a new one and couldbe traced back to Penrose's (1959) theory of firm growth. Closer examination of the RBV reveals clear connections to Penrose's work, particularly regarding the relationship between resources and firm performance, as well as how these resources distinguish firms from one another.

Although Wernerfelt's (1984) work tended to present the RBV in abstract, theoretical terms, it nevertheless paved the way for subsequent strategic management scholars to further examine the relationship between resources and profitability (Wernerfelt, 1995). One of which is was Jay Barney (1991), who proposed a simple yet comprehensive framework suggesting that for firms to tap into the competitive advantage afforded to them through their bundles of resources and capabilities, these bundles needed to be Valuable, Rare, have imperfect Imitability, and Non-substitutable (VRIN). Resources are valuable when they enable firms to capitalise on opportunities or counter threats in competitive business environments. Firms gain the upper hand over competitors when they have access to

resources that are rare or perceived as such. Ideal resources should not be readily imitated or acquired by competitors without significant costs. Similarly, they should not have readily available substitutes (hence non-substitutable).

There are varying definitions of resources across literature. They are sometimes defined as activities and capabilities (Barney, 1991) while elsewhere, resources and capabilities are referred to distinctly from each other but collectively as strategic assets (Amit and Schoemaker, 1993). Others break down resources into tangible (financial and physical), intangible (organisational), and people-based skills (employee expertise) whilst identifying two types of capabilities, namely functional and strategic, which ties in with core competencies theory (Grant, 1991). Building on this, the distinction between resources and capabilities has also been based on related activities, namely resource-picking and capability building (Makadok, 2001). Another key difference noted in literature is that capabilities need to be cultivated and unlike resources, cannot be bought (Teece et al., 1997). Despite these descriptive differences in the definitions of resources and capabilities, the RBV typically bundles them together based on the argument that them under the argument that firms must acquire and manage VRIN resources and capabilities to sustain competitive advantage (Amit and Schoemaker, 1993; Barney, 1991; Hoskisson et al., 1999).

At the core of RBV, resource-picking needs to precede capability-building (Makadok, 2001) and consequently, this means that development of firm capabilities depends on the consolidation of firm resources. As such, it is essential that firms acquire and consolidate resources, while offloading undesirable ones, to assemble a resource portfolio that is effective (Peteraf, 2005). They will then be able to respond and adapt to changes in unpredictable circumstances (Winter, 2003).

While the RBV provided valuable insights into how firms could utilise their resources to achieve and sustain competitive advantage, it soon faced a fair share of critiques (Barney, 2001). One limitation was its tendency to overlook factors surrounding resources, assuming that they simply existed without considering how resources and capabilities might be acquired or developed (Stinchcombe, 2000). It also proved to be inadequate for explaining how and why specific firms are capable of reacting promptly to unpredictable changes (Eisenhardt and Martin, 2000). Furthermore, due to the ambiguity of how resources are defined, the term “resources” often ended up becoming a catch-all that does not sufficiently distinguish between resources held by firms and the capabilities needed to capitalise on those resources (Amit and Schoemaker, 1993).

Moreover, the RBV may appear to be static and thereby limited in its explanation of competitive advantage in changing business environments (Priem and Butler, 2001). Its practical significance has also been questioned, as it offers limited guidance on what managers should do regarding strategic assets management (Connor, 2002). In addition, the RBV may overstate the measure of control that managers have on resources (McGuiness and Morgan, 2000), which has been referred to as an "illusion of total control" that is unlikely to exist in practice (Kraaijenbrink et al., 2010). Following on from Priem and Butler's (2001) critique on RBV's assumption on the static nature of resources, questions have also been raised about whether the sustained competitive advantage that these resources supposedly provide is realistically attainable in the long run (Kraaijenbrink et al., 2010).

While the RBV advocates for organisations to look inward to discover sources of competitive advantage rather than focusing on competitive environments (Barney, 1991), it neglects the dynamic environment which, as Teece (2007) argues, encompasses a broader collection of firms and individuals, including customers. It also disregards the risks of resource obsolescence (Thornhill and Amit, 2003) that may stifle innovation initiatives and impede firm growth (Leonard-Barton, 1992).

2.3.6. Organisational Routines

Resource-picking and capability-building are examples of organisational routines because they are activities consistently carried out to sustain the functioning of firms (Cyert and March, 1963; Nelson and Winter, 1985; Stene, 1940). These routines are temporary structures with recurring behavioural patterns but can also be subject to changes in circumstances (Becker, 2001; Winter, 1964). In addition, routines represent collections of distinct activities performed by multiple individuals, with the emphasis placed on the activities rather than the individuals performing them (Feldman and Pentland, 2003; Felin and Hesterley, 2007; Pentland, 2011).

Although organisational routines have traditionally been associated with lack of flexibility and viewed as stable and rigid (Nelson and Winter, 1985), the duality of their ostensive and performative aspects suggests that they can be sources of change and flexibility (Feldman and Pentland, 2003). It is precisely the stability afforded by organisational routines that enables firms to maintain their current capabilities while simultaneously responding to environmental changes (Barney and Felin, 2013; Feldman et al., 2016; Teece, 2007).

Organisational routines sustain a firm's operational functioning and underpin both "zero-order" organisational resources and "first-order" organisational capabilities (Wang and Ahmed, 2007). There is a symbiotic link between resources and routines: resources are foundational to routines while routines influence how resources are accumulated and used by firms (Barney and Felin, 2013). Both elements constitute integral components of the microfoundations of capabilities that enable firms to adapt to dynamic market environments. This perspective is further reinforced by Feldman and Pentland's (2003) conceptualisation of routines as "generative systems" that can produce diverse performances while maintaining recognisable patterns. Such generative quality becomes particularly valuable when firms need to adapt established routines to changing circumstances without completely abandoning their operational foundations (D'Adderio, 2008; Becker, 2004).

2.3.7. The Need for Flexibility to Adapt to Changing Market Environments

As globalisation continues to accelerate, the phenomenon of technology-enabled disruptions driven by new market entrants causing upheaval for incumbent firms has been thoroughly documented (Bower and Christensen, 1995; Christensen, 1997; 2006; Christensen et al., 2018). Within this landscape of disruption, AI and other cognitive technologies have become key enablers to the digital transformation of firms, allowing firms to develop more efficient operations, smarter decision-making capabilities, and innovative business models that further accelerate market disruption (Davenport, 2018). With their competitive advantage at stake, incumbent firms eventually find themselves compelled to adopt these disruptive technologies (Rogers, 2003).

While combining Core Competencies and RBV frameworks can provide organisations with a comprehensive approach to assessing firm-wide capabilities and explaining resource utilisation for achieving and sustaining competitive advantage in the face of AI and other cognitive technologies, these frameworks share a common limitation. Critics question their applicability due to insufficient consideration of market dynamics (Conklin and Tapp, 2000; Ljungquist, 2013; Priem and Butler, 2001). Though competitive advantage can indeed be achieved and sustained through static resources in static business environments (Barney, 2001), dynamic business environments demand a new perspective (Teece and Pisano, 1994).

When radical shifts occur in market environments, firms must reconfigure their capabilities because they no longer possess competitive advantage based on their previous assets (Schilke, 2014). The influential work of Teece et al. (1997) proposed the DCs framework to address this critical gap in strategic management theory. Their framework has since been

elaborated upon by numerous scholars (Eisenhardt and Martin, 2000; Helfat et al., 2007; Teece, 2007, 2018) and has become the dominant perspective for understanding how firms adapt to unpredictable environments (Schilke et al., 2018; Wilden et al., 2016; Peteraf et al., 2013).

2.4. Dynamic Capabilities Concepts

2.4.1. Core Tenets of DCs

The DCs framework builds upon Core Competencies and RBV, drawing from foundational tenets such as behavioural theory (Cyert and March, 1963), transaction cost theory (Williamson, 1975, 1985), and evolutionary theory (Nelson and Winter, 1984).

Behavioural theory conceptualises businesses and organisations as political systems where decisions are made based on how individuals and groups behave and interact with each other (Cyert and March, 1963). According to this theory, firms' operational goals are reflections of various internal stakeholder demands and thus, the political coalitions formed among these stakeholders will impact how decisions relating to firm performance are made (Augier and Teece, 2008). Given that, behavioural theory forms the basis of firms looking inward to individuals and their group affiliations in search of what might help them achieve competitive advantage through developing DCs (Teece, 2007; Zollo and Winter, 2002). This focus on internal decision-making processes echoes the emphasis on managerial cognition as a critical component of strategic adaptation, particularly when organisations face unfamiliar or ambiguous environmental conditions (Gavetti, 2005).

Transaction cost theory seeks to explain why firms exist through the hypothesis that markets and hierarchies represent alternative governing structures for transactions to be carried out (Williamson, 1975, 1985). Williamson's theory argues that firms would choose the most efficient outcome of minimising transaction costs by weighing the pros and cons of external transactions with that of internalised ones (Hoskisson et al., 1999). The theory's focus is on crucial elements in management such as governance and structure but they are insufficient in driving long-term competitive advantage (Augier and Teece, 2008). Despite this, transaction cost theory's emphasis on internalising transactions when it is economically advantageous to do so shines the spotlight on the firm itself. This is similarly crucial to the emphasis on continuously developing and reconfiguring firm-specific assets in the DCs framework (Teece, 2007).

The evolutionary view of the firm proposed by Nelson and Winter (1985) brings together Schumpeter's (1934) assertion for the necessity of bounded rationality in firm decision-making, profit maximisation in firm theory (Alchian, 1950, 1953; Penrose, 1952, 1953), and behavioural theory (Cyert and March, 1963). It considers the primary goal of a firm to be pursuing profits through creating and accumulating valuable knowledge assets by undergoing a learning process (Augier and Teece, 2008). Drawing on Penrose's (1959) theory of firm growth, evolutionary theory suggests that this learning process ensures firms adapt when external environments change (Nelson and Winter, 1985).

Therefore, evolutionary theory sets the baseline for firms being highly adaptable to change which the DCs framework builds upon by focusing on specific capabilities that are needed to sustain adaptability (Augier and Teece, 2008; Winter, 2003). This viewpoint corresponds with the idea that firms cultivate path-dependent learning trajectories, accumulating knowledge and capabilities that impacts their future adaptive ability (Vergne and Durand, 2011; Zollo and Winter, 2002).

2.4.2. Definitions of DCs

Teece et al.'s (1997) DCs framework established a foundation for subsequent researchers to expand upon. Focusing on superior performance as the primary purpose of DCs, Zollo and Winter (2002) define them as "a learned and stable pattern of collective activity through which the organisation systematically generates and modifies its operating routines in pursuit of improved effectiveness." Similarly, Helfat et al. (2007) characterise DCs simply as "the capacity of an organisation to purposefully create, extend or modify its resource base." Though seemingly different, Eisenhardt and Martin's (2000) reconceptualised definition: "the firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to match and even create market change; DCs thus are the organisational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die" is still an adaptation of Teece et al. (1997), except that it avoids drawing a direct link between DCs and firm performance.

The common thread running through early DCs literature like Teece et al. (1997), Eisenhardt and Martin (2000), and Zollo and Winter (2002) is their assertion that DCs are well-defined organisational processes or routines that are path-dependent. These organisational processes tend to be entrenched within firms and, when confronted with changing market conditions, will be relied upon to develop new competencies through the reconfiguring of firms' resource base, including acquiring and integrating new resources with existing ones (Helfat

et al., 2007). Furthermore, unlike some assets and resources, DCs need to be developed as they cannot be bought (Makadok, 2001; Teece et al., 1997). This distinction underscores the idiosyncratic nature of DCs, which develop through firm-specific learning paths (Barreto, 2010; Easterby-Smith and Prieto, 2008) and are shaped by the unique past experiences of each firm (Vergne and Durand, 2011).

To be considered as employing DCs, firms ought to be involved in deliberate implementations rather than spontaneous reactions where they adapt haphazardly to crises (Helfat et al., 2007; Zollo and Winter, 2002). DCs should therefore have patterned and repeatable elements involving strategic change, resource formulation, and the deliberate modification of firms' resource bases (Ambrosini and Bowman, 2009). However, not all changes should be attributed to DCs as some of them are not planned (Winter, 2003) and could have been implemented by luck (Barney, 1991). The distinction between purposeful adaptation and reactive response suggests how DCs are intentional and structured in nature as opposed to impulsive problem-solving or improvisation (Winter, 2003; Zollo and Winter, 2002). The focus on intentionality also highlights the significance of managerial agency in the development and deployment of DCs (Helfat and Peteraf, 2015; Adner and Helfat, 2003).

Extending the DCs framework, Teece (2007) identifies three cognitive meta-capabilities, "where DCs can be disaggregated into the capacity to (1) sense and shape opportunities and threats, (2) seize opportunities, and (3) maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets." This expanded framework is a subtle reference to the RBV (Barney, 1991) and the competencies that allow firms to achieve competitive advantage while also building upon Teece et al.'s (1997) earlier definition on the need to adapt in order to sustain these competencies. Teece's (2007) conceptualisation has gained considerable traction in subsequent research, as evidenced by Wilden et al.'s (2016) systematic review confirming the sensing-seizing-reconfiguring framework's strong explanatory power across diverse contexts and Fainshmidt et al.'s (2016) meta-analysis demonstrating statistically significant positive relationships between these capabilities and firm performance. It remains one of the most influential frameworks for understanding the specific capabilities that enable firms to adapt to environmental changes (Schilke et al., 2018; Peteraf et al., 2013).

A consistent theme throughout most DCs literature is the omnipresence of change. Firms deploy DCs to detect market environment changes early so they can promptly respond by modifying operating routines to accommodate such changes (Wilhelm et al., 2015). Radical

alterations to organisational routines and resource reallocation exemplify how DCs enable firms to seize opportunities in response to changes (Easterby-Smith et al., 2009). DCs operate on the foundation of such routines and are influenced by learning mechanisms that facilitate routine adaptation with the aim of enhancing firm performance during periods of change. This relationship between DCs and organisational learning has been extensively explored by scholars who emphasise that knowledge articulation, codification, and the development of absorptive capacity are integral to the development of DCs (Zahra and George, 2002; Zollo and Winter, 2002; Easterby-Smith and Prieto, 2008). These learning mechanisms enable firms to identify relevant knowledge from beyond their domain, make sense of it, and put it into practice so as to create business value (Cohen and Levinthal, 1990). This is a crucial ability to have in fast-changing business environments where the understanding and applying of new insights quickly can mean the difference between thriving and failing (Zahra and George, 2002).

2.4.3. Enhancing Firm Performance and Deriving Competitive Advantage through DCs

Peteraf and Barney (2003) tap on empirical evidence to draw the link between firm performance and competitive advantage. Contrary to Winter's (1995) observation that competitive advantage is commonly interpreted as "superior financial performance," Peteraf and Barney (2003) instead define competitive advantage as "a more fundamental type of competitive edge." They further elaborate that the extent of competitive advantage provides an indication of a firm's capacity to outperform its competitors. This ties in with the view that DCs focus on a firm's ability to refresh its resource pool when impacted by environment changes, with the aims of achieving competitive advantage and enhancing firm performance (Ambrosini and Bowman, 2009). Their view captures an important distinction that while strong financial results can be a sign of competitive advantage, they are just the tangible outcomes rather than the core of what actually gives firms and edge in the competitive market (Peteraf and Barney, 2003; Barney and Clark, 2007).

One core tenet of the DCs framework is that DCs lead to improved firm performance (Helfat et al., 2007). Fainshmidt et al. (2016) uses meta-analysis to empirically assess this relationship and found that DCs did in fact have a positive impact on firm performance. However, they noted that standalone capabilities may not afford firms the sensitivity to react quickly to environmental changes, especially when those changes are complex. Such instances would instead require collective sets of DCs to ensure that firms can respond to

the changes appropriately. Pezeshkan et. al.'s (2016) vote-count analysis, likewise, found that there is a positive and significant link between DCs and firm performance (60% on empirical testing). Longitudinal studies such as Wilden et al. (2013) provide additional evidence that organisational structure and firm strategy play key mediating roles in how DCs translate into firm performance, highlighting the importance of context in determining when and how these capabilities deliver value.

Since Zollo and Winter's (2002) learning mechanisms of (i) experience accumulation, (ii) knowledge articulation, and (iii) knowledge codification have crucial roles to play in the forming of and improving of DCs, then by extension of the link between firm performance and competitive advantage (Peteraf and Barney, 2003) as well as DCs and firm performance (Fainshmidt et al., 2016; Helfat et al., 2007; Pezeshkan et. al., 2016), these learning mechanisms can facilitate continued growth in both firm performance and competitive advantage. The relationship between learning mechanisms and DCs is clarified through integrative work that proposes knowledge management as the bridge between how organisations learn and how they develop DCs (Easterby-Smith and Prieto, 2008). Their framework suggests that effective knowledge management allows firms to translate their learning into capabilities that can practically drive competitive advantage, reinforcing the importance of intentional learning to cultivate DCs (Zollo and Winter, 2002; Eisenhardt and Martin, 2000).

In Winter (2003), a distinction is drawn between zero-level ordinary capabilities (OCs), those that enable firms to "make a living", and DCs ("those that operate to extend, modify or create OCs"). He noted that DCs would entail significantly higher costs since they tend to involve longer-term commitments to specific resources while OCs are tapped on for solving ad-hoc problems and carry lighter cost burdens since they disappear once the problem has been solved. Both Lavie (2006) and Pablo et al. (2007) have also addressed the cost of DCs, particularly the hefty "cognitive, managerial, and operational costs" that arise from their deployment where substantial commitment (time and energy) is needed from managers. If managers misinterpret the firm's situation and environment, inappropriate DCs might be deployed, incurring costs rather than strengthening or preserving firm performance (Zahra et al., 2006). Consequently, they assert that the firm would have to bear both the costs of deploying DCs as well as the fallout from misapplied DCs. This inherent tension mirrors the "capability-rigidity paradox" where the structure that makes capabilities reliable and efficient also limits an organisation's ability to adapt, a contradiction that becomes especially

problematic in the face of rapidly changing environments (Schreyögg and Kliesch-Eberl, 2007).

Establishing and sustaining DCs often involves considerable costs that could potentially negatively affect firm performance, making it critically important for firms to carefully balance practical benefits with the resources required to deploy them (Schilke, 2014). As such, it is imperative for managers to be well-versed in the enabling and inhibiting triggers of DCs: correctly interpreting information gathered from scanning the business context, decisively deploying suitable DCs, and implementing them in a timely fashion (Ambrosini and Bowman, 2009). This echoes the observation that the line distinguishing OCs from DCs is often blurred in real-world settings, implying that successful firms must skilfully combine both capabilities to sustain strong performance amidst changes in the business environment (Helfat and Winter, 2011).

When faced with growing demand for products and services, DCs can influence firm activities and collectively impact the process of developing and producing them to pave the way for increased profits (Teece, 2014b) and, by extension, enhance firm performance. With DCs, resources are transformed substantially and are converted into competitive advantage (Wu, 2006). Without DCs, these resources would not have translated into improved firm performance (Zollo and Winter, 2002). In this context, building up robust DCs becomes crucial as it allows firms to gain the upper hand over their industry rivals, particularly those that are overly focused on pre-existing resources, stagnating, not empowering entrepreneurs and change agents, neglecting changes in consumer behaviour, or prioritising efficiency over innovation (Teece, 2014b). These DCs are then able to boost firm performance through productively building and renewing resources and assets (both internally and externally).

On their own, strong DCs are unlikely to bring about competitive advantage because other factors such as idiosyncratic resources and good strategy also play key roles when combined with DCs (Teece, 2014a). Pre-existing synergies ensure more timely and prudent use of DCs through integration into firm activities while temporary advantages help firms shift quickly to achieve new short-term gains over competitors. Tapping into these two areas enables firms to develop and continuously enhance their resource configurations to bring about competitive advantage (Eisenhardt and Martin, 2000). As such, while DCs are essential for building competitive advantage, it is not enough to just rely on them alone. This view that competitive advantage requires multiple complementary factors corresponds with the capability lifecycle concept, which explains how capabilities progress through distinct stages

and can branch into different paths when confronted with events like market disruptions or technological shifts (Helfat and Peteraf, 2003).

Using Lengnick-Hall and Wolff's (1999) logic of leverage, Eisenhardt and Martin (2000) conceptualise DCs to be tools that alter, utilise, and even reinforce existing resource configurations such that the firm's position is strengthened. DCs can also be leveraged on to help develop new resource configurations, facilitating shifts into new competitive positions, following Karim and Mitchell's (2000) logic of change. Ultimately, Eisenhardt and Martin (2000) advocates for the need to combine strategic logics in response to dynamic markets with the goal of achieving long-term competitive advantage. The dual role of DCs in simultaneously enhancing existing resources and creating entirely new configurations captures how firms have to manage the competing tension of leveraging on current capabilities and exploring new opportunities (March, 1991; O'Reilly and Tushman, 2007, 2008), a balancing act that is critical in environments defined by accelerating technological change. This is all the more important for firms undergoing digital transformation as they must continuously adjust their processes to manage tensions between digital strategy and existing resources (Yeow et al., 2018).

Achieving long-term competitive success for firms requires not just technical competence but also enterprising and developmental competence (Teece, 2014b). Firms' top management teams are the primary drivers of exemplifying DCs and will require entrepreneurial management (Ambrosini and Bowman, 2009; Teece, 2007). While tensions exist among the three meta-capabilities because the managerial skills required for each often differ, firms must establish and utilise them concurrently to succeed (Helfat and Peteraf, 2003; Teece, 2007). This aligns with Raff's (2000) view that strategies driving capabilities development enhance firms' competitive positions. Referring to Teece's (2007) typology, developing capabilities to identify and seize new business opportunities while transforming the resource base enables firms to build corporate strategies delivering sustainable competitive advantage. Teece (2014) refines this further by arguing that DCs' pivotal value lies in their potential to help firms regularly engage in typical entrepreneurial pursuits, such as identifying unfulfilled customer demands and tapping on resources to fulfil those demands, because these activities help create long-term competitive advantage. The concept of "entrepreneurial asset orchestration" extends this view, highlighting how firms can effectively coordinate resources and capabilities in dynamic environments shaped by digital transformation and platform-based competition (Teece, 2016, 2018).

Hyper-competition has led to competitive advantage becoming harder to sustain over time (Wiggins and Ruefli, 2005) and this is further exacerbated by the rapid rise of AI and other cognitive technologies that are accelerating the pace of change and disruption (Davenport, 2018). In such environments, Baretto (2010) argues that successive advantages attained over a period are what sustain competitive advantage, rather than individual standalone advantages, which is similar to Eisenhardt and Martin's (2000) perspective on temporary advantages. The concept of "transient advantage" subsequently elaborated on this perspective, suggesting that firms in hypercompetitive environments must continuously launch new strategic initiatives instead of attempting to sustain a single competitive position indefinitely (D'Aveni et al., 2010).

Schilke et al.'s (2014) empirical analysis adopted an OLS regression methodology that derived a non-linear inverse U-shape moderation where under intermediate levels of dynamism, the correlation between DCs and competitive advantage is strongest, but the relationship is comparatively weaker under low or high dynamism levels. This implies that DCs can indeed provide competitive advantage, but the impact is subject to the environmental dynamism level that the firm is exposed to. These findings validate Baretto's (2010) assertion that firms ought to be dynamic in response to swift changes in the environment so that successive temporary advantages can be built, which then contributes to sustained competitive advantage. These results also support Eisenhardt and Martin's (2000) distinction between DCs in moderately dynamic versus high-velocity markets, where the former feature predictable change patterns and reliance on existing knowledge, while the latter involve unpredictable changes requiring experiential, iterative processes to develop new knowledge.

Substantial evidence indicates that DCs can enhance firm performance and sustain competitive advantage. The significance of DCs makes distinguishing them from OCs imperative (Pavlou and El Sawy, 2011; Zollo and Winter, 2002) in helping managers determine the suitability of each for achieving specific objectives (Zahra et al., 2006). While their differences were briefly mentioned above with reference to Winter (2003), a more detailed comparison of the two is needed to establish clear distinctions.

2.4.4. Order of Capabilities

According to Teece (2014), OCs can be benchmarked against best practices because they are operational in nature and constitute what Winter (2003) terms "zero-order capabilities" that directly impact current firm performance. These OCs also tend to be routine in nature

as they involve activities that keep firm operations running on a daily basis (Collis and Montgomery, 1995; Teece, 2008). One example is supply chain management capabilities that allows a firm to manage its procurement process in a cost-efficient manner, produce its goods or products effectively, and then deliver with precision (Golicic and Smith, 2003).

In contrast, DCs are referred to as capabilities of a higher-order that are deployed specifically in response to market environment changes to reconfigure OCs (Zollo and Winter, 2002). Empirical examples of DCs include: research and development activities which were ramped up in response to market price changes in the US petroleum industry (Helfat, 1997); product innovation in high-tech firms, driven by continuous technological evolution (Danneels, 2002); and diversification of accounting firms into related services that are beyond typical accountancy services to adapt to the requirements of environmental changes (Døving and Gooderham, 2008). These examples show that DCs are deliberate and strategic in nature, as opposed to OCs which are focused on operational workflows (Winter, 2003; Teece, 2014a).

Beyond the seemingly binary distinction between OCs and DCs (Winter, 2003), it has been suggested that firm capabilities can be categorised into a hierarchical structure with four levels (Wang and Ahmed, 2007):

At "zero-order" are resources, which form the core of any firm's operations. While resources exhibiting VRIN characteristics can give firms competitive advantage (Barney, 2001), these are not sustainable in the long-term. Next in line are "first-order" capabilities, which lead to improved firm performance and come about from the deployment of resources. "Second-order" core capabilities refer to resources and capabilities that are bundled together and are essential to firms' competitive advantage. However, due to changes in the environment, they can become core rigidities instead (Leonard-Barton, 1992). Finally, the "third-order" DCs represent the highest order of organisational capabilities, vital to long-term firm performance and hence the most value-adding to firms. It is further suggested that each capability order depends on its preceding order being well-managed before the next can be tapped on (Hine et al., 2014). This hierarchical structure outlines the relationship between resources, operational capabilities, and DCs, underlining the layered nature of organisational adaptation.

While this hierarchy divides capabilities down in a well-defined manner, some have argued against this granular typology, either contending that differentiating OCs from DCs is already adequate (Teece, 2014a) or suggesting that the dividing lines between each capability order are often blurred due to the perpetual nature of change (Helfat and Winter, 2011). The distinction between OCs and DCs by Winter (2003) already offers much clarity

in that OCs are used to support the firm's day-to-day operating routines while DCs are intended to modify these routines to respond effectively to rapid changes in the business environment. Since it is of greater importance in this research to identify the DCs that enable AIDA adoption and drive digital transformation in accounting firms, the focus should be on DCs themselves. Since Teece's (2007) typology represents the most used in DCs research (Schilke et al. 2018), this research will be underpinned by the sensing, seizing, and reconfiguring/transforming framework.

2.4.5. Classes of DCs – Sensing, Seizing, and Reconfiguring/Transforming (Teece, 2007)

Having already established the correlation between firms having DCs and the rapidly changing nature of the environments that they operate in (Teece et al., 1997), Teece (2007) extends this further by proposing that this link is even more pronounced and relevant for multinational corporations in global markets where there is greater impact from changes in competitor behaviour, consumer needs, and technology. Building on the foundations of Teece et al. (1997), the focus turned to explaining the factors facilitating swift deployment and development of resources and capabilities to remain competitive (Teece, 2007; 2012). By integrating social and behavioural sciences with economic evolutionary theory, Teece (2007) proposed three sequential component capabilities: Sensing, Seizing, and Reconfiguring (Feiler and Teece, 2014).

Sensing

A firm's sensing capabilities can be seen as its capacity to recognise and analyse changes in the external market environment (Teece, 2007). Examples of such changes include advancements in technology, changes in customer preferences, fluctuations in the market, and even competitor activity. Firms must be able to sense market changes and adapt appropriately to preserve their competitive advantage (Barney, 2001; Helfat et al., 2007). Sensing involves managers scanning the environment, discovering new opportunities, interpreting new information, and integrating knowledge as they respond to the challenges posed by market changes (Eisenhardt and Martin, 2000). The search for new opportunities typically depends on how much access to information a firm has, and having a greater range of sources can help them better detect new changes in the market (O'Reilly and Tushman, 2007, 2008). Information gathered on any changes requires interpretation and assessment of their significance before the firm can decide on what should be done next. The sensing component would include activities such as environmental scanning, market intelligence,

and technological forecasting (Day, 1994; Teece, 2007), as well as exploratory processes like experimenting, prototyping, and scenario planning (McGrath, 2010; Rohrbeck, 2012). The effectiveness of these sensing activities ultimately depends on the firm's absorptive capacity, which determines how well it can identify valuable external information, incorporate it into existing knowledge structures, and apply it practically into its operations to gain competitive advantage (Cohen and Levinthal, 1990; Zahra and George, 2002).

Seizing

After addressing the sensed opportunities, the next step for a firm is to seize these opportunities swiftly and decisively. Seizing capabilities give firms greater agility and flexibility to mobilise their resources for the development of relevant products, services, and processes (Teece, 2007). Given the uncertainty that is associated with new opportunities, risk tolerance plays a crucial role in whether a firm can leverage on them. Firms with excessive risk aversion may sense opportunities but fail to seize them due to fear of losses. On the other hand, firms with a greater willingness to take risks and are more prone to making swift decisions have a higher likelihood of thriving in rapidly changing markets (Eisenhardt and Martin, 2000; McGrath and MacMillan, 2000). That being said, there may be a danger of excessive optimism that could result in poor returns on investments. Therefore, firms must establish a fine balance through effective risk management as they formulate strategies to seize opportunities. Beyond risk management, seizing also involves crucial decision-making processes about business models, resource allocation, and strategic investments that determine how firms take advantage of the identified opportunities (Teece, 2007, 2018), alongside governance structures that facilitate quick decision-making and implementation (Augier and Teece, 2009; Wilden et al., 2013). Firms' capacities to commit resources decisively while preserving strategic flexibility thus emerge as critical components of effective seizing capabilities (Eisenhardt and Martin, 2000; Teece, 2007).

Reconfiguring/Transforming

The final class of capabilities, originally termed as "reconfiguring" in Teece (2007), is also described as transforming capabilities (Teece and Leih, 2015). These capabilities involve making significant changes to firm resources and capabilities so they can adapt to changing market environments. Although often used interchangeably, Teece's more recent work uses "transforming" more prominently over "reconfiguring" likely due to the rising prominence of the digital economy and the radical changes it brings (Teece, 2016). Such changes are often drastic and disruptive, hence requiring firms to be transformative and go beyond

merely reconfiguring their assets (Teece, 2018). In addition, how quickly firms respond to changes by realigning their resources and capabilities to match their corporate strategy is a measure of how strong their transforming capabilities are (Teece, 2014a). Another key aspect of transforming is turning to acquisitions when the internal reconfigurations are insufficient to fill the gap and new resources and capabilities are needed (Karim and Mitchell, 2000). Acquisitions can help firms look beyond their core competencies that may have become core rigidities due to changes in the external environment (Leonard-Barton, 1992). With acquisitions in place, firms can combine these co-specialised assets with their existing resources to maximise profits, derive cost savings, and create new products (Teece, 2007). These integrations help firms develop new resource configurations that create value as they transform and adapt to market environment changes. Effective transforming capabilities also depends on organisational learning processes that foster the continuous renewal of capabilities (Zollo and Winter, 2002; Easterby-Smith and Prieto, 2008), as well as leadership approaches that drive change while addressing resistance throughout the organisation (Helfat and Peteraf, 2015; Teece, 2007). The ability to transform organisational identity and culture to support strategic shifts represents another essential dimension of transforming capabilities (Teece, 2007; O'Reilly and Tushman, 2007, 2008).

For the purposes of this research, the terms 'reconfiguring' and 'transforming' will be used interchangeably to refer to this third component of the DCs framework. While recognising Teece's semantic shift towards 'transforming' in his more recent work to emphasise the radical nature of change in digital economies (Teece, 2018), both terms capture the essential process of modifying organisational resources and capabilities in response to environmental shifts. This approach acknowledges the conceptual continuity in Teece's work while remaining consistent with the broader DCs literature that continues to reference both terms (Barreto, 2010; Helfat and Peteraf, 2003). When discussing specific authors' contributions, their original terminology will be preserved to maintain fidelity to their conceptual framing.

In the context of technological disruption, such as the rise of AIDA, these three classes of capabilities—sensing, seizing, and transforming—provide a structured framework for understanding how organisations detect technological opportunities, make strategic decisions about technology adoption, and transform their operations to leverage these technologies effectively (Warner and Wäger, 2019; Vial, 2019, 2021). Studies of service-oriented organisations have shown that successful digital transformation depends on routines enabling knowledge acquisition, stakeholder interaction, and change orchestration across these capability dimensions (Ellström et al., 2021). This tripartite framework has gained

considerable empirical support through studies demonstrating its relevance across various industries and environmental contexts (Fainshmidt et al., 2016; Wilden et al., 2016; Schilke et al., 2018).

2.5 The Manager's Role in the DCs Process

In response to signals of change in the environment, DCs are the capabilities that managers rely on to sense for opportunities, seize upon them, and reconfigure firm resources and capabilities (Eisenhardt and Martin, 2000; Martin and Bachrach, 2018). These managers also play a crucial role in ensuring that DCs are operationalised into their firms (Helfat and Peteraf, 2015; Teece, 2007). Given that, each of the three classes of capabilities from Teece's (2007) DCs framework requires significant managerial involvement to ensure that DCs are operationalised.

Senior management are often relied upon to sense market shifts and to have the problem-solving skills to address these shifts (Teece, 2007). Furthermore, managers having the ability to override dysfunctionality entrenched within their firms through decision-making processes is also deemed as a DC. Since management decision-making guides a firm's strategy, this then translates to varying firm performance (Beck and Wiersema, 2013). This perspective resonates with "dynamic managerial capabilities" as conceptualised by Helfat and Peteraf (2003) to describe the ability of managers to create, extend, and adapt an organisation's resource base in response to evolving conditions. These capabilities stem from a combination of managerial cognition, social capital, and human capital, which are attributes that reflect the distinctive strengths managers bring to their roles. Cognition sharpens their perception of opportunities, social capital leverages their networks for support, and human capital draws on the expertise they have gathered through their experiences to guide strategic decision-making strategic choices (Helfat and Martin, 2015; Kor and Mesko, 2013). Additionally, managers who effectively draw upon organisational history and memory can create transformation narratives that facilitate change while maintaining organisational identity (Ferri and Takahashi, 2024).

Ultimately, firm DCs reside in managers' capacity to recognise, create, and integrate internal assets, resources, and capabilities with those acquired externally (Ambrosini and Bowman, 2009; Teece, 2007). As such, how managers execute and practise strategy is vital to the way in which firms build their DCs (Regnér, 2008). When managers make strategic decisions, they bridge the gap between their own thinking processes and how their firms which is why there is managerial leadership is increasingly perceived as an important part of

understanding DCs in complex business environments of today where AI and other cognitive technologies are rapidly changing how firms compete and operate.

2.6 Dynamic Capabilities in Contemporary Strategic Management

The DCs framework has come to prominence simply because it addresses the shortcomings of earlier strategic management theory in explaining how firms adapt to fast-changing environments. Distinct from the RBV's static emphasis on the ownership of valuable assets, DCs highlight the processes by which companies continually evolve their resource base in accordance with changes in the environment (Teece et al., 1997; Eisenhardt and Martin, 2000). With firms today having to contend with seemingly never-ending cycles of technology change and market disruption, this difference is especially relevant (Christensen et al., 2018). The DCs framework has advanced beyond its original conceptualisation to draw upon complementary theoretical insights in organisational learning (Zollo and Winter, 2002; Easterby-Smith and Prieto, 2008), managerial cognition (Adner and Helfat, 2003; Helfat and Peteraf, 2015), and institutional theory (Oliver, 1997; Peng et al., 2009), documenting its theoretical flexibility and explanatory power across wide-ranging contexts.

Due to its emphasis on firm adaptation having to be an intentional and systematic process, the DCs framework stands out from among other strategic management frameworks as being more practicable. While firms may sometimes navigate changes through lucky breaks or one-off solutions (Winter, 2003), DCs in their purest form involve consistent patterns and practices that firms develop over time through repeated application (Zollo and Winter, 2002). With business environments becoming more volatile and unpredictable, a structured approach to adapt to changes has become all the more important. The DCs framework also acknowledges path dependencies, which is that their past actions and experiences set up pathways that both enable and constrains firms' ability to adapt and thereby impacting their future (Vergne and Durand, 2011; Teece et al., 1997). Despite that, it concurrently highlights how entrepreneurial leadership can play an important role in breaking firms out of constraining path dependencies when circumstances call for bold action (Teece, 2007, 2016).

Empirical evidence supporting the strong correlation between DCs and firm performance (Fainshmidt et al., 2016; Pezeshkan et al., 2016) have further strengthened the DCs framework's validity and relevance to contemporary strategic management discourse. However, this link is not a straightforward one because it relies on complementary elements like unique resources and well-thought-out strategic plans (Teece, 2014a) and shifts with

how fast the business environment changes (Schilke et al., 2014). This is a reflection of the complexity that firms are faced with when seeking to develop competitive advantage.

As firms continue to navigate technological disruption and market volatility, the DCs framework offers a theoretical lens that acknowledges both the path-dependent nature of organisational change and the need for adaptation that is done intentionally rather than reactively. This is consistent with the socio-technical viewpoint of digital ecosystems in which technology are not only tools but generative elements co-constituent with human behaviour in a recursively changing system (Morgan-Thomas et al., 2020). Both perspectives emphasise the dynamic, interactive nature of adaptation in fast-changing business environments impacted by technology. Recent extensions of the framework have demonstrated its continued relevance to emerging strategic challenges and its application to specific contexts, including digital transformation (Warner and Wäger, 2019; Vial, 2019, 2021; Yigitbasioglu et al., 2023), platform-based competition (Teece, 2018; Helfat and Raubitschek, 2018), sustainability transitions (Teece et al., 2021), as well as in resource-constrained environments, where SMEs leverage digital tools for business model innovation through adaptive and entrepreneurial capabilities (Matarazzo et al., 2021). The framework has also been valuable in understanding professional service adaptation, with Yigitbasioglu et al. (2023) showing how accountants develop new client advisory capabilities, exemplifying the sensing, seizing, and transforming processes that Teece (2007) identified as central to DCs.

2.7 Summary of Dynamic Capabilities Literature Review

This chapter has traced the evolution of strategic management theory from its early days of identifying “best practices” and analysing how firms’ unique internal resources bring about competitive advantage to the development of the DCs framework. Each theoretical advancement throughout this journey addressed the shortcomings of previous approaches while simultaneously factoring in the increasingly dynamic nature of business environments. Beginning with viewing firms as resource bundles (Penrose, 1959), followed by the core competencies approach (Prahalad and Hamel, 1990, 1997), and then the RBV (Barney, 1991), strategic management theory gradually incorporated more dynamism and complexity to capture a better understanding of how firms adapt and compete.

The DCs framework represents a pivotal advancement in this theoretical trajectory by directly addressing how firms adapt to changing conditions through sensing opportunities, decisively seizing them, and reconfiguring resources. Unlike static approaches from before,

DCs recognises that in rapidly changing environments, competitive advantage derives not from merely possessing valuable resources but from continuously adapting and transforming those resources as circumstances shift. This framework has also been validated by empirical evidence (Fainshmidt et al., 2016; Pezeshkan et al., 2016; Wilden et al., 2013) which confirms the correlation between DCs and firm performance while revealing new insights about how various organisational contexts affect the effectiveness of DCs in practice.

By highlighting managers' critical role in orchestrating adaptation processes, the DCs framework brings attention to the human dimension of strategic change. It positions dynamic capabilities as embedded in organisational routines yet ultimately guided by managerial judgment and action. This relationship between individual-level elements and firm-wide processes bridges micro and macro perspectives on adaptation, contributing to an integrated understanding of the interaction between managerial agency, organisational structures, and environmental forces (Helfat and Martin, 2015; Salvato and Vassolo, 2018).

The chapters that follow on practice-based perspectives (that look into SAP and TIP) and digital transformation will extend this foundation with the intention of developing an integrated theoretical framework for analysing technology adoption and strategic change. Teece's (2007) sensing, seizing, and reconfiguring typology provides a structured approach to examining how firms identify technological opportunities, make strategic decisions about new technologies, and transform their operations. This proves to be particularly valuable for understanding how accounting firms develop capabilities in AIDA amid digital transformation in today's technology-driven competitive landscape.

CHAPTER 3. PRACTICE-BASED PERSPECTIVES: STRATEGY-AS-PRACTICE AND TECHNOLOGIES-IN-PRACTICE

3.1 Introduction: Toward a Practice-Based Understanding of Organisational Adaptation

The preceding chapter established Dynamic Capabilities (DCs) as a theoretical framework for understanding how firms adapt to changing environments through sensing opportunities, seizing them through strategic decision-making, and reconfiguring their resources and capabilities. While the DCs framework provides useful insight into what firms need to develop for successful adaptation, it offers limited guidance on how these capabilities manifest in everyday organisational activities (Regnér, 2008; Salvato, 2009). To address this gap, this chapter introduces two complementary theoretical perspectives that focus on the micro-level practices through which organisational adaptation takes place: strategy-as-practice (SAP) and technologies-in-practice (TIP).

These practice-based approaches shift attention from abstract organisational capabilities to the tangible, situated activities through which strategy is formulated and technologies are enacted. As Whittington (2006, p. 613) argues, practice perspectives are concerned with "strategy not just as something an organisation has, but something that its members do." Similarly, Orlikowski (2000, p. 407) contends that technology use is best understood as "situated and recursive practices through which people engage with particular technological artefacts in particular ways in particular conditions."

By integrating these practice-based perspectives with the DCs framework established in Chapter 2, this chapter develops a more comprehensive theoretical foundation for understanding how accounting firms build capabilities for AIDA as they pursue digital transformation. Practice-based perspectives provide a different lens to understand the day-to-day activities that cultivate, facilitate, and deploy sensing, seizing, and reconfiguring capabilities, while also recognising that these activities are influenced by the social, cultural, and organisational settings.

The chapter starts off by going back to the origins and evolution of the SAP perspective, differentiating it from conventional methodologies in strategy research. It subsequently presents the fundamental elements of the SAP conceptual framework—practitioners,

practices, and praxis—and examines how they are closely linked together. Following this, the chapter examines Orlikowski's TIP perspective, which offers insights into how technologies become integrated into organisational routines through recurrent patterns of use. The chapter then considers the applications of these practice-based perspectives to professional service firms, paying particular attention to accounting organisations. Finally, the chapter concludes by exploring the connections between these practice perspectives and their relevance for understanding how accounting firms adopt AIDA technologies through everyday strategic and technologic practices as they pursue digital transformation.

3.2 The Evolution of Strategy Research: From Content and Process to Practice

3.2.1 Content and Process Perspectives in Strategy Research

Early works in strategy research such as Penrose's (1959) "Theory of the Growth of the Firm" and Ansoff's (1965) "Corporate Strategy" established foundations for two predominant streams of research: strategy content and strategy process (Bowman et al., 2002). Content-oriented strategy research focused primarily on how strategy formulation by senior management influences firm performance (Bowman and Ambrosini, 1997). The generic strategies model (Porter, 1980) exemplifies this approach by emphasising strategic positioning and competitive advantage (Golsorkhi et al., 2010). While content research conceptualised strategy as an outcome or end goal, process research viewed strategy as a sequence of actions leading to that goal (Van de Ven, 1992; Pettigrew, 1992).

The DCs frameworks (Teece et al., 1997; Eisenhardt and Martin, 2000; Zollo and Winter, 2002), examined in the previous chapter, attempted to bridge these perspectives by emphasising how firms can respond to environmental changes by reconfiguring their internal resources and capabilities. However, as noted by Johnson et al. (2003), much of traditional strategy research, including the DCs framework, has been influenced heavily by positivism and quantitative methods derived from economics (Hoskisson et al., 1999). Porter's influential work, in particular, steered strategy research toward conventional economic analysis, focusing on macro-level firm activity while neglecting the human dimension of strategy-making (Whittington, 2003).

Economics-based models have dominated traditional strategy research, resulting in a preoccupation with macro-level analysis of firms and markets while largely overlooking the individuals who perform strategic activities (Jarzabkowski and Spee, 2009). One of the

criticisms that surfaced over the reductionist inclinations of these approaches was that they frequently overlooked the messy and complex realities of organisational processes within firms. Vaara and Whittington (2012) further argue that conventional strategy research tends to privilege economic outcomes over other consequences of strategic activity, leading to a narrow conceptualisation of strategic success.

3.2.2 The Emergence of Strategy-as-Practice

In response to these limitations, SAP emerged as a distinctive approach drawing heavily on social theories from disciplines such as sociology, social psychology, and anthropology (Golsorkhi et al., 2010; Jarzabkowski, 2004, 2005; Vaara and Whittington, 2012; Whittington, 1996). Rather than viewing strategy as something organisations have, SAP conceptualises it as an ongoing, socially accomplished activity, something organisational members do (Jarzabkowski et al., 2007). Since the early 2000s, SAP has offered an alternative to economics-based models by focusing on the micro-level social activities that constitute organisational strategy and strategising (Golsorkhi et al., 2010).

The intellectual foundations of SAP can be traced to the broader "practice turn" in social sciences, which emphasises the role of practices in constituting social reality (Johnson et al., 2003; Jarzabkowski, 2005). Golsorkhi et al. (2010) note that this practice turn highlights three key aspects: the activities of individuals in real-world contexts; how such activities relate to prevailing practices that enable or constrain them; and understanding why actions may or may not conform to established routines, rules, and norms by examining the relationship between social action, structure, and agency. The philosophical underpinnings of this practice turn can be found in the works of theorists such as Foucault (1977), Giddens (1984), de Certeau (1984), and Bourdieu (1990), who developed foundational concepts during the 1970s to 1990s.

SAP research also draws inspiration from earlier work in strategic management by scholars such as Mintzberg (1973), Mintzberg and Waters (1985), and Pettigrew (1973, 1992), whose studies emphasised the emergent, processual nature of strategy formation. As Johnson et al. (2003, p. 3) argue, "The Strategy as Practice perspective is concerned with the detailed processes and practices which constitute the day-to-day activities of organisational life and which relate to strategic outcomes." This focus on everyday activities and micro-practices represents a significant departure from traditional strategy research, with its emphasis on macro-level outcomes and economic performance.

Within this evolving SAP landscape, scholars have continued to develop new theoretical extensions that build upon these foundational ideas. A notable recent development has been the emergence of Open Strategy (Whittington et al., 2011; Hautz et al., 2016), which examines how strategy-making processes have evolved to become increasingly inclusive and transparent in contemporary organisations. This perspective identifies two key dimensions: transparency in strategy formulation and inclusiveness through broader stakeholder participation. Open Strategy research has revealed how networked professionals can exert normative pressure on organisational decision-making (Whittington and Yakis-Douglas, 2020) and has identified various dilemmas organisations face when opening their strategy processes (Hautz et al., 2016). This strand of research exemplifies how SAP continues to develop new conceptual tools for understanding the changing nature of strategic activity in various organisational contexts.

SAP is distinct from other strategy domains as it focuses on the practical aspects of what managers do and the specific techniques they use to facilitate organisational processes (Johnson et al., 2003). Whittington's (1996) influential work established that the practice perspective shifts attention toward examining how individuals within organisations actively engage in strategy-making activities. This view of strategy is activity-based and is centred on the specific processes and practices that make up organisational routines.

By paying closer attention to the people within organisations and their activities, SAP provides a valuable perspective for examining how accounting firms and their employees respond to the challenges of digital transformation through the adoption of AIDA technologies. The practice lens allows for a more granular analysis of the everyday activities through which strategic change is accomplished, moving beyond abstract conceptualisations of capabilities to the concrete practices through which these capabilities are enacted.

3.2.3 Distinguishing Strategy-as-Practice from Traditional Strategy Research

To establish SAP as a distinct theoretical perspective, it is important to clarify how it differs from traditional approaches to strategy research. Vaara and Whittington (2012) identify four core differentiating features of SAP. First, unlike traditional strategy research grounded in economic principles, SAP draws on the social theory and practice theory, leading to fundamentally different assumptions regarding what strategy is (modes of thought). Second, SAP takes a much broader view than does classic mainstream strategy research, focusing not only on economic performance but also on political consequences, the function of strategic tools, and practitioner involvement in the actual creation of strategy. Third, while

traditional strategy research has mainly narrowed its focus on the examination of senior executives operating within organisations that exist to make profits for shareholders, SAP broadens its scope by examining strategic activities across a much wider range of organisational settings, including public-sector and not-for-profit organisations. Finally, methodologically, conventional strategy research heavily relies on the statistical manipulation of large datasets; in contrast, SAP favours qualitative methodologies that are better equipped to catch the context-specific practice of strategy.

Rather than serving as a substitute for traditional approaches, these four core distinguishing features position SAP as a complementary perspective, thereby establishing it as a distinctive and valuable contribution to strategy research. As Mintzberg (1994) observes, strategy can be conceptualised as both a plan (aligning with traditional strategy research) and a pattern of "consistency in behaviour over time" (resonating with the SAP perspective). The latter conceptualisation emphasises elements of action and doing, which are central to SAP. Jarzabkowski's (2005, p. 7) definition of strategy as "a goal-directed activity over time" aligns with Whittington's (1996) view that the SAP perspective enables exploration of strategy as an activity from practitioners' perspectives. Johnson et al. (2007) and Jarzabkowski (2005) further contend that SAP views strategy and strategising as closely intertwined activities, rather than focusing on the relationship between strategy and performance, which can create artificial dichotomies.

Unlike conventional strategy research rooted in Penrose (1959), Ansoff (1965), and Porter (1980), SAP does not concentrate on the macro-level of senior management establishing corporate strategies. Instead, it examines the micro-level activities that practitioners engage in while strategising. This focus has led to the conceptualisation of SAP as a framework interconnected by three key elements: practices, practitioners, and praxis (Jarzabkowski, 2005; Jarzabkowski et al., 2007; Whittington, 2007). The following section explores this conceptual framework in greater detail.

3.3 The Strategy-as-Practice Perspective

3.3.1 Overview of SAP

SAP views strategy as a socially constructed and situated activity that emerges from the interactions of actors across multiple organisational levels (Jarzabkowski, 2005). It is primarily concerned with the strategic activities that people are engaged in and how these activities both shape and are shaped by organisational and institutional contexts (Johnson et

al., 2007). Johnson et al. (2007) condense the SAP research approach down to two fundamental questions: (1) what are individuals engaged in strategising actually doing? and (2) how are strategic outcomes impacted by their actions?

Building on Reckwitz's (2002) development of practice theory, Jarzabkowski (2005) distils SAP down to three distinct, yet interlinked, focal points commonly referred to in the literature as the "3 Ps": Practitioners, Practices, and Praxis. The 3 Ps form the basis of the SAP perspective allowing for a structured approach to analysing strategic activity across various organisational levels. Building on these 3 Ps, Jarzabkowski and Spee (2009) conducted a review of SAP research to consolidate the definitions and associated terminology for each of these elements, which are elaborated in the following sections.

3.3.2 Practitioners

Practitioners can be broadly defined as the people who have a direct or indirect influence on strategy activities in organisations (Jarzabkowski and Whittington, 2008). They are also referred to as the actors who develop, shape, and execute strategy (Whittington, 2006). Based on the SAP perspective, these practitioners include not just the senior management but also the many employees involved in operations (Jarzabkowski, 2005).

Recognising that strategy involves not only senior executives but also a diverse range of actors across organisational levels, Jarzabkowski and Spee (2009) proposed a categorisation based on two dimensions to better analyse how different practitioners engage in strategic activities. The first dimension concerns the *level of analysis*: where practitioners can be analysed either as (i) *individuals*, focusing on specific roles or what they do while interacting with others (e.g. CEOs or Finance Directors), or alternatively as (ii) *aggregated actors*, broader categories of people such as senior management or middle management teams. The second dimension relates to *organisational boundaries*, distinguishing between (i) *internal* practitioners who operate within the organisational hierarchy as staff and (ii) *external* practitioners who function outside the formal organisational structure, such as consultants or institutional actors like regulators.

3.3.3 Praxis

Praxis is the term used to describe the tangible actions and practices carried out by individuals within organisations which include those related to development and execution (Whittington, 2006). Similarly, Paroutis and Pettigrew (2007) refers to praxis as "the actual

work of strategising" involving activities that aids the making and execution of strategy such as meetings, consulting, writing, presentations, and communications. Going back to its deeper philosophical roots, Sztompka (1991) describes praxis as "where operation and action meet, a dialectic synthesis of what is going on in a society and what people are doing."

Jarzabkowski and Spee (2009) suggest that praxis operates at multiple interconnected levels. Based on their review of SAP literature, they identified three levels of strategy praxis that interact and influence one another. At the *micro* level, praxis involves the experiences of individuals or groups during specific events such as decisions, meetings, or workshops. The *meso* level relates to practices at the organisational or sub-organisational level, including change programmes, strategy processes, or patterns of strategic acts. This links specific occurrences to overarching organisational initiatives. The *macro* level refers to praxis at the institutional level, which is most typically associated with explaining patterns of action within the specific industries.

3.3.4 Practices

Practices represent the tools, techniques and methods through which strategy work gets accomplished in organisations (Jarzabkowski and Spee, 2009). Whittington (2006) describes them as day-to-day behaviours that include traditions, established norms and standard procedures that organisational members follow while engaging in strategic activities. Tools and artefacts serve as important examples of practices that enable multiple actors to interact effectively as they collaborate on strategic tasks (Jarzabkowski et al., 2007). These practices develop under the influence of both internal organisational dynamics and the external environment in which the organisation operates (Whittington, 2007).

Jarzabkowski (2005) identifies three types of practices in strategy-making: rational, discursive, and episodic. *Rational* practices are logical, structured activities such as planning, budgeting, and forecasting that foster clarity and coherence in strategy-making. *Discursive* practices emphasise language, using narratives and discussions to contextualise and give meaning to strategy across organisations. *Episodic* practices occur at specific events, such as in meetings, workshops, or review sessions, where practitioners interact with each other through focused discussions that impact strategic directions.

3.3.5 Integration of the SAP Framework

Although the SAP perspective seemingly delineates the 3 Ps and distinguishes them from one another, they are in reality, closely linked together in strategic activity and each P cannot be analysed independently from the other two. As Jarzabkowski et al. (2007, p. 9) argue, "The praxis of strategy is enabled through practices that are carried out by practitioners." This interconnection is crucial for understanding how strategy as an activity unfolds in organisational contexts. By integrating all 3 Ps together, SAP can be a useful lens to help explore how strategy practitioners tap on a range of practices as part of the daily routine praxis of strategising activities. This approach acknowledges that strategic activity cannot be simplified to just a singular component but emerges from the dynamic interplay between the individuals engaged in strategy making, the tools and techniques they use, and the tangible actions through which strategy is executed.

This has important implications for exploring how accounting firms adopt AIDA technologies. Instead of focusing exclusively on the technologies themselves or on formal strategic decisions, an integrated approach can be used to examine how various practitioners across different domains throughout the firm engage with specific technological and non-technological practices in the praxis of their day-to-day operations. This will provide greater clarity in understanding how AIDA adoption unfolds as a situated, socially accomplished activity rather than as a straightforward implementation of strategic decisions.

3.4 Strategy Tools-in-Use: A Practice Perspective on Strategic Instruments

Building on the SAP framework, recent scholarship has paid increasing attention to the role of strategy tools and instruments in strategic practice. The SAP perspective puts a substantial emphasis on the activities related to the "doing" of strategy (Jarzabkowski, 2005; Golsorkhi et al., 2015), offering a practical approach to strategy research that moves beyond traditional preoccupations with firm performance. As Jarratt and Stiles (2010) observe, the strategising process often centres on methodologies and tools, raising important questions about how these tools "should be used" versus how they are "actually used" in practice.

Jarzabkowski and Kaplan's (2015) strategy tools-in-use framework provides the basis for considering tools as enablers that support managers in formulating strategy. This shifts the attention away from evaluating how well tools are used to understanding how they are used and how useful they are in specific contexts. By examining strategy tools through a practice

lens, the measure of success for strategy makers is no longer exclusively on firm performance alone but also extended to include the processes behind the development and execution of strategy.

Ultimately, methodologies and tools are used to help managers with the ongoing task of developing and revising strategy in response to their operating environment (Jarratt and Stiles, 2010). This corresponds closely with the core premise of the SAP perspective that strategy is something people in organisations do rather than something organisations have (Whittington, 2006). As such, the emphasis should be on how strategy methodologies and tools are used in practice and not just their content or formal design (Jarzabkowski and Kaplan, 2015). It also aligns with Whittington's (2014) call for greater integration between information systems strategy and SAP research, which is addressed more fully in the following section on the TIP perspective.

3.5 Technologies-in-Practice: Understanding Technology Use in Organisational Contexts

3.5.1 From Technological Determinism to Practice-Based Views

The adoption and use of AIDA technologies is an example of what Jarzabkowski et al. (2007) would describe as the use of information technology (as both tools and artefacts) into strategic practices. Understanding this adoption requires moving beyond traditional perspectives on technology adoption to examine how technologies are enacted in everyday organisational activities. Furthermore, there is significant potential for synergy between information systems research and SAP, as proposed by Whittington (2014). One such synergy is through the technologies-in-practice (TIP) perspective (Orlikowski, 2000).

TIP has been conceptualised as "the set of rules and resources that are (re)constituted in people's recurrent engagement with the technologies at hand" (Orlikowski, 2000, p. 407). This perspective can be traced back to the social theory of structuration developed by Anthony Giddens (1984), which formed the basis for her work on the duality of technology (Orlikowski, 1992). In this earlier work, technology was deemed to be adaptable within organisational contexts as both a product and a medium of human action.

A common thread found in structurational models suggested that technologies have structures (rules and resources) built into and embedded within them (DeSanctis and Poole, 1994; Orlikowski, 1992). Structurational models are also influenced strongly by social

constructivism concepts. However, that presented two problematic assumptions: first, that technologies stabilise after development; and second, that they embody structures representative of social and political norms.

On the premise of technological stability, it is claimed that there could be either a faithful or unfaithful appropriation of technology (DeSanctis and Poole, 1994). However, empirical evidence has shown that the interpretation, characteristics, and use of technologies are frequently redefined and modified after development (Orlikowski, 2000). This implies an openness of technology where there are no pre-defined outcomes and that only through emergent use does technology then become appropriated. Furthermore, the notion that technologies embody social structures is at odds with the structurational perspective as it positions structures within technological artefacts and not in human action (Leonardi, 2011). As such, Orlikowski (2000) argues for a practice lens to study technologies which does not assume technologies to be stable, predictable, or complete. Instead, she turns the focus on technology structures being emergent rather than embodied, with the emphasis on the structures themselves and how people continuously interact with the technologies' properties.

This perspective resolves the conflation of technology as an artefact and its use by drawing a clear distinction between technological artefacts and use of technology. *Technological artefacts* refer to the material and symbolic properties bundled into a form that is recognisable by users such as hardware, software, and techniques. *Use of technology*, on the other hand, refers to what users actually do with those artefacts, where the experiences can differ across users and even for the same user over time.

3.5.2 The Technologies-in-Practice Perspective

The practice-oriented approach to technology views technological artefacts as having material and symbolic properties, where users only utilise some of them (Leonardi, 2011; Orlikowski, 2000). TIP refers to the distinct practices (structures) of how technology is repeatedly used in daily activities. Such structures are the result of users interacting with technology iteratively, primarily in the form of repeated usage, in accordance with structuration theory (Giddens, 1984). As a result, structures of technological properties emerge from this repeated usage rather than being embedded within the technology itself. These emergent structures can be altered, expanded, and improved, or even left unutilised by users (Leonardi, 2011; Orlikowski, 2000; Suchman, 1995). However, this is not to say that they are entirely flexible either because physical properties place some limits on how the artefacts can be used.

While technological artefacts come with properties that are predetermined by their developers, how people choose to use them is not restricted to their intended design or predefined functions (Kallinikos, 2006; Pinch and Bijker, 1984; Leonardi and Barley, 2010; Orlikowski, 2000; Orlikowski and Scott, 2008). Instead, use of technology is impacted heavily by how users understand the properties and functions of the technology, which is reinforced by everyday recurrent usage (Orlikowski et al., 1995). This can be extended to communities of practice, where users tend to employ technology in similar ways due to shared work practices and routines, including training sessions, socialisation, on-the-job experiences, mutual coordination, and storytelling (Orlikowski, 2000; Pentland and Feldman, 2005). While repeated emphasis by such communities may bring about the reification and institutionalisation of TIP, this could potentially hinder change by considering these practices as predefined and prescribed (Jarrahi and Sawyer, 2015; Leonardi, 2011; Orlikowski, 2000).

That said, use of technology cannot be entirely independent from external influences as individuals are reliant on such influences, which include training, communication with peers, and prior experiences (Orlikowski and Gash, 1994). There is also a long-standing perception that technologies are seldom used the way they were designed to be or used as intended (Bijker, 1997; von Hippel, 1988), even if there is no right or wrong way on how a technology is used (Orlikowski, 2000). Crucially, Orlikowski (2000) reasons that technology can only be said to be structuring the actions of its users when it is being used as part of a conventional routine. Based on this reasoning, technology can be objectively independent of its social construction. Therefore, she puts forward TIP as an approach to find out how technology is relevant to individual users and organisations since its impact can only be inferred when it is being enacted in practice.

Building on the foundation of Giddens' (1984) structuration theory, Orlikowski's TIP perspective identifies three dimensions that users of technology are dependent on: facilities, norms, and interpretive schemes. *Facilities* are the technological artefact's properties that users interact with directly. *Norms* include the protocols on how to use the technology appropriately within organisational contexts. *Interpretive schemes* comprise of the assumptions, expectations, knowledge, and skills that users have about the technology when they use it. This has close similarities with Berger and Luckmann's (1966) three stages of social construction, namely externalisation, objectivation, and internalisation, further reiterating the point that that technology is actively involved in social construction processes and not just a passive artefact (Orlikowski, 2000).

3.5.3 Modes of Technology Enactment

The TIP perspective also furthers the enactment of technology concept that was used to assess how new technologies brought about a transformation of work practices (Orlikowski and Scott, 2008). Just as SAP highlights that strategy is about the practices and routines of organisational members (Golsorkhi et al., 2010; Jarzabkowski, 2005; Johnson et al., 2007), the enactment of technology is centred on what people actually do with specific technologies as part of their everyday routines (Leonardi, 2013; Markus and Silver, 2008; Orlikowski, 2000). Based on her study of Lotus Notes implementation, Orlikowski (2000) mapped out three distinct modes of technological enactment: inertia, application, and change.

Inertia refers to the ways in which existing structures and practices are reinforced by the use of technology. It is also observed when there is resistance from people who have become accustomed to old technologies and preferring to stick with the old rather than switch to the new (Leonardi, 2011). This ties closely with "path dependence" and the "lock-in effect" which leads to the persistence with older technologies despite the availability of more advanced alternatives (David, 1985; Liebowitz and Margolis, 1995; Orlikowski and Gash, 1994).

Application is characterised by users embracing new technology with the intention of enhancing their current work routines. However, this enactment does not challenge the current structures and, similar to *inertia*, reinforce them but could still enhance the status quo. Such use of technology reflects how users often adopt technology in ways that fit within familiar routines, using it to support rather than disrupt established practices (Morgan-Thomas, 2016). Firms may seek to adopt technology intent on formulating and implementing strategy that brings about competitive advantage through the improvement of current routines while concurrently using technology to development of new routines and processes (Papp, 2001; Powell and Dent-Micallef, 1997; Rogers, 1997).

Change is characterised by instances where the choice of using new technology is done so to significantly modify the current practices. This leads to substantial transformation of organisations' status quo, where there could be an extensive revamp of the structures through the progressive overhauling of prevailing conditions, a considerable alteration of work practices, and even changes in the technology itself (Dewett and Jones, 2011; Leonardi, 2011).

Using a practice-oriented approach, Orlikowski (2000) sought to expound on the evolution of technologies, how they are being used, and the "understanding of the recursive interaction between people, technologies, and social action". The TIP perspective identifies the three enactments of *inertia*, *application*, and *change*, highlighting the structural consequences that dictates the varying level of changes which firms experience from the use of technology (Leonardi, 2011; Orlikowski, 2000). With that, subsequent research referring to technologies describe them as practices (Leonardi, 2012), tying in with how Jarzabkowski et al. (2007) define Practices in SAP. The convergence of the SAP and TIP perspectives suggest that digital transformation and AIDA adoption in accounting firms can be examined through an integrated practice lends that considers both the strategic and technological dimensions of organisational change.

3.6 Professional Service Firms and Practice-Based Perspectives

3.6.1 Accounting Firms as Professional Service Firms

Accounting firms are often classified under the large umbrella term of Professional Services Firms (PSFs) (Morris and Empson, 1998; Von Nordenflycht, 2010). This is due to the fact that the assurance, audit, consultancy, and tax services that they provide to their clients involve knowledge intensive work and require highly trained professionals (Von Nordenflycht, 2010). PSFs tend to refer to firms that provide goods and services based on their knowledge and expertise in specialised domains, often intangible in nature (Greenwood and Empson, 2003). Because of their expertise in helping their clients navigate the highly complex and competitive business environments of a globalised economy, PSFs are integral partners to firms' operations (Empson, 2007; Von Nordenflycht, 2010). This is further accelerated by the influx of digital technologies that make it possible for services to be delivered in creative new ways (Brousseau and Penard, 2007).

The Practitioners pillar in SAP refers to the people or actors of strategy that make an impact on organisations' strategy activities. Based on the definitions of who practitioners are (Whittington, 2006; Jarzabkowski and Spee, 2009), accounting firms would typically be considered aggregate actors, external to organisations. SAP has been used to assess accounting as a practice with many similarities between accounting and strategising as enduring structures instead of just being activities done at a moment in time (Whittington, 2011). The key difference between accountants and strategy consultants lies in the tools and techniques that they utilise to achieve the same aims of performing idealisation (Mueller, 2018).

Strategy is not something foreign to accounting, since the Big 4 accounting firms are known to offer services in strategy consultancy, and some strategy tools like the balanced scorecard originate from accounting (Carter and Whittle, 2018). However, given the lack of SAP research that is specifically on accounting firms, this chapter will use PSFs as a proxy for accounting firms, since literature discussing PSFs typically refer to accounting firms as archetypal PSFs (Hinings et al., 2015; Løwendahl, 2017). Observations derived from SAP studies on other PSFs may provide useful directions for investigating accounting firms as they go about adopting AIDA technologies as part of their digital transformation.

3.6.2 Practice-Based Research on Professional Service Firms

Much of SAP literature involving PSFs are concerned with them as practitioners involved in their clients' strategy process (Jarzabkowski, 2004; Whittington, 2007) rather than as the focal units of analysis. As such, SAP studies examining PSFs themselves are few and far between. This research seeks to add to this limited pool of research by spotlighting accounting firms but will first need to review the available SAP literature where PSFs are the units of analyses.

Discourse and Strategy Participation

Mantere and Vaara (2008) used SAP as their theoretical lens to examine the discursive practices of 12 PSFs (either Finnish or from other Nordic countries) to find out what impacts organisational members' level of engagement in strategy processes. They identified six discourses: (i) mystification, (ii) disciplining, (iii) technologisation, (iv) self-actualisation, (v) dialogisation, and (vi) concretisation.

The first three impeded participation by: (i) characterising top managers as experts and prioritising exclusivity (mystification), (ii) adopting top-down approaches and even imposing punishments (disciplining), and (iii) enforcing the use of technology or systems on organisational members, all of which resulted in individuals having restricted access to information. In contrast, the latter three tended towards encouraging individuals to be actively involved in the strategising process by: (iv) presenting strategy as a means for them to find meaning in organisational activities (self-actualisation); (v) providing platforms for constructive dialogue (dialogisation), and (vi) promoting clarity in rules and practices (concretisation).

The "technologisation" discourse is particularly relevant to this research because of the reference to accounting firms' adoption of AIDA technologies as they pursue digital

transformation. Whether use of technology would impact employees in accounting firms warrants further study and investigation, especially in comparison with Mantere and Vaara's (2008) findings.

Framing Concepts as Enacted Practices

By adopting a practice lens, Heusinkveld and Visscher (2012) sought to explore how management concepts are framed as enacted practice by conducting 64 detailed interviews with experienced management consultants about their client assignments. Through the interviews, they identified key frames that pertain to two distinct dimensions: Dispositional and Interactive-Situational. The framing categories of (i) experiential insights and (ii) collective routines relate to Dispositional, while (iii) client interpretive schemes and (iv) organisational setting are related to Interactive-Situational.

Through the identification of these four framing categories, their study provided useful insight on the crucial processes behind the practices of management knowledge commodification (the transformation of knowledge into products that can be marketed) and knowledge transfer (the flow of knowledge between consultant and their clients). In particular, the client-consultant collaboration was alluded to as a partnership where consultants formulate management concepts that can be applied in practice by their clients (Heusinkveld and Visscher, 2012). As such, the essential service that consultants provide comprises the analysing of their clients' current routines to either package them as a product for sale on the market or to offer management advice through knowledge exchange.

While the scope of work that accounting firms provide throughout their client engagement differ from what is offered by management consultants, practicality remains a major factor, particularly when considering whether clients benefit from value-added services (Buchheit et al., 2020). In their survey of local public accounting firm partners or managers in the US, Buchheit et al. (2020) found that the firms' drive for technology adoption is partially influenced by perceived client benefit among other factors. As such, Heusinkveld and Visscher's (2012) findings on framing management concepts as enacted practices may be a helpful guide for how accounting firms engage with their clients, especially with AIDA technologies involved.

Technology's Role in Strategy Development

An ethnographic case study on a UK-based telecommunications company and its employed consultants looked to explore the role of management accounting systems in business

strategy development (Whittle and Mueller, 2010). Having referred to Carter et al.'s (2008) criticism of SAP as not paying sufficient attention to issues of power and politics within strategy, Whittle and Mueller (2010) highlight accounting as playing an important role in organisation power battles. They cite Dent (1991) and Baxter and Chua (2006) as examples where accounting systems played a part in the transformation of organisational culture and decision-making. Identifying actor-network theory (ANT) to be a key approach in accounting research (Lounsbury, 2008; Ahrens and Chapman, 2007), Whittle and Mueller (2010) drew on its concepts and built on SAP for their case study.

The case study found that the management accounting systems were perceived to be faithful allies of senior management as they sought to formulate strategy (Whittle and Mueller, 2010) possibly due to the general impression that accounting numbers are presented fairly and reported independently in adherence to accounting standards (Roberts, 1991). Whittle and Mueller (2010) terms the management accounting systems as "obligatory points of passage" in organisations' strategic making. However, the case study also revealed that the consultants had attempted to use the management accounting systems as a means to create the perception that they were more profitable. As such, they conclude that while management accounting systems may have been designed as neutral tools to measure and allocate resources (Quattrone, 2004), they may not actually be neutral since individuals may use them to further their own agenda in a power and politics play.

Theoretically, Whittle and Mueller's (2010) findings can be extended to the use of other technology tools as part of business strategy development, which likewise applies to the use of Powerpoint (Kaplan, 2011), and specifically to this research, the phenomenon of AIDA adoption in accounting firms. This is consistent with Vaara and Whittington's (2012) observation that technologies are pivotal to strategy making. At the same time, it is important to consider Mantere and Vaara's (2008) findings regarding how "technologisation" may discourage strategy participation. Since Whittle and Mueller (2010) allude to how the usage of technologies may be influenced, analysing how tools should be used with respect to strategy making is needed.

3.7 Integrating Practice Perspectives

3.7.1 Connecting Strategy-as-Practice and Technologies-in-Practice

While SAP and TIP have developed as distinct theoretical perspectives, they share significant intellectual foundations and complementary insights. Both approaches emphasise

the situated, socially accomplished nature of organisational activities, whether strategic or technological. Both reject deterministic views that abstract away from the complex realities of day-to-day practices while focusing on how organisational outcomes emerge from the recursive relationship between human agency and social structures.

The two perspectives share similarities most evidently in the way they regard tools and technologies within organisational contexts. Within SAP, technological tools are conceptualised as strategic practices that practitioners employ in the praxis of their day-to-day operations (Jarzabkowski et al., 2007). Similarly, TIP examines how technologies become integrated into organisational routines through repeated patterns of use (Orlikowski, 2000). Both SAP and TIP perspectives recognise that technologies are not merely neutral instruments but are actively implicated in the constitution of organisational activities and outcomes.

This conceptual overlap provides a foundation for integrating SAP and TIP into a broader framework that will facilitate for clearer understanding of how accounting firms adopt and implement AIDA technologies for digital transformation. Such integration allows for analysis of both the strategic dimensions of technology adoption (how AIDA fits into broader strategic initiatives) and the practical dimensions of technology use (how AIDA is enacted in everyday organisational routines).

It is important to acknowledge that these practice-based perspectives are not without limitations. Critics have noted that SAP sometimes overemphasises micro-level activities at the expense of broader institutional forces (Carter et al., 2008) and faces methodological challenges in capturing the full complexity of strategic practices (Jarzabkowski and Spee, 2009). Similarly, TIP has been questioned for its ability to adequately theorise the material properties of technologies (Leonardi, 2013) and the extent to which practice approaches can account for power dynamics in technology implementation (Oostervink et al., 2016). By integrating these perspectives with each other and with the DCs framework introduced in Chapter 2, this research aims to address these limitations through a more comprehensive theoretical approach that connects micro-practices to macro-outcomes while acknowledging both the material and social dimensions of AIDA adoption in accounting firms.

3.7.2 Linking Practice Perspectives to Dynamic Capabilities

The practice perspectives outlined in this chapter can be productively linked to the DCs framework discussed in Chapter 2. While DCs provides a useful conceptual framework for

understanding the capabilities that firms need to adapt to dynamic environments, it offers limited insight into the manifestation of these capabilities in day-to-day firm operations. As Teece (2012, p. 1400) acknowledges, "There is some ambiguity and confusion in the literature on dynamic capabilities" regarding how to operationalise them in practice.

Practice perspectives help address this gap by focusing on the micro-level activities through which DCs are developed and deployed. For example, Teece's (2007) sensing capabilities can be analysed through the SAP lens as specific practices that practitioners employ to survey the business environment and identify opportunities. Similarly, seizing capabilities can be understood as the strategic practices through which opportunities are evaluated and resources are mobilised. Transforming capabilities, in turn, can be examined through the TIP perspective as specific modes of technology enactment, particularly the "change" mode that involves significant modification of existing practices. Moreover, digital ecosystems do more than just set the stage, they actively shape new engagement practices by blending technology with human action (Morgan-Thomas et al., 2020), which suggests that DCs in digital transformation emerge from this ongoing interplay between technology and everyday practice.

Integrating DCs with the SAP and TIP perspectives offers several advantages. Firstly, it provides a more concrete understanding of how abstract capabilities are enacted in specific organisational contexts. Secondly, it highlights the influence that social interactions and power dynamics have on capability development, an aspect that is sometimes overlooked in DCs literature. Thirdly, it provides more in-depth insights on how capabilities grow and evolve through ongoing interactions between the people involved (practitioners), the tools they use (practices), and their day-to-day activities (praxis).

3.7.3 A Practice Approach to Building Dynamic Capabilities for Digital Transformation

While the DCs framework provides a basis for understanding how firms adapt to changes in their surroundings by sensing new opportunities, seizing on those opportunities, and transforming themselves through reconfiguring their resources and capabilities (Teece 2007; Teece, 2014a), it provides limited guidance on how to apply DCs and operationalise them in practice (Teece, 2012; Whittington, 2006; Winter, 2003; Zollo and Winter, 2002). Using practice-based perspectives like TIP and SAP can address this gap by focusing on leveraging DCs to execute strategies that support the enactment of technologies (Johnson et al., 2007;

Orlikowski, 2000). Wenzel et al. (2021) extend this by theorising dynamic capabilities as outcomes of how organisational routines are enacted and varied in practice.

Since competitive advantage is derived from improved use of resources instead of the intrinsic superiority of the resources themselves (Barney, 1991; Teece et al., 1997; Smith and Reece, 1999; Zajac et al., 2000), managing digital transformation then requires firms to be aware and prepared for challenges while concurrently also considering their resources and capabilities as well as external demands (Liu et al., 2011). This is consistent with the claim that digital transformation goes beyond revamping business processes and involves using digital technologies to reorganise business operations by tapping on firms' core competencies with the aim of achieving competitive advantage (Brynjolfsson and Hitt, 2000).

The current digital transformation wave, driven by AI and cognitive technologies (Brynjolfsson and McAfee, 2017), calls for a deeper understanding of how organisations manage this change, especially since it has evolved significantly over the years (Kraus et al., 2021). Given that digital transformation brings both benefits and costs to any implementing organisation (Liu et al., 2011), accounting firms that are experiencing technological disruption from this transformation wave (Smith, 2020) will have to be mindful of the implications of adopting technologies as they pursue digital transformation.

3.8 Summary of Practice-Based Perspectives Literature Review

This chapter has examined two complementary practice-based theoretical perspectives, SAP and TIP. Together, they provide clarity and insights into the concrete activities through which organisations develop and deploy capabilities. Both perspectives shift attention away from abstract organisational capabilities to focus on the situated, everyday activities that enable the strategic and technological change in organisations.

SAP views strategy not as something organisations have but as something organisational members do on a daily basis. This perspective also acknowledges that strategy cannot be simplified down to one single component. Instead, it involves a dynamic interplay between the people involved in formulating strategy (practitioners), the tools and techniques they use (practices), and the tangible actions taken for them to execute the strategy (praxis).

TIP looks at how technology impacts organisations through how people use them as part of their daily work rather than through its built-in features alone. Orlikowski's three modes of technology use (inertia, application, and change) lead to different outcomes ranging from

reinforcing current practices to fundamentally transforming organisational routines. This perspective helps explain why the same technology sometimes has impacts firms different given their unique organisational contests.

Integrating the practice-based perspectives discussed in this chapter with that of the DCs framework from Chapter 2 creates a strong theoretical base for understanding how accounting firms build capabilities to adopt AIDA as they pursue digital transformation. This integrated approach suggests that firms develop these capabilities through the interaction between strategic practices (how AIDA fits into broader strategies) and technological practices (how AIDA technologies are used in everyday work). The next chapter builds on this by exploring digital transformation as a strategic initiative behind AIDA adoption in accounting firms. It looks at how digital transformation changes organisational structures, processes, and capabilities, creating both opportunities and challenges for accounting professionals.

CHAPTER 4. DIGITAL TRANSFORMATION AND AI-DRIVEN ANALYTICS ADOPTION IN ACCOUNTING FIRMS

4.1 Introduction: The Digital Transformation Imperative

The previous chapters established theoretical foundations through the DCs framework and practice-based perspectives that provide complementary lenses for understanding organisational adaptation. This chapter extends these theoretical foundations by examining digital transformation as a strategic imperative that is reshaping organisational structures, processes, and capabilities across industries, with particular attention to its impact on accounting firms. Central to this transformation is the role of AIDA technologies that is redefining the nature of accounting work and the strategic positioning of accounting firms.

In recent years, digital transformation has received a lot of attention and gained increasing significance, spurred on by the rapid advancement of cloud computing and cognitive technologies AI, NLP, ML, and RPA among several others (Brock and von Wangenheim, 2019; Davenport and Ronanki, 2018; Goh et al., 2023). The impact that globalisation has had over businesses has further amplified the importance of digital transformation, with a surge in publications on this topic between 2014 and 2020, even before the COVID-19 pandemic further accelerated digital initiatives across industries (Fletcher and Griffiths, 2020; Soto-Acosta, 2020). The re-emergence of AI and ML since the 2010s has brought with it a new digital transformation paradigm for businesses (Brynjolfsson and McAfee, 2017), changing how organisations operate so they can deliver value, compete, and deliver value.

Despite its prominence in academia (Kraus et al., 2021) as well as practitioners across various functions in corporations, industries, organisations, and societies (Verhoef et al., 2021), digital transformation remains very much just a buzzword characterised by conceptual ambiguity, with limited consensus on its definition and components (Warner and Wäger, 2019; Wessel et al., 2021). This lack of clarity is especially problematic for researchers trying to measure the impact of digital transformation on specific industries or firms.

This chapter will start off with tracing the conceptual evolution of digital transformation, looking at the concept's origins, how it stands today, and what sets it apart from earlier technological shifts in organisations. This includes clarifying the important distinctions

between terminologies related to technological change, specifically: digitisation, digitalisation, and digital transformation. The chapter then proceeds to analyse digital transformation through three dimensions: contextual conditions that trigger transformation, mechanisms that enable implementation, and outcomes that result from these efforts.

Following this, the chapter explores digital transformation strategies and the role of technology as a driver, with particular attention given to transformative AIDA technologies reshaping multiple industries. It then examines the digital evolution of the accounting industry specifically, addressing how AIDA technologies are changing the landscape of accounting work. This includes exploring AIDA adoption as a strategic imperative for accounting firms as well as the opportunities and challenges in implementation. Finally, the chapter concludes by presenting a firm-level approach to understanding AIDA adoption in accounting firms, arguing that while individual competencies matter, organisational capabilities and strategic adaptations at the firm level are critical for successful digital transformation.

This chapter examines how accounting firms navigate the complex challenges of technological change in the digital age amid the ongoing AI boom, focusing on their practical experiences with digital transformation rather than theoretical constructs. It sets the stage for the conceptualisation chapter that follows, which will integrate the theoretical elements from all preceding chapters into a cohesive framework for empirical analysis.

4.2 The Evolution of Digital Transformation as a Concept

4.2.1 Origins and Development of Digital Transformation

Since it was first introduced in academic literature, the concept of digital transformation has evolved significantly. Kraus et al. (2021) points to Jensen's (1981) work as the first peer-reviewed scientific article that kickstarted the discussion of digital transformation, with a focus on technology and data management within digital systems. Since then, there has been extensive amounts of literature on digital transformation with surging publications and conferences, from the beginning of the 2010s (Hanelt et al., 2021). The systematic reviews carried out by both Hanelt et al. (2021) and Kraus et al. (2021) found that while the interest had been steadily increasing, it grew exponentially after 2013, a reflection of the accelerated pace that technology is changing and its impact on organisations.

The COVID-19 global pandemic further accelerated digital transformation initiatives across organisations (Fletcher and Griffiths, 2020; Soto-Acosta, 2020), as remote work, digital

collaboration, and online service delivery became essential rather than optional. This crisis-driven acceleration compressed what might have been years of digital evolution into months, forcing organisations to rapidly adapt their processes, technologies, and workforce capabilities to maintain operational continuity (Kronblad and Pregmark, 2021). At the same time, firms that were strategically agile and already advancing in digital transformation responded more effectively to the pandemic, demonstrating that digital maturity and the ability to convert intangible capital were key to resilience and rapid business model adaptation (Bounfour et al., 2023).

However, despite the plentiful literature available, there appears to be lack of a universally understood definition and interpretation of digital transformation (Warner and Wäger, 2019; Wessel et al., 2021). This ambiguity is indicative of the multifaceted nature of digital transformation, which includes the technological, organisational, and strategic aspects. Despite the apparent lack of consensus in defining the digital transformation phenomenon, there is a prevailing view of its effects and significance which revolves around how the rapid growth of digital technologies impact organisations and drives the need for them to adapt (Verhoef et al., 2019). This is consistent with the perception that digital transformation involves the usage of technologies in driving change, especially in business contexts (Kraus et al., 2021).

4.2.2 Conceptual Distinctions: Digitisation, Digitalisation, and Digital Transformation

Due in part to it being an overused buzzword lacking a consistent definition, digital transformation is often misrepresented (Hanelt et al., 2021). In response, scholars have sought to distinguish between the related concepts of digital change namely: digitisation, digitalisation, and digital transformation to resolve ongoing conceptual ambiguity and misrepresentation (Verhoef et al., 2021; Vial, 2019). Although these terms are sometimes used interchangeably in academia and among business practitioners, there are some intricate differences between them and have differing implications for organisational change (Reis et al., 2018).

Digitisation is referred to as a technical process where analogue data and information are converted into digital format, including processes like converting paper documents to PDF files (Legner et al., 2017; Reidl et al., 2017). In contrast, digitalisation involves using digital technologies to change business processes and thus includes activities like automating manual processes, implementing digital workflows, or using digital channels for customer

engagement (Verhoef et al., 2021). According to Hess et al. (2016), digitalisation typically implies the integration of digital technologies into existing business processes, leading to incremental improvements rather than drastic overhauls by improving operational efficiency, enhancing customer experiences, or developing new capabilities.

Of the three types of digital change, digital transformation is the most extensive since it goes beyond changes to data and processes but also fundamental changes to organisational structures, business models, and strategic positioning (Vial, 2019, 2021). It involves the use of digital technologies to radically change up the way that firms operate, create value, and interact with stakeholders (Bharadwaj et al., 2013). For firms to reap as much benefits as they can from the use of the digital technologies they adopt, their digital transformation journey requires significant cultural changes, new organisational capabilities, and strategic realignment (Hess et al., 2016).

An alternative but similar perspective is to consider these digital changes as three sequential stages: beginning from digitisation, progressing to digitalisation, and finally digital transformation (Verhoef et al., 2021). This view clarifies the link between these three concepts and provides a structure to understand the varying depths of digital change that firms may go through. Although Verhoef et al.'s (2021) model appears to be sequential and linear in nature, elements from each of the three stages may coexist within the same firm at different levels or across different departments.

This staged perspective of digital transformation is further substantiated by Ates and Acur's (2022) longitudinal study of a high-tech manufacturing SME. Besides providing empirical evidence that validates the three sequential phases, their findings also emphasises that each stage requires distinct capabilities such as 'empirical sensitivities' and 'habitus' that are essential for sustainable transformation. These empirical insights illustrate how organisations have effectively managed the transitions from one phase to the next, suggesting that digital change goes beyond just implementing technologies but also needs continuous capability development.

Although there have been efforts to make clear the distinctions between digitisation, digitalisation, and digital transformation as have been outlined above, there still remains considerable confusion in the way these terms are used in both academia and in practice. In their systematic literature review, Farias-Gaytan et al. (2023) found that digital transformation and digitalisation are often deemed as synonymous. Overlooking the distinctions between digitisation, digitalisation, and digital transformation is problematic as

the latter tends to be misconstrued as purely a technological upgrade, potentially discounting the deeper implications for organisational capabilities, culture, strategy, and structure (Knudsen, 2020; Nadkarni and Prügl, 2021). This points to the need for a clearer and more precise definition of digital transformation that is a better reflection of how it drives firms towards organisational change.

4.2.3 Redefining Digital Transformation

Due to its inherent links to organisational change (Van de Ven and Poole, 1995; Brynjolfsson and Hitt, 2000) as well as the conceptual ambiguity surrounding digital transformation as discussed in the preceding sub-section, there is a need for a more precise definition that captures its distinctive features. Hanelt et al. (2021, p. 1160) propose defining digital transformation as "organisational change that is triggered and shaped by the widespread diffusion of digital technologies." This view makes it easier to draw on existing research about organisational change and innovation to better understand the digital transformation phenomenon and also how it can be managed in practice.

The digital transformation phenomenon of today differs significantly from the kind of organisational change assessed by Orlikowski's (2000) TIP perspective. Technologies of today stand out from their predecessors due to several distinctive features that Kallinikos et al. (2013) identify: Firstly, modern digital technologies' remarkable *generativity* as they serve as platforms upon which other technologies can be built, thus creating layered technological ecosystems that enable continuous development and innovation. Secondly, these technologies exhibit increased *malleability* relative to their previous iterations of technology, offering significantly improved adaptability and versatility that allows firms to customise and reconfigure them to meet specific operational needs. Thirdly, today's technologies demonstrate enhanced *combinability* with the integration of various digital systems becoming significantly easier. This enables firms to deploy unified technological ecosystems that can simultaneously address multiple business needs.

These distinctive features of contemporary digital technologies have several important implications for digital transformation processes. First, these technologies are no longer bound by the confines of firms or industries and are usually part of expanded ecosystems that spans across organisations, industry sectors, and geographical boundaries (Kohtamäki et al., 2019; Mann et al., 2022). Second, the effects of today's digital transformation stretch past the incremental, technology-enabled changes within organisations that Orlikowski (2000) considered through a practice lens. Instead, digital transformation often involves

radical changes to organisational structures, business models, and competitive market environment (Verhoef et al., 2021). Third, digital transformation can also lead to unintended institutional disruptions, as the ripple effects of digital change unsettle established industry standards and make coordination across evolving ecosystems more difficult (Scott and Orlikowski, 2022).

With digital transformation having evolved dramatically since the 2010s (Hess et al., 2016), business models have undergone significant changes in response (Verhoef et al., 2021). As such, digital transformation now needs new ways of measuring its impact on firm performance (Henfridsson and Bygstad, 2013). Conventional metrics that primarily measures operational efficiency or cost management may no longer be a full reflection of the impact of digital transformation as it usually includes changes to customer experience, innovation capacity, and strategic approach (Fitzgerald et al., 2014; Chanias et al., 2019). Using a multi-dimensional framework that adapts the contextual conditions-mechanisms-outcomes structure (Pawson and Tilley, 1997) provides the means to examine digital transformation process thoroughly (Hanelt et al., 2021).

4.3 Analysing Digital Transformation

4.3.1 Contextual Conditions: Internal and External Triggers

Referred to also as triggers, contextual conditions are the internal and external factors that shape firms' digital transformation (Hanelt et al., 2021; Henfridsson and Yoo, 2013; Wessel et al., 2020). These circumstances make digital transformation essential and influence its direction within the specific organisational contexts in which it takes place. They not only shape the timing and course of change but also prompt firms to re-evaluate underlying assumptions and decision-making routines. To respond effectively, firms often need to change their mindset, revise existing routines, and adopt new organisational approaches such as flatter hierarchies, greater cross-functional collaboration, and more flexible, technology-enabled ways of working (Volberda et al., 2021).

Internal factors are organisational characteristics such as strategy (Devadoss and Pan, 2007), availability of resources (Gillani et al., 2024), and corporate culture (Kane et al., 2015). Strategy is of exceptional importance owing to the fact that organisations with a clear digital plan and commitment to innovation are more likely to go ahead with broader digital transformation projects (Matt et al., 2015). The nature and scope of digital transformation initiatives also depends on the availability of resources such as financial capital,

technological infrastructure as well as workforce expertise (Bharadwaj et al., 2013). Determinants of organisations' corporate culture such as openness to change, tolerance of risk, and digital mindset play a significant role in how digital technologies are perceived, adopted, and applied (Butt et al., 2024).

External factors include environmental dynamics (at both country and industry levels) and consumer characteristics. Environmental dynamics, such as competitive pressures, regulatory changes, and technological disruptions, often act as powerful catalysts for digital transformation (Bharadwaj et al., 2013; Hess et al., 2016; Vial, 2019, 2021). For instance, the emergence of fintech startups has driven digital transformation in banking, while e-commerce platforms have compelled traditional retailers to reconsider their digital strategies. Changing consumer characteristics, in terms of preferences, expectations, and behaviours, also set further imperatives for digital transformation (Brynjolfsson et al., 2013). With consumers increasingly expecting seamless digital experiences, there is mounting pressure on organisations across sectors to improve their digital capabilities and offerings.

Internal and external factors are not independent from one another but are functionally intertwined in complex ways to chart an organisation's digital transformation journey (Lanzolla et al., 2020). For example, while the external competitive pressures may add a sense of urgency, an organisation's response is contingent on internal considerations such as strategic orientation, resource availability, and corporate culture (Lanzolla et al., 2021). Creating practical strategies for digital transformation that respond both to the realities of the organisation and external pressures requires making sense of these contextual conditions (Hanelt et al., 2021).

Furthering the understanding of the firm responses to ecosystem dynamics, Ates et al. (2023) identified three ecosystem dynamics: capability configuration, network governance, and value appropriation, that induce certain strategic responses from firms. These dynamics are deemed as one significant set of contextual conditions responsible for shaping digital transformation, stressing the inherently relational and networked context. Organisations, therefore, need to maintain a delicate balance while developing mechanisms for facilitating digital transformation that takes into consideration their internal capabilities, external market pressures, and also how they fit into the bigger picture of digital ecosystems.

4.3.2 Mechanisms: Enabling Digital Transformation

Mechanisms enable the implementation of digital transformation by tapping on organisational competencies such as capabilities, processes, resources, and routines (Daniel and Wilson, 2003; Hanelt et al., 2021; Henfridsson and Yoo, 2013). These mechanisms can be categorised as either innovative or integrative. While innovative mechanisms seek to apply these organisational competencies in new ways, integrative mechanisms focus on alignment of the new with the existing (Lanzolla et al., 2021). Both types of mechanisms are important for successful digital transformation because they enable organisations to discover new opportunities as well as leverage existing strengths in the digital domain.

Examples of mechanisms that enable digital transformation include digital technologies like AI, cloud computing, and data analytics (Bharadwaj et al., 2013), digital business models that facilitate innovation (Hinings et al., 2018; Wirtz, 2024), the establishment of a digital strategy (Matt et al., 2015; Yeow et al., 2018), and the development of DCs (as discussed in Chapter 2) to carry out those strategic plans (Karimi and Walter, 2015). Successful digital transformation is contingent upon how well mechanisms fit with organisational context, strategic objectives, and the external environment (Ferri and Takahashi, 2024). Firms that apply these mechanisms effectively are better equipped to navigate through the complexities of digital transformation and attain a competitive edge in the marketplace, which is has become increasingly digital (Ellström et al., 2021).

4.3.3 Outcomes: Strategic and Economic Consequences

Outcomes in Hanelt et al.'s (2021) multi-dimensional framework refer to the consequences resulting from digital transformation. Firm-based outcomes can be either strategic or economic in nature. In the context of this research that explores the adoption of AIDA technologies in accounting firms, these outcomes are an indication of the benefits that motivate firms to pursue digital transformation initiatives.

From a strategic standpoint, digital transformation has helped develop agility, adaptability, and flexibility in organisational structures (Hanelt et al., 2021). As accounting firms develop these capabilities, they are able to better manage evolving client demands, deal with pressure from competitors, and respond to changing regulatory requirements. Digital transformation has also cultivated a greater acceptance for using technologies such as AI to support managerial decision-making (Kolbjørnsrud et al., 2016), therefore changing how firms approach problem-solving and strategy planning.

Furthermore, it has brought about the development of new business models along with the alteration of current ones (Berman,2012; Dutra et al., 2018). This has allowed accounting firms to expand their service offerings beyond the traditional accounting services to include technology-based engagements like data-driven advisory services, predictive analytics, and the provision of real-time financial insights. Through digital transformation, task automation technologies are being made available for accounting professionals to leverage on so they can turn their attention to complex tasks requiring their professional judgment and domain expertise that bring more value to their clients (Dery et al., 2017).

The economic outcomes of digital transformation are associated with improved firm financial performance through profit maximisation and cost minimisation (Agarwal et al., 2010; Bouwman et al., 2011). AIDA technologies enhance operational efficiencies in accounting firms through the automation of routine tasks, workflow optimisation, and reduction of errors, thus contributing to cost-saving opportunities and expanding capacity to handle more complex jobs (Brynjolfsson and McAfee, 2017). These technologies also trigger revenues from new service offerings such as real-time financial forecasting, which improve client interaction and more personalised advisory service delivery, along with tapping into new markets (Moll and Yigitbasioglu, 2019).

The accounting firms that extract maximum operational benefits from AIDA will gain significant competitive advantage through AIDA service offerings, which in turn leads to more in-depth relationships with clients through delivering data-driven strategic insight customised to clients' needs (Mikalef and Gupta, 2021). Nevertheless, reaping these economic benefits will depend on successful implementation that requires reorganisation, cultural adaptation, and alignment with business strategies (Vial, 2019). AIDA adoption will generate short-term financial and operational effects, such as integration costs and retraining of staff, which need to be managed to allow for the realisation of long-term economic benefits (Fountaine et al., 2019).

Taking into account this contextual conditions-mechanism-outcomes framework empowers firms to take a more thorough and strategic approach to digital transformation. Understanding the potential strategic and economic outcomes of AIDA adoption will allow firms to better align their capability development efforts with their broader strategic and financial objectives. In addition, integrating this contextual conditions-mechanism-outcomes framework with the drivers of organisational change (Armenakis and Bedeian, 1999) expands on the TIP perspective (Orlikowski, 2000), where it is observed that digital

business ecosystems drive digital transformation, spurring firms on to adopt flexible and adaptable organisational designs (Hanelt et al., 2021).

4.4 Digital Transformation Strategies and Technology as a Driver

4.4.1 The Strategic Imperative of Digital Transformation

The rise and continued prominence of digital transformation has led to a growing need for an integration of multiple strategies into a unified digital strategy (Bharadwaj et al., 2013; Matt et al., 2015). Traditional approaches that treated IT strategy as separate from business strategy are increasingly inadequate in a digital environment where technology is deeply embedded in all aspects of organisational operations and value creation. Instead, organisations need comprehensive digital transformation strategies that align technological investments with business objectives, organisational capabilities, and competitive positioning.

Going forward, digital transformation will have a strategic impact on businesses and will likely be tapped on by businesses as they strive for competitive advantage in increasingly digital markets (Kraus et al., 2021). As a result, they hint that firms which do not act swiftly in developing and implementing digital transformation strategies would lag behind those who do. This alludes to firms being able to reap the rewards of incorporating Digital Transformation into their business strategy by gaining the upper hand in the market. However, doing so requires organisational transformation, is complex, revolutionary, and continuous process, requiring significant revisions of current frameworks and procedures through the development of products and delivery of services (Armenakis and Bedeian, 1999; Romanelli and Tushman, 1994). The implication is that implementing digital transformation brings with it both benefits and costs to the implementing organisation (Liu et al., 2011).

Combining resource-based theory from Barney (1991) and DCs from Teece et al. (1997) with the strategic fit perspective (Smith and Reece, 1999; Zajac et al., 2000), Liu et al. (2011) assess the digital transformation development process, revealing that competitive advantage is derived from improved use of resources instead of the intrinsic superiority of the resources themselves. Their empirical case study of Taiwan's e-banking system concluded that managing digital transformation will require firms to be aware and prepared for the challenges it brings about. This is done through meticulously reviewing the resources and capabilities of the firm as well as external demands.

This strategic lens on digital transformation resonates with the DCs framework discussed in Chapter 2, which emphasised the need for sensing opportunities, seizing them through strategic decisions, and reconfiguring resources to adapt in changing environments. In the context of digital transformation, DCs are relied upon in identifying technologies that are appropriate for the firm, making strategic investments in those technologies, and reconfiguring the processes, structures, and capabilities to leverage them effectively.

4.4.2 Technology as a Driver of Digital Transformation

The pervasiveness of technology leaves every industry susceptible to digital disruption (Gerth and Peppard, 2016). This makes business performances reliant on investments in technology and using it to achieve profits and gains. By tapping on digital technologies, firms are now able to set up a variety of business models that were previously unavailable to them while also transforming those models (Li, 2020). Using case study research, Li (2020) found that digital technologies were used by firms as new channels for gathering information as well as to interact with customers and other stakeholders.

In viewing technology as a driver of Digital Transformation, new technologies would affect established structures, as outlined in the TIP perspective (Orlikowski, 2000). Kraus et al. (2021) refer to several examples of how firms can benefit from incorporating technologies into their business strategies:

Encouraging business agility and rapid innovation

Digital technologies are instrumental in helping organisations to keep up with the market and increases the pace of innovation trends. This faster response is needed to gain an edge in dynamic and competitive markets due to shifts in client demands, competitor dynamics, and technology advancements. Jiang and Katsamakas (2010) looked into how e-book technology disrupted the book industry as an example of how digital transformation strategically affects sellers and consumers in the market. This is an instance where digital technologies serve as opportunities for firms to overhaul their current situation while also threatening the survival of the traditional firms. (Sebastian et al., 2017)

Strategic use of technologies

Knowing how and when to apply new technologies into the business requires understanding of the technologies themselves and the manner in which they could possibly transform the business (Gottschalk, 2006). Similarly, this is in alignment with the TIP perspective

(Orlikowski, 2000) which seeks to study what people actually do with technology. Rather than spending on new technologies haphazardly, companies now tend to fund technologies with a focus on adherence to their strategies and how the technologies contribute to their competitive advantage (Andal-Ancion et al., 2003). This approach to technology investment strategically aligns digital initiatives with their broader organisational objectives and brings long-term benefits.

Operational efficiency and Cost considerations

To facilitate the interaction with customers and processing of data, new technologies that help businesses with search costs and real-time interfaces are often relied upon while also being used to assist with standardisation and deliver positive network effects (Andal-Ancion et al., 2003). Trantopoulous et al.'s (2017) survey found that reducing costs, achieving operational efficiency, and improving business process through the use of technology are among the key objectives of investments in IT. Such cost savings may give organisations a measurable advantage especially in markets highly sensitive to price competition. However, while some operational efficiency is clearly necessary, it must be balanced with strategic considerations, which include ensuring that any digital initiative focused on cost never undermines longer-term competitive standing or innovative capacity.

Increase access to data

Data has been growing exponentially as a result of increasing connectivity and the rise of social networks, thereby necessitating for the evaluation of data through business analytics to leverage on the data (Berman, 2012). Gaining insights into customer behaviour, market trends, and operational performance is contingent upon organisations using and analysing the data effectively for informed decision-making and strategic planning. However, the technical complexity of data management and analytics requires specialised staff that are not readily available in businesses (White, 2012), creating both opportunities and challenges for digital transformation.

Data processing requirements

Technologies that aid data-driven approaches to the analysis of business operations need to be complemented with those that can process data dynamically as the large volume of data available can be exploited to derive business insights (Gölzer and Fritzsche., 2017). Advanced data capabilities, including running complex ML algorithms, real-time analytics, and automated data integration tools, enable organisations to translate raw data into

actionable intelligence at speeds and scales that were previously thought to be impossible. Managing data and information effectively by capitalising on the use of digital technologies can open doors for those prepared to transform their businesses (White, 2012).

As identified by Kraus et al. (2021), firms can derive the benefits of integrating technology into their business strategy in five areas: business agility, strategic utilisation, operational efficiency, data access, and advanced data processing capabilities. Across these different areas, the evidence shows merely adopting new technologies is no guarantee for any positive outcome. Instead, the benefits that can be realised by firms are highly contingent upon implementation strategies and the degree of alignment between technology and firms' business overarching business objectives.

This link between implementation quality, strategic fit, and organisational outcomes correspond with the TIP perspective (Orlikowski, 2000). As discussed in Chapter 3, the emphasis of TIP is that technology's impact does not necessarily come from its intrinsic properties but on how it is enacted within specific organisational settings. Organisations that view technologies merely as tools instead of a strategic driver are less likely to realise the benefits of digital transformation outlined above. To capture value from digital technologies successfully, there needs to be a concerted and deliberate effort to ensure alignment between technology and practice with strategy (Bharadwaj et al, 2013; Yeow et al., 2018).

4.4.3 Artificial Intelligence and Machine Learning as Transformative Technologies

The widespread availability and affordability of powerful machines, better and improved algorithms, cloud-computing access, and data in abundance have been the fundamental trend-enablers of the rapid advancement of disruptive technologies such as AI and ML (Lee et al., 2019; Russell and Norvig, 2020). AI-powered and ML-driven techniques are the major driving forces behind data analytics processes widespread throughout corporations, industries, organisations, and societies at large (Kaplan and Haenlein, 2020).

AIDA, which encompasses ML, NLP, RPA, and advanced analytics tools as has been defined in Chapter 1, has been a transformative force in organisational digital evolution (Davenport, 2018). With technological innovation continuing its rapid rise and AIDA showing no signs of slowing down but instead increasing in potency, labour markets face potential disruption, there had been much written about workers at risk of being made redundant (Brynjolfsson and McAfee, 2011, 2014, 2017; Frey and Osborne, 2013, 2017).

Consequently, there is growing concern about technology-driven job displacement, particularly for roles involving routine, predictable tasks (Acemoglu, 2025; Berg et al., 2018).

Borrowing Keynes' concept of technological unemployment (Keynes, 1933), Frey and Osborne (2013, 2017) found that up to 47% of US jobs are at risk of being computerised (i.e. automated by computer-controlled equipment). This is corroborated by Brock and von Wangenheim's (2019) case-studies and surveys which found that the exponential surge in computing power that facilitates AI adoption at scale has allowed data-driven business decision-making to supersede that of humans. There is also growing concern that AI could displace human labour and how that could drastically change industries' growth strategies and organisational structures (Felten et al. 2019, 2021).

However, it is important to note that these assessments of automation risk have been challenged on several grounds. Critics argue that they often fail to account for task variation within occupations and therefore overestimate the risk of automation (Arntz et al., 2017; Stephany and Lorenz, 2021). Instead of the grim reality of almost half the jobs in the US economy risking automation, Arntz et al. (2017) found that most jobs comprise of tasks that cannot be easily automated, and the risk falls to approximately 9%. This more modest assessment reflects the reality that many job roles involve complex problem-solving, decision-making involving contextual judgment, and interpersonal interactions that remain challenging for machines to replicate (Jarrahi, 2018; Joksimovic et al., 2023).

These alternative viewpoints suggest that the continuous development of AI and ML technologies should be described more accurately as changing work rather than eliminating work. For instance, Davenport and Ronanki (2018) note that the role of such cognitive technologies is to enhance human performance more than to displace humans, leading to a new working relationship of human-machine collaboration. This change in the nature of work often includes the automation of routine tasks in the job while allowing employees to turn their attention to more advanced or complex tasks that require judgment, imagination, and interpersonal skills (Lee et al., 2019; Smith, 2020).

The transformative potential of AI and ML go beyond simply altering existing jobs to enable entirely new business models, products, and services (Li, 2020, Verhoef et al, 2021). Organisations across different industry sectors are using these technologies to enrich the customer experience, operational capabilities and create value from data was previously not tapped on (Agrawal et al., 2018). Such advancements seem to imply that AI and ML will

continue to drive digital transformation, reshaping the competitive market environment and setting new strategic objectives for firms across different industries.

4.5 Digital Evolution of the Accounting Industry

4.5.1 The Changing Landscape of Accounting Work

Traditionally, the accounting profession has been deemed to be safe from disruption (Brougham and Haar, 2020) but Frey and Osborne (2017) seem to suggest otherwise. Of the 702 occupations they examined, "Accountants and Auditors" ranked 589 with a 0.94 probability of being computerised. Several other accounting-related roles especially those of a clerical nature (such as bookkeeping), were found in the bottom 50 with a probability of between 0.97 – 0.99. There is a growing perception that an accountant or auditor will fall victim to computerisation and increased technology adoption because their jobs often involve activities that are repetitive and manual, such as adjusting entries and transactions reconciliation (Smith, 2020).

However, subsequent research has revealed the limitations of such occupation-level assessments. Arntz et al. (2017) demonstrated that accounting roles comprise diverse tasks with varying automation potential. Their task-based analysis suggested that while routine components of accounting jobs face automation, many aspects requiring professional judgment, stakeholder communication, and contextual understanding remain difficult to automate. Stephany and Lorenz (2021) refined this further by identifying that high-routine, computer-based jobs face higher transformation likelihood from digital technologies, while professional roles requiring complex information processing remain less vulnerable as they are still primarily human domains.

Since accounting involves both routine tasks and complex professional judgment, accountants should embrace AIDA as a complement to their work, automating tedious routines while focusing on higher value-added tasks requiring professional judgment and client interaction (Issa et al., 2016; Kokina and Davenport, 2017; Lee et al., 2019; Moffit et al., 2018; Tysiac and Drew, 2018). Furthermore, with AIDA progressively being used in a variety of accounting and assurance work, the roles of accountants have begun to evolve as companies undergo digital transformation (Kokina et al., 2021). ML has been applied by auditors to analyse documents, examine transactions, and identify risks while also being used in accounting research areas such as bankruptcy and fraud predictions (Cho et al., 2020). In financial reporting for investors, the deployment of ML techniques significantly enhances

the accounting estimates made by managers and auditors (Ding et al., 2020). Using AIDA to engage with multiple sources of data including Big Data ensures that the provision of financial and valuation is done with greater assurance of reliability, timeliness, and relevancy (Vasarhelyi et al., 2015). While interpretability of AI has been an established issue, explainable AI methods applied to auditing tasks ensure that users can explain the results derived from the AI applications (Zhang et al., 2022).

With the continued development of AIDA technologies, accountants are gradually moving away from engagements that are focused only on traditional compliance tasks like audit and tax and transitioning towards becoming strategy and technology consultants (Yigitbasioglu et al., 2023). From their interviews of partners in Australia-based PSFs, they found that there is a growing perception among accountants that their roles have evolved into strategic advisors rather than traditional accountants. Kokina et al. (2025) corroborate this finding as their interviews with Big 4 and other large accounting firms noted that despite the advances which technology has brought to the audit processes, human auditors still bring in key professional judgment and review and oversee such processes, with partners in firms asserting that human-AI collaboration is critical for the firms in offering quality service.

The changing landscape of accounting work thus reflects neither wholesale replacement nor mere incremental change. Instead it signals a fundamental transformation of how accounting firms create value for their clients. As routine tasks become increasingly automated, accounting firms and professionals must develop new capabilities to thrive in an environment where AIDA technologies complement and extend human expertise rather than replace it, such as through co-piloted auditing, which enables collaborative decision-making between human auditors and AI systems as well as enhanced audit quality (Gu et al., 2024).

4.5.2 AIDA Adoption as a Strategic Imperative for Accounting Firms

As accounting firms navigate the challenges and opportunities of digital transformation, AIDA adoption has emerged as a strategic imperative rather than merely a technological enhancement. AIDA tools, including ML, NLP, and RPA, offer accounting firms the opportunity to automate repetitive tasks such as data entry, reconciliation, financial reporting, payments processing, and transactional analysis. These technologies allow firms to process enormous amounts of data with increased efficiency and thus speed up the audit timeline, achieve greater accuracy in financial reporting, and improve risk management (Goh et al., 2019).

In doing so, AIDA has transformed accounting practices by shifting their focus away from traditional compliance tasks that are manual and routine in nature to AIDA-enabled engagements that include value-adding activities, such as data analysis, advisory, and predictive analytics (Moll and Yigitbasioglu, 2019). Some new challenges and opportunities have emerged from this shift as accounting firms need to build organisational capabilities to facilitate proper integration of AIDA into their operations while simultaneously reviewing their service offerings and staff skill requirements to meet clients' changing demands. This corresponds with the empirical findings from Kokina et al.'s (2025) interviews with participants from Big 4s and other large accounting firms where AI is found to be more of an enabler than an outright replacement of human capabilities. Their research emphasises that while there has been remarkable technological advancement in various audit processes, the human auditor remains essential. Firm partners highlighted that the human auditor's exercise of professional judgment and having oversight of AI is crucial and that the collaboration between humans and AI is key to delivering services of high audit quality to their clients.

The successful integration of AIDA into accounting firms is contingent on the firm's ability to align its digital strategy with broader business objectives. The insights offered by the DCs framework (discussed in Chapter 2) can provide a better understanding of how AIDA adoption is managed. As alluded to by Teece (2007, 2017), firms with strong DCs will be better able to adapt their resources, processes, and structures in response to technological disruptions. In the context of AIDA adoption, this involves sensing the potential benefits of AIDA, seizing opportunities through strategic investments, and reconfiguring resources to ensure that AIDA tools are fully embedded within the firm's operations.

One of the key drivers of AIDA adoption in accounting is the growing demand from clients for data-driven insights and more strategic, real-time decision-making (Holmes and Douglass, 2022). As firms increasingly implement AIDA to deliver predictive analytics and automated audit solutions, they are able to offer clients faster, more comprehensive services that go beyond traditional compliance work. However, to capitalise on these opportunities, firms must develop the necessary organisational adaptability to integrate AIDA into their existing workflows and expand their service lines to include AIDA solutions. This is where the firm's DCs become critical, as the ability to continuously sense opportunities, seize them, and reconfigure resources allows firms to remain agile and responsive to client demands.

Despite the clear benefits, the adoption of AIDA technologies also presents significant challenges for accounting firms. First, the skills gap remains a key barrier to AIDA integration. While AI can automate routine tasks, accountants need to develop new competencies in data analytics, AI interpretation, and technology management to fully leverage the potential of these tools (Gulin et al., 2019; Moll and Yigitbasioglu, 2019). Many accounting firms are addressing this challenge by investing in upskilling and training programmes, ensuring that employees have the necessary skills to work alongside AIDA systems (Boritz and Stratopoulos, 2023).

AIDA adoption also requires firms to reconfigure their organisational structures, shifting from traditional, hierarchical models to more agile, cross-functional teams that can adapt to the demands of AIDA processes (Arnaboldi et al., 2017). These changes to both skillsets and organisational structure are critical to the firm's ability to integrate AIDA and achieve long-term competitive advantage. This structural reconfiguration aligns with the "transforming" component of the DCs framework, as firms must adapt their organisational designs to support effective AIDA implementation.

4.5.3 Opportunities and Challenges in AIDA Adoption

The adoption of AIDA technologies presents accounting firms with both significant opportunities and substantial challenges. Understanding these dynamics is crucial for the formulation of strategies that would ensure optimal AIDA integration, enabling firms to realise the benefits that digital transformation brings.

AIDA technologies with task automation functionalities improve operational efficiency, allowing firms to process larger volumes of transactions more with greater speed and accuracy (Kokina and Blanchette, 2019). This automation lowers error percentages and speeds up the delivery of services, thus increasing client satisfaction and firm profitability. Meanwhile, ML improves fraud detection, risk assessment, and audit quality as complex algorithms highlight patterns and flag off anomalies in financial data that may sometimes be overlooked by human accountants (Sutton et al, 2016; Cho et al., 2020).

AIDA adoption also facilitates the provision of AIDA-enabled services that carry out data analytics to make sense of voluminous datasets and predictive modelling to provide forward-looking insights (Moll and Yigitbasioglu, 2019). Progressing from the retrospective reporting to prospective analysis serves to enhance client relationships and increase accounting firms' value proposition beyond the conventional compliance functions like audit

and tax. With the automation of many accounting tasks that used to be routine and repetitive, PSFs are now repositioning themselves by offering strategic advisory services (Yigitbasioglu et al. 2023). With AIDA technologies integrated into their operations, the work environment becomes more intellectually stimulating as accountants now focus on complex tasks that leverage professional judgment rather than performing arduous and repetitive tasks (Issa et al., 2016; Kokina and Davenport, 2017; Moffit et al., 2018).

Despite the various clear advantages of AIDA adoption, there are many hurdles that accounting firms face when implementing these technologies. Many accounting professionals lack the vital data science, programming, and analytical skill sets that are needed for the effective use of AIDA technologies (Al-Htaybat and von Alberti-Alhtaybat, 2017; McKinney et al., 2017). This skills gap calls for substantial investments in upskilling programmes and alternative recruitment approaches. Besides this, it is also a common sight that there is some pushback and resistance to using AIDA technologies, as employees worry about job security and their potential loss of professional identity, perceiving these technologies as a threat to their domain expertise (Guthrie and Parker, 2016). This resistance manifests as distrust of AIDA-generated insights and an unwillingness to adopt these new tools into existing workflows, thus making change management strategies crucial to facilitate a mindset shift. There are also technical challenges that need to be dealt with, including data quality issues, system integration problems, and security concerns when implementing AIDA within existing IT infrastructures (Moll and Yigitbasioglu, 2019). As many accounting firms operate on legacy systems, integration with AIDA technologies can become a huge stumbling block, which requires substantial investments in IT systems to facilitate the integration.

4.5.4 The Need for a Firm-Level Approach to AIDA Adoption

The adoption of AIDA technologies cannot be adequately explained by focusing solely on individual competencies. Although individual expertise plays a big part in the AIDA adoption process, it represents only one aspect of organisational changes that need to happen for the implementation to be successful.

While individual skills are relevant, they are just one dimension of the broader organisational changes that need to happen for AIDA adoption to be successful. Thus, this research uses a firm-level perspective to look at wider organisational capabilities and strategic changes required for the effective integration of AIDA into accounting firms. Under this premise, AIDA adoption moves from being a simple dichotomy of accept versus resist

on the part of individual employees into a broader recognition of systemic changes at the firm level in resource allocation, process reconfiguration, and reshaping of strategic priorities (Wamba-Taguimdje et al., 2020).

The Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 2024) and the diffusion of innovation theory (Rogers, 2003; Rogers et al., 2014) are examples of models focusing on individual behaviour that provide useful insights on how individuals perceive and adopt new technologies in firms. However, they tend to fall short of explaining the organisational complexities that accompany the technology adoption process within firms. For example, TAM is more focused on user acceptance and perceived ease of use but does not give adequate consideration to how firms reconfigure their organisational structures and business models to effectively integrate technologies. On the other hand, the DCs framework that focuses on sensing, seizing and reconfiguring capabilities, emphasises the strategic processes through which firms adapt to technological changes (Teece, 2007). This particular approach provides a more in-depth understanding of firm-level transformations required during technology adoption which relate not only to technological change but also to cultural and leadership change as well as how firms utilise its resources.

One of the primary reasons for adopting a firm-level approach is that AIDA adoption in accounting firms requires strategic decisions that affect the entire organisation. For instance, the implementation of AIDA tools such as RPA or ML techniques for predictive analytics requires significant investment in infrastructure, upskilling of employees, and the reconfiguration of workflows (Zhang, 2019). These changes are not limited to the competencies of individual accountants but necessitate a top-down approach where leadership takes the initiative to realign the firm's strategy and operational models in ways that make AIDA accessible. AIDA adoption also involves cross-departmental collaboration, as the benefits of these technologies are realised when different parts of the organisation, such as accounting professionals and data specialists (analysts, engineers, and scientists), work together to integrate AIDA solutions (Arnaboldi et al., 2017).

Additionally, the shift away from routine compliance tasks towards AIDA-enabled advisory work and other more value-adding services, compels firms to rethink their value proposition (Shaffer et al., 2020). This transition is strategic and must be managed at the organisational level, as firms move away from traditional audit and financial reporting functions to providing more data-driven insights and strategic guidance to clients (Leitner-Hanetseder et al., 2021). Individual accountants, while important, cannot redefine all the service offerings

of the firm or effect all the structural changes necessary for such a transition (Busulwa and Evans, 2021). Therefore, taking a firm-level perspective would be more appropriate for analysing how accounting firms build DCs in AIDA as they pursue digital transformation.

Furthermore, one of the key risks associated with investing heavily in upskilling individual accountants in AIDA-related competencies as they may leave for more lucrative opportunities in the tech sector where there is high demand for AIDA-trained professionals (Alekseeva et al., 2021; Jaiswal et al., 2021).This is a prevalent observation in technology-intensive fields where employees highly specialised skills often move on to take other opportunities once they have received extensive training (Nouri and Parker, 2020). Consequently, accounting firms should prioritise cultivating AI-related expertise across all organisational levels rather than depending on the specialised skills and knowledge of select individuals. This ensures that the firm's capabilities in harnessing AIDA remain sustainable and embedded within the firm, even in the face of employee turnover.

The other determinant favouring the firm-level approach is the changing nature of competition in the accounting industry. As AIDA technologies become more integrated into accounting practices, firms will need to continuously adapt to maintain their competitive edge (Wamba-Taguimdje et al., 2020). This adaptation occurs within a broader digital ecosystem, where socio-technical interactions shape capability development (Morgan-Thomas et al., 2020). Such adaptive transformation extends beyond employees simply learning new skills but also requires firms to be reconfiguring resources, adopting new technologies, and realigning their strategic priorities to to gain the upper hand over competitors (Volberda et al., 2021). By focusing on sensing opportunities, seizing them, and reconfiguring resources, the DCs framework provides a holistic view of how firms should proceed with strategic adaption to implementing AIDA intor their workflows. In a fast-changing industry such as accounting, where technological innovation continuously reshapes the competitive landscape, these capabilities of sensing market trends, seizing the opportunities to ride those trends, and reconfiguring resources are critical for sustaining competitive advantage (Teece, 2017).

The firm-level perspective is also important for understanding how accounting firms deal with AIDA adoption risks and challenges. In adopting AIDA technologies, firms are faced with several ethical dilemmas, such as data privacy, algorithmic bias, and transparency of the AI-driven process of decision-making (Felzmann et al., 2019, 2020; Munoko et al., 2020; Russell and Norvig, 2020). These risks cannot be managed solely at the individual level as

they require organisational governance structures for compliance with the responsible use of AI and adherence to regulatory requirements (Díaz-Rodríguez et al., 2023). This reinforces the need for a firm-wide approach to AIDA adoption as policies and oversight mechanisms to mitigate the aforementioned risks are only effective when developed and implemented across the firm (Morley et al., 2019). Addressing these issues requires coordination across multiple departments, including legal, compliance, and risk management teams, thus further emphasising the need for strategic leadership and organisational alignment in managing AI ethical and regulatory implications (Wirtz et al., 2023).

Given that, the firm-level approach is critical to gaining insight into how accounting firms handle the challenges and opportunities of AIDA adoption. Although individual competencies are still important since they are the ones actively using AIDA technologies in their work, they are not sufficient to capture the full complexity of digital transformation especially at the broader organisational level. By focusing on the organisational capabilities required for AIDA integration such as strategic leadership, resource reconfiguration, and cross-functional collaboration, this research provides an in-depth understanding of how accounting firms can successfully implement AIDA technologies.

4.6 Summary of Digital Transformation Literature Review

This chapter has examined the concept of digital transformation from its early mentions in literature to its current position as a strategic imperative reshaping organisations across industries. It has clarified the differing perspectives in which digital transformation as a unique phenomenon from digitisation (the technical conversion of analogue information to digital format) and digitalisation (the use of digital technologies to change business processes), instead representing a comprehensive transformation of organisational structures, business models, and strategic positioning. Digital transformation is more than just simply adopting a particular technology; it is a continuous strategic process that impacts the core foundation of how organisations operate, create value, and interact with stakeholders.

For accounting firms, this would mean the integration of technologies into their workflows while concurrently reconceptualising service offerings and adapting to clients in a more data-driven business environment. AIDA technologies play a key role in the digital transformation journeys that accounting firms pursue. While some studies had raised concerns regarding large-scale job displacement, subsequent studies have shown that these technologies transform rather than eliminate work in accounting. The automation of routine

work shifts accountants towards more value-added strategic advisory solutions requiring professional judgment and domain expertise, areas where machines still struggle.

A firm-level approach is crucial to successful and effective AIDA adoption, with organisational capabilities and strategic adaptations at the firm level determining transformation success rather than individual competencies alone. This is especially important for accounting firms as they face several challenges when seeking to adopt AIDA technologies in the form of skills gaps, employee resistance, technical complexities, and strategic uncertainties, with these challenges proving particularly difficult for firms lacking capabilities to navigate technological disruption effectively. The next chapter proposes a conceptual framework that integrates DCs and the practice-based perspectives of SAP and TIP with digital transformation insights. This framework will guide the empirical investigation into how accounting firms build DCs in AIDA for their digital transformation journeys.

CHAPTER 5. CONCEPTUALISATION AND PROBLEM STATEMENT

5.1 Introduction

This chapter presents the aim, objectives, and research questions of this thesis in order to conceptualise the problem that motivates this research. The chapter intends to achieve three objectives. Firstly, it will present the research problem that justifies this research. Secondly, it will outline the working thesis statement that informs and guides this subsequent empirical research. Thirdly, it will present the overall aim, objectives, and theoretical framework that underpins this research. The chapter will then conclude by summarising the research problem that drives this research.

5.2 Problem Statement

The accounting profession stands at a crossroads, facing unprecedented disruption due to advancements in AI. Though it offers transformative potential for accounting practice, many firms struggle with developing the capabilities needed to effectively integrate them into their operations (Kokina and Davenport, 2017; Smith, 2020). The technologies encompassed within AIDA (ML, NLP, RPA, and advanced analytics tools) are rapidly reshaping traditional accounting work through automation of routine tasks, enhancement of data processing capabilities, and enablement of more sophisticated advisory services that were previously not possible (Lee et al., 2019; Cong et al., 2018; Yigitbasioglu et al., 2023).

Despite the growing significance of AIDA, existing research remains predominantly focused on individual-level factors, particularly accounting professionals' skills gaps and perceptions (Gulin et al., 2019; Moll and Yigitbasioglu, 2019; Rikhardsson and Yigitbasioglu, 2018). This narrow focus on individual readiness, while undoubtedly important, overlooks the broader strategic and organisational challenges that firms encounter when adopting AIDA at scale. Successful AIDA implementation demands more than individual competencies; it requires fundamental transformation of organisational structures, processes, and capabilities, representing a firm-level phenomenon that remains underexplored in accounting research.

The accounting profession, traditionally characterised by established practices and somewhat conservative approaches to change, now confronts a technological revolution demanding fundamental rethinking of service delivery models and core competencies (Sutton et al., 2018). Frey and Osborne (2013, 2017) initially sparked concern with their

suggestion of a high probability (0.94) of accounting and auditing roles becoming computerised. Subsequent studies, however, have challenged this deterministic view. Arntz et al. (2017) and Stephany and Lorenz (2021) make a compelling case that the profession will likely be transformed rather than eliminated, with AIDA technologies complementing rather than replacing human professionals. This view is further substantiated by recent empirical evidence from Kokina et al. (2025), whose interviews with experienced audit professionals from Big 4s and other large firms revealed that rather than wholesale job displacement, AI is primarily transforming the nature of accounting work by automating routine tasks while creating new opportunities for professionals to focus on higher-value activities requiring judgment and expertise. This transformation, nevertheless, requires accounting firms to develop new capabilities enabling effective integration of AIDA technologies.

There are still many barriers to AIDA adoption including skills gaps, cultural resistance, technical complexities, and strategic uncertainties (Kokina et al., 2021). These challenges prove particularly acute for firms lacking the DCs needed to navigate technological disruption. Such firms struggle in rapidly changing environments as they tend to be overly focused on pre-existing resources, are resistant to change, and prioritise efficiency over innovation (Teece, 2014b).

Furthermore, AIDA adoption presents unique challenges extending beyond those associated with previous technological changes in accounting. AIDA technologies represent fundamentally different approaches to data analysis, decision-making, and client interaction (Cong et al., 2018; Richins et al., 2017). Their effective implementation requires accounting firms to develop capabilities in areas such as data science, algorithm design, and computational thinking, domains traditionally foreign to accounting practice (Al-Htaybat and von Alberti-Alhtaybat, 2017; McKinney et al., 2017; Seow et al., 2024).

Digital transformation, with AIDA adoption as a critical component, represents not a one-time event but rather a continuous process requiring firms to build, maintain, and enhance their DCs to remain competitive (Warner and Wäger, 2019). Accounting firms must navigate the complexities of integrating AIDA into existing workflows, restructuring operations, and ensuring these changes yield tangible improvements in service delivery (Wamba et al., 2017). The digital transformation literature examined in Chapter 4 highlights these challenges while emphasising the importance of developing appropriate capabilities to address them.

Understanding these complex processes demands a multi-theoretical approach, building on the frameworks established in the previous chapters. The DCs framework examined in Chapter 2 provides a foundational theoretical lens for understanding how firms adapt to technological change. This framework emphasises firms' capacity to sense opportunities, seize them through strategic decisions, and reconfigure resources to adapt to changing environments. However, as noted in Chapter 2, this framework alone cannot provide sufficient insight into the concrete practices through which AIDA adoption unfolds in accounting firms.

The practice-based perspectives discussed in Chapter 3, including SAP and TIP, complement the DCs framework by focusing on the micro-level activities through which strategies take shape and technologies become enacted in specific organisational contexts. As established in Chapter 3, these perspectives provide valuable insights into how strategic decisions are made and how technologies are integrated into everyday practices. These perspectives have rarely been applied to accounting contexts, particularly regarding AIDA adoption.

The digital transformation literature reviewed in Chapter 4 deepens the understanding by situating AIDA adoption within broader processes of technology-driven organisational change. However, as noted in Chapter 4, this literature often focuses on industries other than accounting or technologies other than AIDA. This gap in the literature highlights the need for research specifically addressing how accounting firms navigate digital transformation through AIDA adoption.

At the same time, research on technology adoption in organisational contexts typically tend to draw on single-theory analytical approaches. These include applying frameworks like DCs to assess strategic decision-making (Teece, 2007; Daniel et al., 2014), as well as interpretive perspectives to make sense of how technologies shape organisational processes and control (Orlikowski, 2000; Quattrone and Hopper, 2005). This suggests that there is theoretical fragmentation that is limiting the understanding of how strategic capabilities translate into operational practices and how capabilities develop from everyday firm activities.

Moreover, existing accounting literature has yet to fully examine how the adaptability, learning capacity, and potential for autonomous decision-making associated with AIDA technologies require the development of distinct capabilities, which may differ from those of earlier technologies. While recent studies have acknowledged the transformative potential

of AIDA technologies across accounting domains, including their impact on professional roles, decision-making, and, in some cases, control structures (Boritz and Stratopoulos, 2023; Gu et al., 2024; Kokina et al., 2025; Leitner-Hanetseder et al., 2021; Moll and Yigitbasioglu, 2019; Sutton et al., 2022), how these characteristics contribute to capability-building in strategic and operational contexts at firm level remain under-theorised.

Given the theoretical foundations established in the previous chapters, the following research problem emerges:

Research Problem Statement

Existing theories do not sufficiently explain how accounting firms build dynamic capabilities in Artificial Intelligence-driven Analytics to enable their digital transformation.

5.3 Conceptualisation and Theoretical Lens

Building on the theoretical foundations established in Chapters 2, 3, and 4, this research employs an integrated theoretical framework combining Teece's DCs framework as the primary theoretical foundation, supplemented by insights from SAP and TIP. This integration of theoretical perspectives, as foreshadowed in the previous chapters, allows for a detailed examination of how accounting firms build DCs in AIDA adoption at both strategic and operational levels.

As established in Chapter 2, Teece's DCs framework provides a valuable theoretical lens for understanding how organisations adapt to changing environments. Teece et al. (1997: 516) define DCs as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments." Teece (2007) further elaborates this framework by identifying three key classes of capabilities: sensing (identifying opportunities and threats), seizing (mobilising resources to address opportunities and capture value), and transforming (continuous renewal and reconfiguration of assets and organisational structures). This framework, as discussed in Chapter 2, is particularly relevant for understanding how firms develop the capabilities needed to navigate technological disruption.

Teece's framework suits the study of AIDA adoption in accounting firms for several compelling reasons. First, it specifically addresses how firms adapt to technological change in dynamic environments, central to understanding AIDA adoption. Second, it emphasises the strategic nature of capability development, aligning with the strategic decisions involved

in AIDA adoption. Third, it recognises the path-dependent nature of capability development, crucial for understanding how accounting firms' historical experiences shape their approach to new technologies. These attributes, as discussed in Chapter 2, make the DCs framework particularly valuable for understanding organisational adaptation in rapidly changing technological environments.

While Teece's DCs framework provides a valuable overarching structure, Chapter 3 established that practice-based perspectives offer important complementary insights. SAP, as examined in Chapter 3, focuses on strategy not as something organisations have but as something organisational members do. It emphasises examining the concrete activities, interactions, and practices through which strategic decisions take shape and implementation occurs. This perspective, as Chapter 3 established, clarifies how organisations formulate and execute strategies through specific practices and activities.

Similarly, the TIP perspective, also discussed in Chapter 3, examines how technologies become enacted in everyday organisational routines. This perspective emphasises that technology's impact depends not on inherent properties but on how people use it in specific organisational contexts. Chapter 3 established that this perspective helps explain why identical technologies might produce different effects in different organisational contexts, depending on how they integrate into existing practices and routines.

The digital transformation literature reviewed in Chapter 4 further enhances this theoretical framework by providing insights into how organisations navigate technology-driven change. As Chapter 4 established, digital transformation involves not only technological implementation but also fundamental changes to organisational structures, processes, and business models. This literature highlights the strategic nature of digital transformation and the importance of developing appropriate capabilities to support this transformation.

Together, these three theoretical perspectives, building on the foundations established in the previous chapters, provide a comprehensive lens for examining how accounting firms build capabilities for AIDA adoption. Teece's framework offers a strategic view of capability development, while the practice-based perspectives provide insight into the concrete activities through which these capabilities take shape and deployment occurs. The digital transformation literature situates these capabilities within broader processes of organisational change.

In operationalising this integrated framework, this research also acknowledges Dudau, Glennon, and Verschuere's (2019) critical perspective on transformation processes. Their research cautions against uncritical adoption of popular collaborative approaches, highlighting that co-design and co-creation paradigms often become 'magical concepts' with overstated benefits lacking empirical validation. This critical stance informs the study's evidence-based approach to examining transformation in specific accounting contexts.

Based on this integrated theoretical framework that builds on the foundations in the preceding chapters, the following working thesis emerges:

Working Thesis Statement

Accounting firms build DCs in Artificial Intelligence-driven Analytics through a process that involves sensing opportunities for AIDA adoption, seizing these opportunities through strategic investments, and transforming organisational structures, processes, and capabilities to effectively integrate AIDA technologies.

The integration of DCs framework with practice-based perspectives addresses the well-documented critique of capability research's reliance on abstract and broad constructs that overlook the specific day-to-day organisational routines and practices where capabilities are formed and operationalised (Peteraf et al., 2013; Wang & Ahmed, 2007; Zahra et al., 2006). By combining the strategic-level DCs framework with SAP's and TIP's focus on micro-level practices, this research seeks to contribute to bridging the "microfoundations gap" in capability theory (Felin et al., 2012). The DCs framework provides clarity for understanding what capabilities firms need to develop, while practice-based perspectives reveal how these capabilities are developed and enacted through everyday organisational activities. Combining them together allows for analysis of both the strategic intent underpinning AIDA adoption in accounting firms and the practical processes through which that intent translates into actual organisational practices.

5.4 Aim, Objectives, and Conceptualisation

Based on the research problem identified and drawing on the theoretical foundations established in the previous chapters, the overarching aim of this thesis is:

To explore how accounting firms build dynamic capabilities in Artificial Intelligence-driven Analytics (AIDA) as they pursue digital transformation.

The research intends to achieve four research objectives through an exploration of four research questions:

Objective 1: To identify the activities through which accounting firms sense and seize opportunities for adopting AIDA technologies.

RQ1: How do accounting firms sense and seize opportunities for adopting AIDA technologies?

This objective corresponds to the "sensing" and "seizing" components of Teece's DCs framework, as examined in Chapter 2. It seeks to understand how accounting firms identify potential applications of AIDA technologies, evaluate their strategic implications, and make decisions regarding technology adoption. In line with the SAP approach, as discussed in Chapter 3, this involves examining the specific activities through which firms scan their environment, analyse technological trends, and formulate strategies for AIDA adoption.

Understanding sensing and seizing capabilities proves essential for explaining how accounting firms initially recognise AIDA technologies' potential and then commit resources to implementation. This objective manifests in the interview protocol through questions about firms' digital strategy, how they identify and evaluate opportunities for AIDA adoption, and what AIDA technologies they have invested in. These questions explore both the strategic vision guiding AIDA adoption and the practical and tangible activities through which this vision becomes reality.

Objective 2: To examine the changes in organisational structure, processes, and practices that enable the integration of AIDA technologies in accounting firms.

RQ2: How do accounting firms reconfigure their structures, processes, and practices to facilitate the integration of AIDA technologies?

This objective addresses the "reconfiguring"/"transforming" component of Teece's framework, as examined in Chapter 2, focusing on how accounting firms adapt their organisations to effectively leverage AIDA technologies. From a TIP perspective, as discussed in Chapter 3, it examines how AIDA technologies become enacted in everyday organisational routines and how these enactments reshape organisational structures and processes. Additionally, it draws on the digital transformation literature reviewed in Chapter 4, which highlights the organisational changes associated with technological adoption.

Transforming capabilities prove crucial for ensuring AIDA technologies fully integrate into the firm's operations rather than remaining isolated initiatives. This objective appears in interview questions about how AIDA adoption has changed the way firms operate and how organisational structures have evolved to accommodate these technologies. These questions explore the concrete ways accounting firms have transformed their organisations to align with AIDA requirements and opportunities.

Objective 3: To investigate the rationale behind why accounting firms adopt specific AIDA technologies over others.

RQ3: Why do accounting firms adopt specific AIDA technologies over others?

This objective explores the strategic considerations guiding accounting firms' decisions regarding which AIDA technologies to adopt and how to implement them. It draws on both the DCs framework, particularly the "sensing" component examined in Chapter 2, and the SAP approach discussed in Chapter 3 to examine how firms evaluate different technological options and align their choices with broader strategic objectives. It also relates to the digital transformation literature reviewed in Chapter 4, which addresses the strategic nature of technology adoption decisions.

Understanding the strategic rationale behind AIDA adoption decisions provides insight into how firms align technological investments with business objectives. This objective appears in interview questions about benefits firms can derive from AIDA transformation and their approach to implementing specific technologies. These questions explore both the perceived value of different AIDA technologies and the strategic considerations shaping adoption decisions.

Objective 4: To assess how accounting firms overcome barriers and cultivate enablers to drive digital transformation through AIDA technologies.

RQ4: How do accounting firms overcome barriers and cultivate enablers for digital transformation driven by AIDA technologies?

This objective focuses on challenges accounting firms face in adopting AIDA technologies and strategies they employ to overcome these challenges. It integrates insights from all three theoretical perspectives examined in the previous chapters: the DCs framework from Chapter 2, the practice-based perspectives from Chapter 3, and the digital transformation

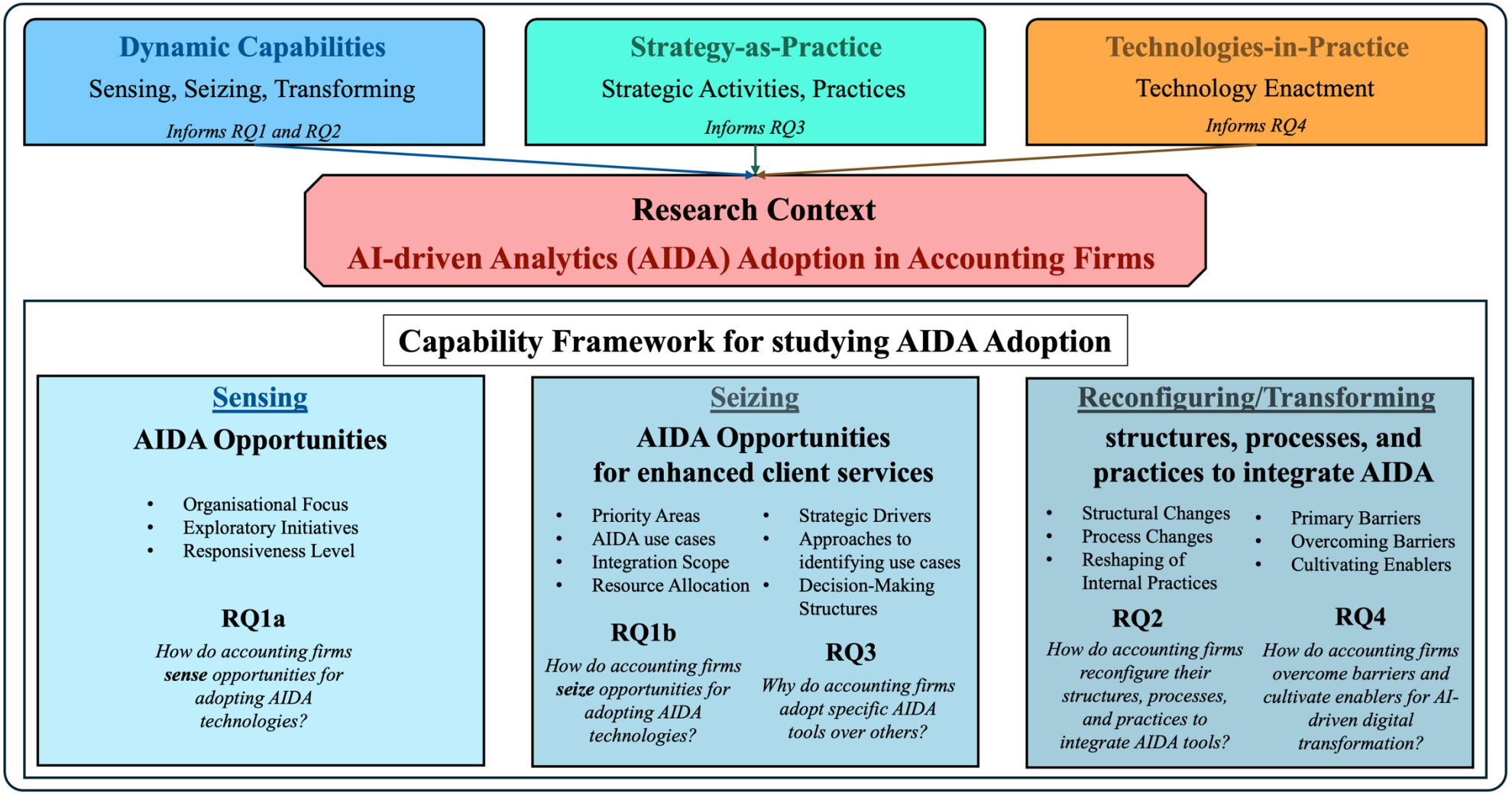
literature from Chapter 4. This integration allows for examination of both structural barriers to AIDA adoption and practical strategies for addressing them.

Identifying barriers and enablers is essential for understanding conditions under which DCs for AIDA adoption can effectively develop and deploy. This objective appears in interview questions about firms' implementation approaches and organisational changes associated with AIDA adoption. These questions explore both challenges firms have encountered and strategies employed to address these challenges.

5.5 Integrated Theoretical Framework for exploring DCs in AIDA Adoption in Accounting Firms

The integrated theoretical framework presented in **Figure 5-1** guides this research, building on the foundations established in the previous chapters. This capability framework for studying AIDA adoption emerged from the conceptualisation presented in this chapter and will be used particularly for cross-case analysis. It combines Teece's DCs framework, complemented by insights from SAP and TIP perspectives, and uses Miles and Huberman's (1994) matrix-based technique to carry out qualitative data analysis. The framework systematically traces AIDA's role across sensing, seizing, and transforming processes while embedding strategising practices and technology enactment.

Figure 5-1: Integrated Theoretical Framework for exploring DCs in AIDA Adoption in Accounting Firms



This multi-theoretical approach enables a comprehensive analysis of AIDA adoption processes at various levels:

- **DCs framework**: Provides the overarching structure for examining how firms sense opportunities, seize them through strategic decisions, and reconfigure their organisations (primarily informing RQ1 and RQ2 but also RQ3 and RQ4).

- **SAP**: Offers insights into the concrete activities, practices, and micro-processes through which strategic decisions about AIDA technologies are formulated and implemented (particularly relevant for RQ3 regarding technology selection rationales).

- **TIP**: Facilitates analysis of how AIDA technologies become enacted in organisational contexts and how these enactments reshape organisational practices (especially important for RQ4 regarding barriers and enablers).

By integrating these theoretical perspectives, the analysis can examine both the strategic, firm-level dynamics of capability development and the practical, situated activities through which AIDA technologies are selected and integrated into daily practices.

This capability framework represents a methodological contribution of this research, providing a structured approach for analysing the complex, multi-level processes through which accounting firms develop capabilities for AIDA adoption. Unlike conventional approaches that focus primarily on strategic decisions or technology implementation in isolation, this framework enables analysis of the interplay between strategic capabilities and everyday practices in shaping digital transformation outcomes.

The research approach to addressing these objectives and questions involves in-depth interviews with accounting professionals who have participated in AIDA implementation initiatives. The interview protocol elicits insights into various aspects of DCs development, focusing on concrete activities, decision-making processes, and organisational changes associated with AIDA adoption.

Background questions about participants' experience in the accounting profession, current role, and involvement with digital transformation initiatives provide context for understanding their perspectives and ensuring they possess relevant expertise to address research questions. Questions about firms' digital strategy and benefits of AIDA

transformation explore how firms sense opportunities and articulate the value proposition of AIDA technologies. Questions about specific technology investments and implementation approaches examine how firms seize opportunities through resource allocation and project execution. Finally, questions about organisational changes and operational impacts address how firms transform their structures and processes to integrate AIDA technologies.

This research adopts a firm-level approach to studying AIDA adoption in accounting firms, as discussed in Chapter 4 and supported by the interview protocol's focus on organisational strategies, structures, and capabilities. Unlike existing studies primarily focusing on individual accountants' skills and technology readiness (Gulin et al., 2019; Moll and Yigitbasioglu, 2019; Rikhardsson and Yigitbasioglu, 2018), this research examines how firms, as whole entities, develop the strategic capabilities necessary to harness AIDA's potential. This firm-level approach aligns with the theoretical foundations established in the previous chapters, particularly the emphasis on organisational capabilities in Chapter 2 and organisational practices in Chapter 3.

5.6 Summary of Conceptualisation

This chapter presents the aim, objectives, and research questions of this thesis, building on the theoretical foundations established in the previous chapters. Firstly, it presents the problem that existing theories inadequately explain how accounting firms build DCs in AIDA to enable digital transformation. This problem carries significant weight given AIDA technologies' increasing importance in reshaping accounting practice and the challenges many firms face in successfully adopting these technologies.

Secondly, the chapter argues that an integrated theoretical approach combining Teece's DCs framework with SAP and TIP perspectives provides a valuable lens for examining this problem. Drawing on the theoretical foundations established in Chapters 2, 3, and 4, it presents a working thesis statement conceptualising AIDA adoption as a process involving DCs development to sense opportunities, seize them through strategic decisions, and transform resources and capabilities to effectively integrate AIDA technologies.

The chapter presents the overall aim, objectives, and theoretical framework driving this research. The aim explores how accounting firms build DCs in AIDA as they pursue digital transformation. The four research objectives address key aspects of this aim, focusing on how accounting firms sense and seize opportunities for AIDA adoption, transform their organisations to facilitate AIDA integration, make decisions about specific AIDA

technologies, and overcome barriers while cultivating enablers for digital transformation. These objectives build on the theoretical foundations established in the previous chapters and will guide the empirical investigation that follows.

To address these objectives and research questions, this study will employ in-depth interviews with accounting professionals who have participated in AIDA implementation initiatives. The interview protocol has been designed to elicit insights into various aspects of DCs development, focusing on concrete activities, decision-making processes, and organisational changes associated with AIDA adoption. This protocol includes questions about firms' digital strategies, specific technology investments, implementation approaches, and organisational changes, aligning with the sensing, seizing, and transforming capabilities in the theoretical framework.

The firm-level approach adopted in this research moves beyond individual skills and technology readiness emphasised in much existing research, addressing a significant gap in understanding how accounting firms navigate the complexities of digital transformation in the AIDA era. Unlike existing studies primarily focusing on individual accountants' skills and technology readiness (Gulin et al., 2019; Moll and Yigitbasioglu, 2019; Rikhardsson and Yigitbasioglu, 2018), this research examines how firms, as whole entities, develop the strategic capabilities necessary to harness AIDA's potential. This approach, grounded in the theoretical perspectives examined in the previous chapters, offers a comprehensive framework for understanding the complex processes through which accounting firms navigate technological disruption.

The next chapter will elaborate on the research methodology employed to operationalise this conceptual framework, detailing the research design, data collection methods, and analytical techniques used to investigate how accounting firms build DCs in AIDA adoption.

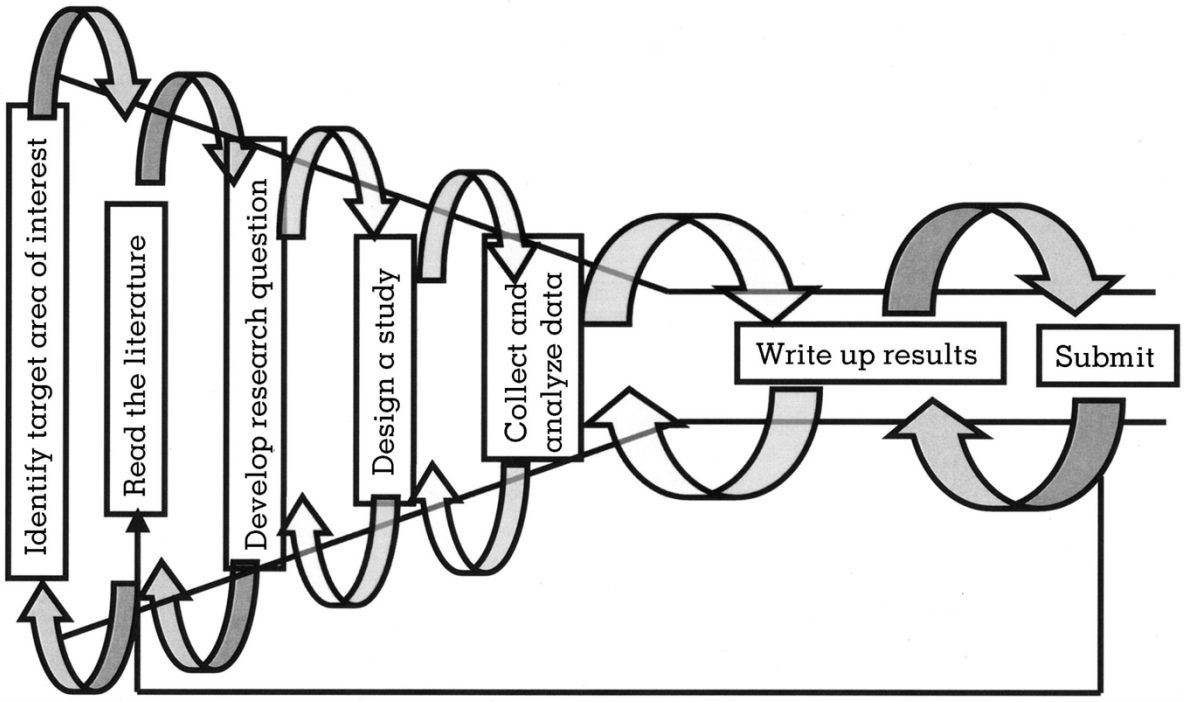
CHAPTER 6. RESEARCH METHODOLOGY

6.1 Introduction

This chapter presents the research methodology employed to investigate how accounting firms build DCs in AIDA as they pursue digital transformation. Following the conceptual foundations established in Chapters 2-5, this methodology chapter outlines the philosophical foundations underpinning this research, the methodological approach adopted, the sampling strategy, data collection methods, analytical procedures, quality assurance mechanisms, ethical considerations, and methodological limitations.

Edmondson and McManus (2007: 1173) conceptualise the field research process to be "a journey that may involve almost as many steps backward as forward" rather than the traditional implicit view of it being a linear process. They use a visual, reproduced here as **Figure 6-1**, to depict their view. This iterative nature was evident in this doctoral research, where the investigation of DCs in accounting firms required continuous refinement of the research approach as new insights emerged. This chapter aims to provide not just the methodological decisions made, but also the reasoning behind these choices.

Figure 6-1: Field Research as an Iterative, Cyclic Learning Journey



The research explores how accounting firms of varying types (sizes)—Big 4s, Mid-tiers, and Boutiques—develop capabilities to sense opportunities for AIDA adoption, seize these

opportunities through strategic investments, and reconfigure their organisational structures, processes, and practices to effectively integrate AIDA technologies. The methodology has been carefully designed to capture the complex, socially embedded processes through which these capabilities develop and manifest in everyday organisational activities.

The study draws on data collected through 24 semi-structured interviews with managing partners, partners, directors, senior managers, and managers from accounting firms in Singapore. The analysis explores the processes through which firms sense opportunities for AIDA adoption, seize these opportunities, and develop the DCs necessary to integrate AIDA technologies into their operations.

6.2 Research Philosophy and Approach

Research philosophy encompasses "a system of beliefs and assumptions about the development of knowledge" (Saunders et al., 2019). These philosophical underpinnings are vital to examine as they significantly influence research quality and relevance of findings (Neuman, 2014). The hallmark of coherent research lies in its philosophical consistency across ontological, epistemological, and axiological dimensions (Saunders et al., 2019).

Ontological Position: Subjectivism

This research adopts a subjectivist ontological stance, acknowledging that the development of DCs for AIDA adoption is not an objective external reality but rather, socially constructed through the interpretations, experiences, and actions of organisational actors. Cultivating DCs requires firms to balance entrepreneurial mindsets with systematic examination of resources and organisational structures. These capabilities are embedded in organisational processes and routines that are inherently subjective in nature (Willis et al., 2007).

Subjectivism in this context acknowledges that how accounting firms' perceptions of their market environment, technological opportunities, and transformation strategies are shaped by their distinct contexts, histories, and interpretive frameworks. This lines up with the practice-based perspectives explored in Chapter 3, which highlight the socially constructed nature of both strategic activities (SAP) and technology enactments (TIP).

This ontological position is appropriate for studying DCs in AIDA adoption as it recognises that the ways in which accounting firms sense opportunities, seize them through strategic decisions, and reconfigure their resources are not objective processes but rather are infused with meaning and interpretation. The specific organisational contexts, histories, and

subjective interpretations of key decision-makers influences how firms perceive and respond to technological disruption.

The subjectivist stance also corresponds with the perspectives on digital transformation explored in Chapter 4, which point out that technological change is not deterministic but is influenced by the perceptions and actions of organisational actors. Technologies themselves do not determine outcomes; instead, their impact is shaped by how they are perceived, adopted, and enacted within specific organisational contexts (Orlikowski, 2000).

Epistemological Position: Interpretivism

From an epistemological perspective, this research aligns with interpretivism, which emphasises understanding social phenomena through the meanings that human actors assign to them (Saunders et al., 2019). Unlike positivism, which seeks objective, measurable truths independent of human interpretation, interpretivism recognises that knowledge about DCs in AIDA adoption is innately context-dependent and socially constructed. Interpretivism is appropriate for research that seeks to make sense of social contexts through identifying, analysing, interpretating, and explaining the links between social environments (Denzin and Lincoln, 2008).

The interpretivist approach is suitable for this research as the development of DCs is influenced by firms' past experiences, organisational learning processes, and strategic decision-making contexts. How accounting firms pursue digital transformation and leverage AIDA technologies is not a uniform, deterministic process but rather a socially embedded phenomenon that varies across firms and contexts.

This epistemological position aligns with SAP as reviewed in Chapter 3, which focuses on how strategy is socially accomplished through the everyday activities of organisational actors (Jarzabkowski, 2004, 2005; Whittington, 1996, 2003, 2006). It also resonates with TIP, which emphasises how technologies are enacted through recurrent patterns of use within specific social contexts (Orlikowski, 2000).

The interpretivist approach enables an examination of how accounting professionals make sense of AIDA technologies, how they integrate these technologies into their everyday practices, and how these practices contribute to the development of organisational capabilities. It acknowledges that the meanings attached to AIDA technologies and their role in digital transformation vary across different accounting firms based on their unique organisational contexts, histories, and interpretive frameworks.

Axiological Considerations

Axiologically, this research acknowledges the value-laden nature of both the research process and the phenomena being studied. The researcher's background as a chartered accountant who also has an added specialisation in analytics and ML in accounting, analytics, and machine learning shapes the research process, from the conceptualisation of research questions to the interpretation of findings. This research adopts a reflexive approach that recognises and critically examines these values and biases throughout the research process, instead of trying to dismiss them.

This axiological position recognises that the decisions made by accounting firms about AIDA adoption are also value-laden, influenced by their organisational cultures, strategic priorities, and the values of key decision-makers. The development of DCs for AIDA adoption is not a value-neutral process but is shaped by firms' perceptions of what is considered valuable capabilities, desirable technologies, and appropriate strategic responses to digital disruption.

By adopting this axiological stance, the research can explore not only what capabilities accounting firms develop for AIDA adoption but also why they prioritise certain capabilities over others and how these priorities reflect their values and strategic objectives. This aligns with the understanding of digital transformation which is comprised of technological, organisational, and strategic dimensions of change, as presented in Chapter 4.

6.3 Research Design

This research utilises a qualitative methodology in accordance with the interpretivist epistemology. Qualitative research is particularly appropriate for exploring complex, context-dependent phenomena like the development of DCs for AIDA adoption (Yin, 2014). The research specifically utilises a multiple case study approach supplemented by semi-structured interviews.

6.3.1 Multiple Case Study Approach

Multiple case studies allow for the in-depth exploration of how and why questions by enabling the investigation of complex phenomena within their real-life contexts (Yin, 2003). This approach is well-suited to examining the processes through which accounting firms develop capabilities for AIDA adoption since it facilitates rich, contextual understanding of

organisational dynamics while enabling cross-case comparison to identify patterns and unique traits among different types of firms (Eisenhardt, 1989).

The multiple case study approach offers several advantages for this research:

1. It facilitates theoretical replication, allowing for the development of robust, generalisable theory (Eisenhardt and Graebner, 2007; Yin, 2003).

2. It enables investigation of the phenomenon across diverse organisational contexts, capturing variation in how different types of accounting firms approach AIDA adoption.

3. It supports cross-case analysis to identify common patterns as well as contextual differences in capability development processes.

4. It allows for the exploration of multiple levels of analysis, from strategic decision-making to everyday practices, aligning with the multi-level theoretical framework conceptualised in Chapter 5.

5. It provides a holistic view of the phenomenon, capturing both the macro-level strategic aspects of capability development and the micro-level practices through which these capabilities are enacted.

The case study approach is particularly well-aligned with the theoretical framework developed in Chapter 5, which integrates the DCs framework (Teece, 2007) with practice-based perspectives (SAP and TIP). While the DCs framework provides a valuable lens for understanding what capabilities firms need to develop, the practice-based perspectives supplement it by offering insights into how these capabilities manifest in everyday organisational activities. The case study approach enables exploration of both dimensions, providing a comprehensive understanding of capability development processes.

6.3.2 Research Context

Singapore provides an ideal context for investigating how accounting firms develop DCs for AIDA adoption. As a global financial hub with advanced technological infrastructure, Singapore represents a particularly relevant setting for understanding digital transformation processes in professional service firms (Gan, 2020). The country's Smart Nation initiative and supportive regulatory environment for technological innovation have created conditions conducive to digital transformation across industries, including accounting.

Singapore's position as a regional headquarters for many accounting firms, combined with its emphasis on technological advancement, makes it a strategically significant context for studying AIDA adoption. Furthermore, the diversity of accounting firms operating in Singapore, from Big 4s to Mid-tiers and local Boutiques, provides an opportunity to examine capability development processes across different organisational contexts.

The Smart Nation initiative found its beginnings in 2014 and it kickstarted a huge push for digital transformation across industries, with accounting becoming one of the notable beneficiaries. On the education front, Singapore Management University (SMU) developed a suite of Accounting Data and Analytics (ADA) programmes across undergraduate, postgraduate, and professional development levels in 2018 to address the growing need for accountants with technological competencies (Singapore Management University, 2018). By 2019, several initiatives aimed at driving a profession-wide transformation had already begun. Collaborating with SMU School of Accountancy (SMU-SOA), CPA Australia's Singapore office developed a toolkit providing accounting and finance professionals with practical insights into leveraging AI technologies titled "Charting the Future of Accountancy with AI". Comprising contributions from academics, the Big 4s, and leading technology consultancies, the publication explored various applications of AI in accounting, from automating repetitive tasks to enhancing fraud detection and financial forecasting, marking the profession's transition toward AIDA.

Concurrently, Singapore's Infocomm Media Development Authority (IMDA), Institute of Singapore Chartered Accountants (ISCA), and Singapore Accountancy Commission (merged with Accounting and Corporate Regulatory Authority (ACRA) since 2023) launched the Accountancy Industry Digital Plan (IDP). This plan served as a structured pathway to guide firms from basic digital readiness through data analytics adoption to advanced AI-enabled solutions (IMDA, 2019). The initiative aimed to accelerate digital transformation, specifically targeting small and medium-sized practices, which constitute 98% of Singapore's accountancy sector. Also part of the plan was the establishing of the Accounting Technology & Innovation Centre in partnership with Singapore Institute of Technology to promote innovation through collaboration with academics and technology partners, with a specific focus on AI and data analytics.

The IDP outlined a three-stage digital roadmap for firms:

1. Getting Digital Economy Ready: Implementation of basic tools like practice management, audit management, and tax management solutions to streamline operations.

2. Growing in the Digital Economy: Adoption of data analytics for advisory services and integrated platforms for seamless transactions to generate insights.

3. Leaping Ahead: Implementation of advanced technologies like AI-enabled solutions and RPA for innovative services and intelligent operations.

Singapore's position as a hub for multinational corporations means that accounting firms operating in the country often serve clients with complex, cross-border operations. This creates additional impetus for developing sophisticated analytical capabilities that can address the needs of these clients. The Singapore context thus provides a rich environment for examining how accounting firms develop capabilities for AIDA adoption in response to both local and global forces.

The selection of Singapore as the research context enhances the study's potential for theoretical contribution while ensuring practical relevance to accounting firms operating in advanced digital economies. By examining capability development processes in this dynamic environment, this research can generate new insights that are valuable for understanding digital transformation in professional service firms more broadly.

6.3.3 Unit of Analysis

The unit of analysis are the digital transformation initiatives through which accounting firms adopt AIDA technologies. These initiatives are recognised as strategic projects by the companies that are intended to drive organisational changes from the implementation and integration of AIDA technologies into their day-to-day operations and workflows. The focus on each digital transformation initiative ensures that the qualitative analysis captures observable activities and practices that can systematically be grouped and compared across different organisational contexts.

While data is collected from individual participants across multiple firms, the analytical focus examines how firms develop and deploy DCs through these transformation initiatives. Each firm serves as a case, with the specific transformation initiatives that adopt varying

AIDA technologies providing the empirical context for examining both the capabilities required to execute these projects and those developed in the process. This approach aligns with the research questions, which were formulated to assess how firms build sensing, seizing, and reconfiguring/transforming capabilities through specific transformation efforts. It recognises that capability development is both a prerequisite for and a consequence of successful digital transformation.

6.3.4 Methodological Considerations for the Case Study Method

Using the integrated theoretical framework presented in Figure 5-1 requires methodological considerations to be made in order to justify the case study approach adopted in this research:

First, the DCs framework's emphasis on process-oriented capabilities requires a longitudinal understanding of how firms develop sensing, seizing, and transforming capabilities over time (Eisenhardt and Martin, 2000; Teece, 2007). Such insights are better captured through a case study approach as compared to cross-sectional surveys (Langley, 1999; Pettigrew, 1990). Case studies allow for a detailed, context-rich examination of how organisational change occurs over time (Eisenhardt, 1989; Yin, 2014).

Second, the emphasis of practice-based perspectives like SAP and TIP is on closely studying everyday activities, social interactions, and technological enactments that influence how strategy is implemented and how technology tools are used (Feldman and Orlikowski, 2011; Jarzabkowski et al., 2007; Orlikowski, 2000; Whittington, 2006). Such organisational practices are inherently contextual and socially embedded, making them difficult to study through standardised methods like surveys or experiments that do not sufficiently account for the lived experiences and situated nature of organisational practice (Nicolini. 2012). As the case study approach facilitates the collection of rich, situated data, it is appropriate for examining such micro-level processes (Yin, 2014).

Third, given the intention to integrate multiple theoretical perspectives for this research, the methodology needs to support analysis across different levels of organisational activity. (Jarzabkowski and Spee, 2009; Orlikowski, 2007). Capturing insights at multiple levels requires an approach that can handle complexity while preserving the link between strategic decisions and day-to-day practices in the firm. A case study design provides methodological flexibility to trace connections across levels of organisational activities, while maintaining consistency with the integrated theoretical framework used in this research as presented in Figure 5-1 (Eisenhardt, 1989; Yin, 2014).

Finally, the research questions listed out in Section 5.4 are concerned with understanding how organisational processes unfold, rather than testing predetermined hypotheses. To adequately account for complexity and context, an open-ended, exploratory approach is needed. Among available options, the case study approach aligns most closely with this research's aim of discovery rather than confirmation since it priorities the understanding of real-world processes as they develop (Yin, 2014).

6.4 Sampling Strategy

6.4.1 Sampling Parameters

This research adopts a purposeful sampling approach to identify information-rich cases that examine the phenomenon of interest (Patton, 2002; Suri, 2011). The sampling strategy is guided by the following parameters:

- **Setting**: The research focuses on accounting firms operating in Singapore, a global financial hub with advanced digital infrastructure that facilitates digital transformation initiatives.

- **Focal Actors**: The focal actors are accounting firms of varying sizes and market positions, including Big 4s, Mid-tiers, and Boutiques, each engaged in digital transformation with emphasis on AIDA adoption.

- **Actors**: The individuals within these firms who participate in the study include senior professionals with some decision-making authority and involvement in digital transformation initiatives. These participants include Managing Partners, Partners, Directors, Senior Managers, and Managers who can provide insight into strategic and operational aspects of AIDA adoption in their firms.

- **Events**: The study focuses on events and activities related to the adoption and integration of AIDA as part of broader digital transformation initiatives, including technology implementation drives and strategic decision-making processes.

- **Processes**: The key processes of interest include the development and implementation of capabilities for AIDA, changes in organisational structure and culture to accommodate new technologies, and evolution of client service approaches.

6.4.2 Purposeful Sampling Criteria

The selection of cases is guided by four primary criteria:

1. **Primary business operations based in Singapore**: Focusing on firms with significant number of operations based in Singapore ensures contextual consistency and relevance to the local business landscape. This criterion was put in place to control for environmental variables while simultaneously factoring in the diversity of firm types operating within the same regulatory and business context.

2. **Diversity in firm size and structure**: The sample includes all Big 4s (with extensive global networks), Mid-tiers (with some global network connections but smaller relative to Big 4), and Boutiques (independent with emerging technology adoption). This diversity facilitates comparative analysis across different organisational contexts (Warner and Wäger, 2019), allowing for the analysis of how firm size and structure impact capability development processes.

3. **Active engagement in digital transformation**: Selected firms are actively pursuing digital transformation initiatives, particularly those involving AIDA technologies (Ellström et al., 2021). This criterion ensures that the firms included in the study have relevant experience with digital transformation and can provide rich insights into capability development processes related to it.

4. **Diversity in professional roles and perspectives**: Participants within each firm represent various hierarchical levels and functional domains to ensure clarity in the understanding of capability development processes (Vial, 2019, 2021). This criterion recognises that capability development involves multiple organisational actors and perspectives, ranging from strategic decision-makers to those involved in implementation.

These criteria were set with the intention of making sure that the sample provides sufficient depth, richness, and diversity to address the research questions while maintaining focus on the phenomenon of interest: accounting firms pursuing digital transformation through adopting AIDA. The criteria strike a balance between homogeneity (firms operating in similar contexts and engaged in digital transformation) and heterogeneity (diversity in firm size, structure, and professional roles), enabling an in-depth and comprehensive cross-case comparison analysis.

6.4.3 Sample Composition

The final sample consists of 24 participants from 11 firms across three types of accounting firms:

Big 4s:

- Firm Size in Singapore: 2,500 - 4,000 employees (each)
- Number of Firms: 4
- Number of Participants: 13
- Positions: 4 Partners, 4 Senior Managers, 2 Managers, 3 Directors

Mid-Tiers:

- Firm Size in Singapore: 200 - 500 employees (each)
- Number of Firms: 4
- Number of Participants: 7
- Positions: 1 Managing Partner, 5 Partners, 1 Senior Manager

Boutiques:

- Firm Size in Singapore: 20 - 100 employees (each)
- Number of Firms: 3
- Number of Participants: 4
- Positions: 3 Managing Partners, 1 Senior Manager

This sample composition ensures a diverse range of perspectives across different firm types while preserving adequate depth within each category to allow for meaningful cross-case analysis. Crucially, all participants were engaged in digital transformation initiatives that incorporated AIDA technologies, although their degree of involvement varied. Some participants were actively engaged in digital transformation teams, others were involved in the formulation of digital strategy, while some were focused on the implementation of AIDA technologies within their respective domains or departments or service functions. This

diversity of involvement provides an in-depth perspective on the implementation of AIDA across different organisational levels, functions, and roles.

The sample size of 24 participants across 11 firms finds consistency qualitative research recommendations for prioritising depth rather than breadth (Creswell, 2013). The number of participants was determined through an iterative process, with additional participants recruited until theoretical saturation was achieved (Guest et al., 2006). Theoretical saturation became apparent when subsequent interviews yielded diminishing returns in terms of new insights and when further data brought clarity to existing themes rather than introducing new ones.

The assessment of saturation occurred continuously throughout the data collection process and ongoing analysis of interview transcripts rather than at predetermined intervals, aligning with the iterative nature of field research described in Section 6.1. This ongoing evaluation allowed for adjustments to be made in real-time when recruiting subsequent interview participants and ensured adequate coverage across different organisational contexts. The final distribution of 13 participants from Big 4s, 7 from Mid-tiers, and 4 from Boutiques reflected both the achievement of saturation within each firm type and the recognition that Boutiques' smaller organisational size and less complex decision-making structures required fewer perspectives to understand their capability development processes. The selection of four Mid-tiers and three Boutiques was done so to ensure adequate representation of these important segments while maintaining a feasible and manageable scope for in-depth analysis, while the participant distribution roughly reflects the relative size and influence of these firm types in the Singapore accounting industry. Details of the 24 interview participants are in **Table 6-1** below.

Table 6-1: Interview Participants' Details

Participant Number	Firm	Firm Type	Position	Reference
1	Landmark Co (Firm A)	Big 4	Partner	#1-A-Partner
2	Safeguard Co (Firm B)	Big 4	Senior Manager	#2-B-SeniorManager
3	Trailblazer Co (Firm C)	Big 4	Partner	#3-C-Partner
4	Safeguard Co (Firm B)	Big 4	Partner	#4-B-Partner
5	Trailblazer Co (Firm C)	Big 4	Partner	#5-C-Partner
6	Trailblazer Co (Firm C)	Big 4	Manager	#6-C-Manager
7	Trailblazer Co (Firm C)	Big 4	Senior Manager	#7-C-SeniorManager
8	Trailblazer Co (Firm C)	Big 4	Manager	#8-C-Manager
9	Keystone Co (Firm D)	Big 4	Senior Manager	#9-D-SeniorManager
10	Keystone Co (Firm D)	Big 4	Senior Manager	#10-D-SeniorManager
11	Trailblazer Co (Firm C)	Big 4	Senior Manager	#11-C-SeniorManager
12	Keystone Co (Firm D)	Big 4	Director	#12-D-Director
13	Safeguard Co (Firm B)	Big 4	Director	#13-B-Director
14	Reliable Co (Firm E)	Midtier	Partner	#14-E-Partner
15	Reliable Co (Firm E)	Midtier	Partner	#15-E-Partner
16	Reliable Co (Firm E)	Midtier	Partner	#16-E-Partner
17	Benchmark Co (Firm F)	Midtier	Managing Partner	#17-F-ManagingPartner
18	Foresight Co (Firm G)	Midtier	Partner	#18-G-Partner
19	Synergy Co (Firm H)	Midtier	Senior Manager	#19-H-SeniorManager
20	Reliable Co (Firm E)	Midtier	Partner	#20-E-Partner
21	Catalyst Co (Firm J)	Boutique	Managing Partner	#21-J-ManagingPartner
22	Forward Co (Firm K)	Boutique	Managing Partner	#22-K-ManagingPartner
23	Venture Co (Firm L)	Boutique	Managing Partner	#23-L-ManagingPartner
24	Venture Co (Firm L)	Boutique	Senior Manager	#24-L-SeniorManager

6.5 Data Collection

6.5.1 Semi-Structured Interviews

The primary data collection method employed in this research is semi-structured interviews with senior professionals from accounting firms. Semi-structured interviews provide a balance between structure and flexibility, allowing for systematic coverage of key topics while giving participants freedom to express their perspectives and experiences in depth (Horton et al., 2004; Guest et al., 2013).

The interviews explored how accounting firms sense opportunities for AIDA adoption, seize these opportunities through strategic investments and initiatives, and reconfigure their organisational structures and processes to effectively integrate these technologies. The semi-structured format enabled the exploration of complex issues while maintaining consistency across interviews, facilitating subsequent cross-case analysis.

As Kvale and Brinkmann (2009) suggest, semi-structured interviews are particularly effective for collecting qualitative data on complex phenomena as they allow for in-depth exploration while maintaining sufficient structure to ensure coverage of key topics. This approach was well-suited to investigating the multifaceted processes through which accounting firms develop DCs for AIDA adoption.

The semi-structured interview approach aligns with both the interpretivist epistemology and the theoretical framework guiding this research. From an interpretivist perspective, semi-structured interviews allow for exploration of participants' subjective interpretations and experiences, recognising that knowledge about DCs is socially constructed through these interpretations. From a theoretical perspective, the flexibility of semi-structured interviews enables exploration of both the strategic aspects of capability development (emphasised in the DCs framework) and the practical, everyday activities through which these capabilities manifest (emphasised in the practice-based perspectives).

6.5.2 Interview Protocol and Process

An interview guide was developed to ensure comprehensive coverage of topics related to DCs for AIDA adoption while allowing for flexibility in exploring emergent themes. The guide was structured around the three core components of DCs as conceptualised by Teece

(2007): sensing opportunities and threats, seizing opportunities through strategic decisions and investments, and reconfiguring organisational assets and structures.

The interview protocol was further informed by the practice-based perspectives explored in Chapter 3, with questions designed to elicit information about both strategic decisions and everyday practices related to AIDA adoption. This dual focus allowed for exploration of both what capabilities firms are developing and how these capabilities manifest in concrete organisational activities.

Specific topics covered in the interviews included:

- **Background and Context**: Participants' experience in the accounting profession, current role, and involvement with digital transformation initiatives. This provided context for understanding their perspectives and ensuring they possessed relevant expertise to address the research questions.

- **Digital Strategy and Vision**: Firms' overall approach to digital transformation, vision for technology integration, and strategic objectives for AIDA adoption. These questions explored how firms sense opportunities and articulated the value proposition of AIDA technologies.

- **Technology Selection and Implementation**: Specific AIDA technologies adopted, criteria for technology selection, and approaches to implementation. These questions examined how firms seize opportunities through resource allocation and project execution.

- **Organisational Changes**: Adjustments to organisational structures, processes, and practices to accommodate AIDA technologies. These questions addressed how firms transform their organisations to integrate AIDA technologies effectively.

- **Challenges and Enablers**: Barriers encountered during AIDA adoption and strategies for overcoming these barriers. These questions explored the contextual factors influencing capability development.

- **Outcomes and Impact**: Effects of AIDA adoption on client service, operational efficiency, and competitive positioning. These questions examined the consequences of capability development.

The interviews were conducted either in-person or via video conferencing (Microsoft Teams or Zoom), depending on participant preference and availability. Each interview lasted approximately 60 minutes and was recorded with participant consent. The recordings were subsequently transcribed verbatim to facilitate detailed analysis.

Prior to each interview, participants were provided with information about the research purpose and process and were asked to review and sign consent forms. Participants were reminded that their participation was voluntary and that they could withdraw at any time without providing reasons.

The interviews were conducted between mid-April 2023 and mid-March 2024. Theoretical saturation was reached after 24 interviews, where no significant new themes or insights were emerging from additional data collection (Guest et al., 2006).

6.5.3 Secondary Data Considerations

This research relied exclusively on data from semi-structured interviews without incorporating secondary data. This approach was deliberately chosen for several reasons:

Firstly, the research questions focused specifically on how accounting firms develop DCs for AIDA adoption through internal processes and practices. These phenomena are primarily experiential and interpretive in nature, making first-hand accounts from key decision-makers and practitioners the most valuable and relevant data source. Secondary documents often present polished, public-facing narratives that may not reveal the complex, messy realities of capability development processes.

Secondly, access to internal firm documentation presented significant challenges. The sensitive and proprietary nature of digital transformation strategies, particularly those involving advanced technologies like AI, meant that accounting firms were hesitant to share internal strategic documents, implementation plans, or evaluation reports. Even when firms were willing to participate in interviews, they generally maintained strict confidentiality regarding written strategic documentation.

Thirdly, the methodological approach of this study emphasised depth rather than breadth of understanding. By closely analysing detailed interview data from 24 participants across 11 firms, the research uncovered meaningful insights into the personal experiences and interpretations of those directly involved in AIDA implementation. This approach aligns with the interpretivist epistemology that underpins the study, recognising that knowledge

about DCs is socially constructed through organisational actors' interpretations and experiences.

While the reliance on interview data might be considered a constraint, it is important to note that the depth and richness of the primary interview data provided sufficient basis for a comprehensive analysis of the research questions. The semi-structured interviews yielded detailed narratives about capability development processes, strategic decision-making, implementation challenges, and organisational transformations that would not have been accessible through document analysis alone. The absence of secondary data triangulation was addressed through alternative quality assurance measures. This includes theoretical triangulation through the integrated framework detailed in Section 5.5 and presented in **Figure 5-1**, systematic cross-case comparison using the matrix approach outlined by Miles and Huberman (1994) as described in Section 6.6.1, and continuous validation through the iterative analytical process that matches up with Edmondson and McManus's (2007) conceptualisation of field research in **Figure 6-1**.

For future research, a more extensive incorporation of secondary data could provide additional context and verification, particularly for studies seeking to examine the relationship between formal strategies and actual implementation experiences. However, for this study's specific focus on the experiential and interpretive dimensions of capability development, the emphasis on interview data was methodologically appropriate and sufficiently robust.

6.6 Data Analysis

6.6.1 Analytical Process

The analytical process consists of interrelated steps in which multiple theoretical lenses are used to examine the data from multiple levels. This process was guided by the qualitative analysis framework outlined by Miles and Huberman (1994), which emphasises three main components: data reduction, data display, and drawing conclusions. Their approach is systematic and flexible such that it can be applied as a means to manage the complexities of the qualitative data gathered from the interviews. This ensures that there is clarity in the analysis while retaining the richness of the empirical data. Each analytical phase was guided by this framework, beginning with familiarisation and initial coding through to cross-case comparison analysis, data display, and theme development, thereby providing a clear progression from raw data to theoretically-informed insight.

1. Data Familiarisation

The analysis began with immersion in the data through careful reading of interview transcripts and review of field notes. This process of familiarisation was essential for developing a holistic understanding of each case before proceeding to more detailed analysis.

During this stage, initial reflections and observations were documented in analytical memos, capturing preliminary insights about patterns, themes, and potential connections across cases. These memos served as a bridge between data collection and more structured analysis, informing subsequent coding and matrix development.

The familiarisation process primarily focused exclusively on interview data. This approach ensured that the analysis remained grounded in the lived experiences and interpretations of the participants, consistent with the study's interpretivist epistemology. The holistic approach to data familiarisation enabled the development of a comprehensive understanding of each case and its context, focusing on the rich, detailed accounts provided by the research participants.

2. Initial Coding

Following familiarisation, the transcripts were systematically coded to identify key concepts and themes (Saldaña, 2021). The coding process was informed by the integrated theoretical framework, with codes relating to the DCs framework, SAP, and TIP perspectives.

The initial coding process used a hybrid approach with both deductive codes derived from the theoretical framework and inductive codes emerging from the data. This hybrid approach ensured that the analysis was theoretically informed while remaining open to unexpected insights and patterns in the data.

Examples of deductive codes included:

- Sensing capabilities (identifying and recognising technology opportunities)
- Seizing capabilities (strategic decision-making processes relating to implementing AIDA)
- Transforming capabilities (organisational restructuring to integrate AIDA)
- Strategic practices (activities related to AIDA technology selection)

- Technology enactment (how AIDA technologies are used in practice)

Examples of inductive codes that emerged from the data included:

- Client-driven adoption (adoption motivated by client expectations)
- Process-oriented adoption (adoption focused on internal efficiency)
- Centralised innovation teams (specialised teams driving digital initiatives)
- Cross-functional collaboration (interactions across organisational boundaries)
- Digital upskilling (training initiatives to develop digital competencies)

The initial coding process generated approximately 120 codes, which were subsequently refined and organised into broader thematic categories aligned with the research questions. This refinement process involved merging related codes, eliminating redundancies, and creating hierarchical relationships among codes to facilitate more structured analysis.

3. Cross-Case Analysis at Firm-Level (RQ1 and RQ2)

Cross-case comparison was conducted using matrices as prescribed by Miles and Huberman (1994) to address research questions 1 and 2. This analysis primarily employed the DCs framework lens:

- For RQ1, matrices were created to examine how firms sense and seize opportunities for AIDA adoption, focusing on exploratory initiatives, organisational focus (client-centric vs. process-oriented), and responsiveness levels. These matrices allowed for systematic comparison of sensing and seizing capabilities across different firms.
- For RQ2, matrices were developed to compare how firms reconfigure their structures, processes, and internal practices to integrate AIDA technologies. These matrices focused on structural changes (e.g., innovation teams, coordination mechanisms), process changes (e.g., system infrastructure, process automation), and internal practice transformations (e.g., cross-functional collaboration, digital upskilling).

This firm-level analysis allowed for detailed comparison across the 11 accounting firms to identify patterns and variations in capability development from a DCs framework perspective. The matrices facilitated systematic comparison of how different firms approach

AIDA adoption, highlighting similarities and differences in their capability development processes.

4. Cross-Case Analysis at Firm Type Level (RQ3 and RQ4)

As analysis progressed, it became apparent that firms of the same type (Big 4s, Mid-tiers, or Boutiques) demonstrated similar approaches to AIDA adoption. This led to aggregating the analysis to the firm-type level for research questions 3 and 4, integrating multiple theoretical perspectives:

- For RQ3, matrices were created to compare technology selection rationales across firm types. This analysis integrated the DCs framework perspective on strategic decision-making with the SAP focus on the practices and activities through which firms evaluate and select technologies. This combination allowed examination of both the strategic drivers behind technology choices and the concrete practices through which these choices are made.

- For RQ4, matrices were developed to examine barriers and enablers for digital transformation. This analysis combined all three theoretical perspectives: DCs framework (organisational-level adaptation processes), SAP (strategic practices for overcoming barriers), and TIP (how technologies become integrated into everyday practices). The TIP perspective was particularly valuable for understanding how technological and organisational factors interact in overcoming barriers or cultivating enablers for effective AIDA adoption.

This firm-type level analysis revealed distinctive patterns in how Big 4s, Mid-tiers, and Boutiques approach AIDA adoption, highlighting how firm size and market position influence capability development processes. The matrix-based approach enabled systematic comparison across firm types while maintaining connection to the rich, qualitative data from individual firms.

5. Data Display

Findings are presented in five matrices that organise and compare data across accounting firms, focusing on their adoption of AIDA technologies. These matrices are built around key themes and variables from the research questions, such as identifying and seizing opportunities for implementation, organisational reconfiguration, rationale for technology selection, and barriers/enablers. This matrix-based analysis was particularly valuable for

comparing how different types of accounting firms approached AIDA adoption through multiple theoretical lenses. For example, while the DCs framework helped explain strategic-level decisions, the SAP and TIP perspectives provided insights into the everyday practices and technology enactments that shape how these strategic decisions are operationalised.

The matrices are presented in table format, summarising key variables like exploratory initiatives, organisational focus, responsiveness, structural and process changes, and internal practice transformations, enabling direct comparison of patterns and differences across firms and firm-types. Specifically, Tables 7-1, 7-2, and 7-3 provide firm-level data, detailing findings for individual firms (e.g., Firms A through L), while Tables 7-4 and 7-5 aggregate data at the firm-type level (Big 4s, Mid-tiers, Boutiques), summarising trends across these groups. The analysis is enriched by representative quotes from interviews, which illustrate and validate each identified theme, ensuring the matrices facilitate both the analytical process and presentation of findings while preserving the richness of the original data through participant voices.

6. Theme Development

Based on the cross-case analyses at both firm and firm-type levels, themes were developed that captured key patterns in how accounting firms develop capabilities for AIDA adoption. These themes integrated insights from all three theoretical perspectives, providing a comprehensive understanding of both strategic and practice-level dynamics.

The theme development process involved iterative movement between data, matrices, and theoretical concepts, ensuring that emergent themes were both empirically grounded and theoretically informed. This abductive approach (Dubois and Gadde, 2002) allowed for refinement of theoretical understanding through engagement with empirical data, leading to more insights about capability development processes.

Key themes that emerged from this process included:

- The role of organisational focus (client-centred vs. process-oriented) in shaping AIDA adoption approaches
- The importance of structural changes (innovation teams, coordination mechanisms) in facilitating AIDA integration

- The transformation of internal practices through cross-functional collaboration, digital upskilling, and role redefinition
- The influence of firm size and market position on technology selection rationales and implementation approaches
- The distinctive barriers and enablers experienced by different firm types in their digital transformation journeys
- These themes provide the foundation for the findings presented in Chapter 7, offering a theoretically-informed yet empirically-grounded understanding of how accounting firms develop capabilities for AIDA adoption.

6.6.2 Analytical Tools

The analysis was facilitated by the use of manual coding, a systematic approach that supported the organisation, coding, and retrieval of data. The initial coding process generated approximately 120 codes, which were subsequently refined and organised into broader thematic categories aligned with the research questions.

For the data display stage of the analysis, and in order to facilitate cross-comparison between firm types and categories, the coded data was summarised onto an Excel spreadsheet with columns corresponding to the pre-determined categories with a row for each accounting firm. Certain categories were sub-coded into characteristics. This approach allowed for a systematic organisation of the data while maintaining the richness and context of participants' responses.

Smith and Hesse-Biber (1996) found that data analysis software used by qualitative researchers was largely used for organisational purposes. Qualitative data analysis software like NVivo was considered but eventually not used for the coding. While such software can be helpful in manipulating segments of text efficiently and can add rigour to the analysis process by permitting quick and accurate searches, such searching needs to be followed up with manual scrutiny to thoroughly interrogate the data (Welsh, 2002), which the researcher had already done through manual coding. Furthermore, such software does not have the functionality to identify suitable coding categories or deduce underlying themes. Rather, it requires the analyst's expertise, which once again would be more easily done through manual coding instead of using a software tool.

The analytical process resulted in an in-depth understanding how accounting firms develop capabilities for AIDA adoption, with findings organised according to the research questions and reflecting the integrated theoretical framework developed in Chapter 5. For RQ1 and RQ2, the analysis primarily employed the DCs framework lens to examine firm-level approaches to sensing, seizing, and reconfiguring. For RQ3 and RQ4, the analysis integrated all three theoretical perspectives to identify patterns at the firm-type level, highlighting how Big 4s, Mid-tiers, and Boutiques differ in their strategic rationales for AIDA adoption and their approaches to overcoming barriers and cultivating enablers.

6.6.3 Research Quality and Methodological Rigour

Several measures were taken to ensure that research quality was maintained through this study, directly addressing the interpretivist epistemological position taken. Key to ensuring quality was the use of multiple theoretical lenses (DCs, SAP, and TIP) that provided different ways of examining the same capability development processes. This approach reduced reliance on any single theoretical perspective while strengthening analytical robustness.

Data collection captured multiple perspectives across different firms, organisational levels, and functional roles, enabling cross-validation of accounts across the sample. This approach examined digital transformation initiatives from various viewpoints while maintaining focus on firm-level practices and processes rather than individual experiences. The matrix-based analysis facilitated a systematic yet rigorous comparison across cases, ensuring that patterns emerged from evidence rather than the researcher's assumptions.

The iterative analytical process described throughout this chapter enabled continuous validation of the data collected, where emerging insights were tested against subsequent data collection and analysis. This process involved ongoing refinement of codes and themes to ensure that theoretical interpretations remained grounded in empirical evidence rather than predetermined expectations. Combined with the multi-theoretical approach and systematic cross-case comparison, these measures ensured research quality and validity were not compromised despite relying exclusively on interview data, while remaining consistent with the interpretivist foundations of this research.

6.7 Limitations

Whilst the sample of 24 interviews across 11 accounting firms is comprehensive for a qualitative study, the findings cannot be extrapolated to the full population of accounting

firms in Singapore or beyond. The sample used in this study may be unrepresentative of all accounting firms because the sample is a self-selected group of relatively high-profile firms who have indicated their willingness to participate in the research.

Data were coded and themes identified solely by the researcher because of the nature of a doctoral study. However, the methodology and analysis, including the coding process, was discussed with, and agreed by, the researcher's supervisors. While future studies could involve other people to act as independent checks on the coding and development of themes, Yardley (2000) observes that, whilst it is possible for two people to code text in the same way, "this does not exclude an element of subjectivity in the interpretation of the data" (p. 218).

This research relied exclusively on primary data from semi-structured interviews. Further work on the areas of potential difference highlighted in the research could be subject to more extensive sampling and potentially incorporate diverse data sources to provide additional context and verification.

6.8 Summary of Research Methodology

This chapter has outlined the methodological approach employed to investigate how accounting firms develop DCs for AIDA adoption. Building upon the foundation of the literature reviewed in Chapters 2 to 4 and subsequently conceptualised in Chapter 5, this research adopts an interpretivist epistemology and subjectivist ontology, employing a qualitative multiple case study approach to explore AIDA capability development processes across different types of accounting firms in Singapore.

The research philosophy reflects the understanding that capability development for AIDA adoption is a socially constructed phenomenon, shaped by organisational actors' interpretations and enacted through their everyday practices. This philosophical stance aligns with the integrated theoretical framework that combines the DCs perspective with practice-based approaches to examine both strategic and operational dimensions of capability development.

Data was collected through semi-structured interviews with 24 senior professionals from 11 accounting firms, spanning Big 4, Mid-tiers, and Boutiques categories. All participants were involved in digital transformation initiatives incorporating AIDA technologies, though their level of involvement varied from strategic decision-making to practical implementation.

This diversity of perspectives enriched the dataset, providing insights into how AIDA adoption unfolds across different organisational levels.

The analysis combined detailed cross-case comparison using Miles and Huberman's (1994) matrix-based analytical techniques. As analysis progressed, similarities within firm categories led to aggregation at the firm-type level, revealing distinctive patterns associated with different categories of firms. The analytical approach integrated multiple theoretical perspectives, with the DCs framework providing the primary lens for RQ1 and RQ2, while the SAP and TIP perspectives complemented this framework for the analysis of RQ3 and RQ4.

Research quality was ensured through several mechanisms despite the absence of secondary data. The rigorous application of multiple theoretical perspectives (DCs framework, SAP, and TIP) provided a form of theoretical triangulation, allowing the data to be examined from different analytical angles. Member checking was employed, where preliminary interpretations were shared with selected participants to validate and refine the researcher's understanding. Throughout the research process, peer debriefing sessions with academic supervisors provided critical feedback that helped strengthen the analysis and challenged potential biases in interpretation. Additionally, a detailed audit trail was maintained, documenting all methodological decisions, coding processes, and analytical steps, enhancing the transparency and dependability of the research. The focus on depth rather than breadth in data collection, with interviews continuing until theoretical saturation was reached, ensured rich, detailed accounts that compensated for the absence of secondary data triangulation. Ethical considerations were addressed through informed consent, confidentiality measures, and respect for participants' autonomy and perspectives.

While acknowledging certain methodological limitations related to sample composition, methodological approach, and the reliance on interview data without substantial secondary data triangulation, the research design aims to generate rigorous, trustworthy insights into this important phenomenon. The depth and richness of the primary data collected provided a solid foundation for understanding the complex, contextual nature of capability development for AIDA adoption.

The findings from this analysis, presented in Chapter 7's Cross-Case Analysis, will contribute to addressing the research aim and objectives established in Chapter 5, providing a comprehensive understanding of how accounting firms of different sizes and market

positions navigate the challenges and opportunities of digital transformation through the development of capabilities for AIDA adoption.

CHAPTER 7. CROSS-CASE ANALYSIS AND EMERGENT FINDINGS

7.1 Introduction

This cross-case analysis chapter investigates how accounting firms adopt Artificial Intelligence-driven Analytics (AIDA) technologies. These technologies are becoming increasingly integral to the operations of accounting firms as they pursue digital transformation.

This chapter examines the interview data using conceptually ordered displays in the form of multiple matrices to compare key themes and cross-case findings (Miles and Huberman, 1994) across different firms. The cross-case analysis presented in this chapter focuses on how the unique characteristic of each firm shapes their digital transformation journey particularly when it comes to the implementation of AIDA technologies. The analysis revolves around the four research questions and draws on both firm-level narratives and aggregated data at firm-type level, highlighting the similarities and differences in the various digital transformation journeys of accounting firms.

The chapter seeks to answer the research questions, beginning with how firms sense and seize AIDA opportunities (RQ1) and progressing through to how they reconfigure their structures, processes, and practices to facilitate AIDA adoption (RQ2), and the rationale behind choosing specific AIDA technologies (RQ3). Finally, the chapter explores how accounting firms overcome barriers and cultivate enablers to drive digital transformation through the use of AIDA technologies (RQ4).

7.2 RQ1: How do accounting firms sense and seize opportunities for adopting Artificial Intelligence-driven Analytics technologies?

This section details the cross-case findings on how accounting firms sense and seize opportunities to adopt AIDA technologies. The following sub-sections break down the analysis by focusing on two key themes: recognising AIDA opportunities (7.2.1), which addresses how firms identify and assess technological opportunities, and implementing AIDA for enhanced client services (7.2.2), which discusses how firms capitalise on the identified AIDA opportunities to improve service delivery.

7.2.1 Sensing AIDA Opportunities

This theme details how accounting firms anticipate market trends and identify the appropriate AIDA technologies to enhance their operations so they can cater their services to client demands. In addition to monitoring technological advancements, firms are also proactively assessing AI's potential to reshape both internal workflows and client service delivery.

The data shows that accounting firms' ability to recognise AIDA opportunities is shaped by two closely linked elements: (i) their *organisational focus* and (ii) the *exploratory initiatives* they engage in. Each firm's organisational focus relates to their priorities when seeking to adopt AIDA. Some firms have a strong *client focus* while others prioritise *operational impact*. The organisational focus for each firm guides their exploratory initiatives, of which there are four types involving: (1) *profiling their clients' readiness*, (2) *tracking technological trends*, (3) *mapping their operational workflows*, or (4) *piloting technology projects*. The *responsiveness level*, which measures firms' level of proactiveness in seeking out opportunities to adopt AIDA, represents an indicator for how effective firms are in both elements. Firms with a stronger alignment between their organisational focus and the four types of exploratory initiatives are deemed as "*Highly Proactive*" in identifying AIDA opportunities.

7.2.1.1. Organisational Focus: Client-Driven AIDA Adoption

Clients increasingly expect their accounting firms to use AIDA technologies to enhance decision-making, optimise workflows, and provide predictive insights. These expectations are compelling firms to adopt novel technologies to meet evolving demands. The pressure to innovate has become a defining characteristic of the contemporary accounting services marketplace.

At Landmark Co (Firm A), a Big 4 firm serving as an well-established reference point in the accounting industry that balances their accounting expertise with measured technological advancement, the pressure to integrate machine reading capabilities has been palpable. Similarly, Keystone Co (Firm D), which positions itself as their client's central support through visualisation and analytics platforms, has observed a fundamental shift in client expectations. This transformation reflects broader market trends toward technology-enabled service delivery.

A senior manager at Keystone Co articulates this evolution in client expectations:

"Clients now expect us to be attuned with these tools out there. Anything that's new in the market, they expect big firms to have some time to play around with these tools. Often, these insights involve behavioural or operational patterns within their organisations that they might not have recognised or understood in depth." (#9-D-SeniorManager)

The transformation from service provider to technology pioneer represents a significant evolution for accounting firms. In this new landscape, clients seek firms capable of leveraging AIDA to uncover previously hidden patterns and generate actionable insights. Such capabilities now constitute a critical component of perceived service value in the accounting profession.

The competitive implications of technological alignment become evident in observations from Reliable Co (Firm E), a mid-tier firm known for its dependable servicing ethos when it comes to digital transformation. A partner notes the existential risk of technological laggards in the marketplace, underscoring how technological competence is becoming a defining factor in client retention:

"If we're not digitalising at the pace of the external environment, our clients may choose other providers who are more aligned with current technological trends. It's crucial for us to stay relevant and updated to retain our clients." (#16-E-Partner)

Six of the 11 firms (Landmark Co, Safeguard Co, Keystone Co, Reliable Co, Forward Co, and Venture Co) demonstrate a Client-Centred organisational focus, structuring their exploratory initiatives to anticipate client expectations and align service delivery accordingly. The pressure to integrate AIDA technologies intensifies as firms recognise the risk of client attrition to competitors offering superior AI-enabled solutions. This competitive dynamic creates powerful incentives for firms to maintain technological currency in their service offerings.

Landmark Co actively monitors client engagements to identify opportunities for AI-driven automation, assessing data management capabilities and readiness for advanced analytics. Venture Co (Firm L), an innovative boutique firm exploring emerging technologies through experimental approaches balanced with practical business outcomes, similarly identifies AIDA opportunities by evaluating client openness towards business transformation and process automation. These proactive approaches enable firms to anticipate client needs rather than merely responding to explicit demands.

In increasingly complex financial markets, the convergence of client demands and regulatory compliance creates additional impetus for AIDA adoption. This convergence presents both challenges and opportunities for firms seeking to enhance their technological capabilities. The dual-purpose nature of many AIDA technologies makes them particularly valuable in addressing multiple strategic priorities simultaneously.

At Keystone Co, regulatory drivers significantly influence technology selection, as a senior manager explains:

"Our work is largely driven by regulatory expectations, such as from the MAS. There has been an increasing focus on technology risk and cyber hygiene, especially given the IT incidents and operational issues arising in banks. Consequently, a lot of our regulatory focus has shifted towards technology-based concerns." (#9-D-SeniorManager)

Regulatory requirements now intertwine intimately with technology adoption decisions. Financial authorities increasingly emphasise technology risk management, driving firms toward AIDA solutions that simultaneously enhance efficiency and strengthen regulatory compliance frameworks. This regulatory pressure creates additional momentum for technological advancement in audit and advisory services.

The dual purpose of AIDA technologies in addressing regulatory requirements while enhancing service delivery emerges clearly in further observations from Keystone Co:

"[...]our adoption of advanced AI tools for specialised tasks like contract analysis. This tool's application is particularly crucial in adapting to various legal jurisdictions, offering a tailored approach to contract management and compliance. The decision to invest in these technologies aligns closely with our corporate strategy, aiming to enhance our capabilities in serving clients more effectively [...]" (#10-D-SeniorManager)

Advanced tools for contract analysis exemplify how firms strategically deploy AIDA to navigate regulatory complexity across jurisdictions while simultaneously elevating client service effectiveness. This multidimensional value creation typifies successful AIDA implementations in the accounting sector. The ability to address multiple strategic objectives with single technological investments creates compelling business cases for adoption.

Foresight Co (Firm G), a mid-tier firm with a forward-looking approach to digital transformation while carefully piloting new technologies before implementation, demonstrates similar integration of regulatory considerations into service delivery:

"We're working on digital solutions and transformation projects, not just for client services but also internally in areas like taxation and internal audit. We're also exploring digital tool applications in compliance and regulatory practices." (#18-G-Partner)

The dissolution of traditional boundaries between service delivery and regulatory compliance represents a strategic shift, with AIDA technologies serving as the connective tissue across firm functions. This integration enables more holistic approaches to both client services and regulatory compliance. The synergies between these previously separate domains create opportunities for enhanced efficiency and effectiveness.

Evolving regulatory standards create additional implementation challenges, as noted by a partner at Reliable Co:

"Recently, with changes in auditing standards, especially regarding technology solutions, there's been a heightened emphasis on maintaining quality and documentation standards. This has introduced a challenge: when adopting new technology tools, we must also consider how their output will be reviewed." (#15-E-Partner)

Technology adoption thus entails multi-dimensional complexity: firms must implement tools and simultaneously ensure outputs meet documentation standards for thorough review under evolving audit frameworks. This complexity requires sophisticated implementation approaches that address both technological and regulatory dimensions. The intersection of technological innovation and regulatory requirements creates a challenging but potentially rewarding strategic landscape.

The transformation of client expectations reflects a profound shift from compliance-focused services toward data-driven, forward-looking insights. This evolution redefines the fundamental value proposition of accounting services in contemporary markets. The implications for service design and delivery are far-reaching.

A senior manager at Trailblazer Co (Firm C), a pioneering Big 4 firm that is often first to implement new technologies and were one of the early ones that integrated data analytics and advanced digital tools into their accounting work, articulates this evolution:

"[...]clients are increasingly seeking insights beyond traditional audit compliance. To address this, we've developed tools targeting the financial statement close process, utilising general ledger data. These tools offer operation effectiveness insights and

facilitate systematic, visually clear presentations, leading to more meaningful and insightful conversations with clients." (#11-C-SeniorManager)

The trajectory from compliance verification to strategic insight generation represents a fundamental reconceptualisation of client service value. By analysing general ledger data to deliver operational effectiveness insights, firms transcend traditional compliance boundaries to facilitate more substantive, strategically oriented client conversations. This evolution fundamentally transforms the nature of client-auditor relationships.

Client expectations have undergone a paradigmatic shift, moving from compliance as a baseline requirement toward demanding sophisticated, data-driven insights that empower strategic business decisions. This transformation compels accounting firms to continually refine their exploratory initiatives to align with evolving client demands. The evidence suggests that client-centric firms fundamentally orient their AIDA adoption strategies toward enhanced service delivery and value creation.

7.2.1.2. Organisational Focus: Process-Oriented AIDA adoption

Beyond client-centricity, a complementary organisational focus emerged from the research: process-oriented AIDA adoption. Five firms (Trailblazer Co, Benchmark Co, Foresight Co, Synergy Co, and Catalyst Co) demonstrate this orientation, pursuing AIDA technologies primarily to enhance operational efficiency. While engaging in the same exploratory initiatives as client-centric firms, their priorities centre on identifying technologies that streamline workflows and optimise operations. This orientation reflects a strategic emphasis on internal process enhancement as a pathway to improved service delivery.

Trailblazer Co exemplifies this approach through systematic process reviews, technological trend tracking, and identification of suitable AI and machine learning integration points. The firm's evaluation encompasses standardisation of global platforms and cross-border collaboration, alongside industry patterns in digital infrastructure development. This comprehensive approach enables strategic alignment between technological capabilities and operational requirements.

A senior manager describes their incremental technological evolution:

"Initially, our process was very manual, involving printing and reviewing with pen and paper. We've transitioned to using PDF editors, enabling electronic amendments and collaboration with (offshore) offices. This digital shift allows us to consider further

automation, like using machine learning for analysing general ledgers to identify non-deductible or taxable items. The key capability for digital readiness is leveraging technology to streamline manual processes… The crux of successful digital transformation lies in investing in new technologies to enhance efficiency and accuracy." (#7-C-SeniorManager)

The developmental sequence illustrates the progressive nature of digital transformation—evolving from rudimentary digitisation (paper to PDF) toward sophisticated AIDA implementations incorporating machine learning. The core value proposition emerges clearly: streamlining manual processes while simultaneously enhancing efficiency and accuracy. This progression demonstrates the evolutionary nature of technological adoption in accounting services

Synergy Co (Firm H), a mid-tier firm that emphasises the synergistic potential of human-technology collaboration, similarly tracks technology trends and pilots AIDA technologies targeted at labour-intensive processes. Their strategic focus on operational efficiency drives technology selection decisions. The firm's approach balances technological innovation with practical implementation considerations.

"In the past, auditing groups of companies involved manually consolidating accounts, trial balances, and general ledgers in Excel. However, we started exploring RPA as a way to automate these tasks, identifying it as a solution to streamline and improve the audit process. This exploration was driven by the need to save time and reduce the labour-intensive nature of these activities." (#19-H-SeniorManager)

Process-oriented firms strategically target repetitive, labour-intensive tasks for automation. By focusing on consolidation of accounts and trial balances—traditionally time-consuming manual processes—firms significantly enhance efficiency while reducing professional staff burden. This targeted approach delivers immediate operational benefits while creating capacity for higher-value activities.

Both Trailblazer Co and Synergy Co seek AIDA technologies specifically to alleviate workforce constraints by automating labour-intensive tasks. Through operational workflow mapping, they identify efficiency bottlenecks amenable to technological intervention. Pilot implementations allow evaluation of tool suitability before broader deployment, minimising implementation risks while maximising adoption success.

Beyond process automation, firms increasingly recognise AIDA's potential to transform audit processes through advanced analytics, enabling granular examination of data for previously unreachable insights. This analytical capability enhancement represents a qualitative rather than merely quantitative improvement in audit processes. The ability to uncover patterns and anomalies within comprehensive datasets fundamentally transforms the nature of audit evidence and findings.

The managing partner of Benchmark Co (Firm F), a mid-tier firm known for establishing clear standards for digital processes in accounting while maintaining a personalised service approach, articulates this analytical transformation:

> *"It's now integral, enabling us to perform deeper, more detailed analyses, such as examining sales data on a daily rather than monthly basis. This has significantly enhanced our auditing capabilities, allowing us to identify anomalies we couldn't before. For instance, we can now perform analysis on a year's worth of data, looking at daily fluctuations to gain insights we previously couldn't, thanks to AI and data analytics." (#17-F-ManagingPartner)*

AIDA technologies fundamentally transform analytical depth and granularity. The shift from monthly to daily sales data analysis represents a paradigmatic change in audit capabilities, enabling pattern and anomaly identification previously invisible at aggregated levels. This enhanced analytical capability provides both efficiency benefits and quality improvements in audit processes.

The evidence suggests AIDA adoption follows a progressive trajectory, beginning with basic process improvements before advancing toward sophisticated analytics. What commenced as initiatives to reduce manual processing evolved into broader opportunities for accounting professionals to analyse extensive datasets, detect anomalies with unprecedented precision, and enhance evaluation accuracy and depth. This progression reflects the expanding possibilities of AIDA technologies as firms gain implementation experience and confidence.

Process-oriented firms, while focused on operational efficiency, simultaneously assess client technology readiness. This assessment enables deeper understanding of client needs and informs capability development to enhance client value. The complementary relationship between internal process optimisation and external service enhancement creates mutually reinforcing benefits.

The relationship between process improvement and service enhancement emerges clearly in the approach taken by Catalyst Co, a boutique firm that accelerates transformational change in financial processes through AI implementation, as articulated by the managing partner:

> *"Recently, we've finalised our approach, which is still an ongoing process. The transformation includes leveraging technology to enhance our financial controller capabilities and everything under that role, like accounting operations, bookkeeping, accruals, management report preparation, and setting up controls…. We're exploring advancements in AI and machine learning to enhance our services. The goal is to stay ahead of industry trends and ensure that our team is equipped with the latest skills and tools. We also plan to deepen our focus on client-centric services, leveraging technology to provide more tailored and efficient solutions." (#21-J-ManagingPartner)*

Process improvements and service enhancements function as complementary dimensions rather than competing priorities. By enhancing internal processes through AIDA technologies, firms simultaneously transform service offerings, delivering increasingly tailored, efficient client solutions. This synergistic relationship maximises return on technological investments while enhancing competitive positioning.

The emphasis on operational efficiency through AIDA adoption reveals consistent patterns of technology deployment to simplify processes, automate routine tasks, and boost productivity. Exploratory initiatives demonstrate ongoing commitment to workflow and operational improvement. Process-focused AIDA opportunity identification yields dual benefits: enhanced operational efficiency alongside improved client service quality and value.

The above insights are presented in a tabular form in **Table 7-1** to summarise the cross-case findings on the exploratory initiatives, organisational focus, and responsiveness levels of the 11 firms and how they go about recognising AIDA opportunities.

Table 7-1: Cross-case findings on sensing AIDA opportunities

		Exploratory Initiatives				
Firm	**Organisational Focus**	**Client Readiness Profiling**	**Tech Trends Tracking**	**Workflow Mapping**	**Technology Piloting**	**Responsiveness Level**
Landmark Co (Firm A)	Client-Centred	✓	✓	✓	✓	Highly Proactive
Safeguard Co (Firm B)	Client-Centred	✓	✓	✓	✓	Moderately Proactive
Trailblazer Co (Firm C)	Process-Oriented	✓	✓	✓	✓	Highly Proactive
Keystone Co (Firm D)	Client-Centred	✓	✓	✓	✓	Moderately Proactive
Reliable Co (Firm E)	Client-Centred	✓	✓	✓	✓	Highly Proactive
Benchmark Co (Firm F)	Process-Oriented	✓	✓	✓	✓	Highly Proactive
Foresight Co (Firm G)	Process-Oriented	✓	✓	✓		Highly Proactive
Synergy Co (Firm H)	Process-Oriented	✓	✓	✓		Highly Proactive
Catalyst Co (Firm J)	Process-Oriented	✓	✓	✓	✓	Highly Proactive
Forward Co (Firm K)	Client-Centred	✓		✓	✓	Moderately Proactive
Venture Co (Firm L)	Client-Centred	✓	✓	✓		Highly Proactive

7.2.1.3 Responsiveness Level: Proactiveness in Exploring Opportunities to Adopt AIDA

The findings reveal varying responsiveness levels in recognising AIDA opportunities among the 11 accounting firms. While some firms categorised as "*Highly Proactive*" engage in all four types of exploratory initiatives, others take a more targeted approach depending on their organisational focus and may not be involved in some. Similarly, "*Moderately Proactive*" firms may also be active across all four initiatives but may be more measured when incorporating their findings with their decision on whether to move ahead with the adoption of specific AIDA technologies.

This distinction in responsiveness levels reflects how firms balance their organisational focus with their exploratory initiatives. "*Highly Proactive*" firms tend to have a greater sense of urgency when identifying AIDA opportunities and demonstrate more flexibility, whereas "*Moderately Proactive*" firms are often more deliberative when exploring AIDA opportunities. The varying levels of responsiveness levels serve as a precursor to understanding how accounting firms transition from recognising AIDA opportunities to actively implementing AIDA to improve how they service their clients.

Having examined how firms recognise opportunities to adopt AIDA technologies, the analysis now turns to explore how these firms implement these technologies to enhance the services they provide to clients. This transition from identifying opportunities to practical implementation represents a crucial step in firms' digital transformation journeys, revealing how their strategic priorities shape their technological choices.

7.2.2. Seizing AIDA Opportunities for Enhanced Client Services

Once accounting firms recognise the transformative potential of AI, the next critical step is to act on the identified AIDA opportunities by implementing the appropriate AIDA tools to improve client services. This requires strategically aligning AIDA adoption with clients' needs and regulatory compliance requirements while also considering how it helps make operations more efficient. The findings suggest that adoption is guided by three interrelated factors: (i) firms' *execution priorities*, (ii) the specific *use cases* of AIDA, and (iii) the *scope of implementation* within the firm. The extent of resources dedicated to facilitating AIDA's implementation, whether *minimal*, *moderate*, or *significant*, further impacts the scale and effectiveness of its adoption.

The use cases, scope of integration, and resource allocation level for each firm are motivated by priority areas that can be categorised into: *Client-Focused Enhancements*, *Operational Efficiency*, and *Compliance and Risk Management*. These areas are indicative of what firms prioritise when implementing AIDA technologies. They serve as the foundation for accounting firms' strategic decisions, allowing them to add value to the services they provide to their clients.

7.2.2.1. Priority Area: Client-Focused Enhancements

AI has fundamentally reshaped how firms engage with their clients, especially in the provision of personalised services. Firms implementing AIDA technologies with a focus on *Client-Focused Enhancements* are actively using these tools to transform their service offerings.

A partner from Trailblazer Co highlights the critical role that data analytics processes play in uncovering findings that were previously unattainable either due to a lack of data or the absence of tools capable of digging deep into the data:

> *"Data analytics has become a vital part of our process. It allows us to perform in-depth relationship and process mapping, providing valuable insights to our clients that were previously not as accessible. These analytics are crucial in highlighting deficiencies or areas for improvement in controls, thereby adding value to our audit services."*
>
> *(#3-C-Partner)*

Using AIDA technologies enables firms to deliver deeper insights by mapping relationships and processes that would be difficult to identify manually. The integration of these technologies into audit processes transforms the firms' value proposition, moving beyond compliance and verification to proactive identification of control deficiencies and improvement opportunities. Such capability enhancement represents a shift in how accounting firms conceptualise and deliver value to clients in an increasingly complex business environment.

Another partner from Trailblazer Co offered an additional perspective on their technology implementation which faced resistance at first but secured buy-in after clients saw its measurable impact:

> *"The journey towards integrating digital tools into our workflow has been largely positive. There was initial resistance, particularly from more seasoned staff, due to apprehensions*

about new technologies. However, as the tangible benefits of these tools became evident, we noticed a significant shift in attitudes. Our clients now not only expect but also value the enhanced insights provided by our data analytics capabilities. This shift has been instrumental in elevating the perceived value of our services."

(#5-C-Partner)

The evolution in client perceptions regarding AIDA technologies has been transformative across the professional services landscape. Despite initial resistance, both staff and clients came to appreciate the value these tools provide, ultimately elevating the perceived value of the firm's services from simple compliance to meaningful business insights. This change in client expectations has also changed the accounting profession's value proposition as service providers.

Similarly, the managing partner of Catalyst Co highlighted how AIDA tools like Power BI (when integrated with Azure AI) enhance accuracy and efficiency compared to traditional manual methods, ultimately improving the quality of service provided to clients:

"Using data analytics tools like Power BI has increased the accuracy, efficiency, and quality of our work. Before, we manually reviewed vouchers; now, analytics automate this process, enhancing efficiency in accounting. We are expanding our use of data analytics, although it requires adapting to different skill sets among our staff."

(#21-J-ManagingPartner)

AIDA implementation necessitates workforce adaptation alongside technology adoption. Professionals must develop new skills so they can use these technologies effectively. The automation of previously manual processes not only improves accuracy and efficiency but fundamentally alters the nature of professional work, creating opportunities for accounting professionals to engage in more strategic, value-adding activities.

Power BI is also known for its visualisation capabilities and firms can use it to deliver dynamic, real-time insights to clients. A senior manager from Synergy Co emphasised on the role of AIDA dashboards in organising and presenting data effectively, to support decision-making and risk identification:

"Power BI is another tool that proved very useful, especially for auditors. It's beneficial for creating dashboards and reports for audit committees, allowing for better visualisation of information. The adoption of Power BI was smoother, possibly because it's a Microsoft

tool and people were already familiar with Microsoft's interface… The general approach was to clean and organise data… and then present it through Power BI dashboards."

(#19-H-SeniorManager)

Visualisation tools transform complex raw data into accessible information that clients can better understand, thereby enhancing decision-making capabilities. Using intuitive visual dashboards to present complex financial information, accounting firms significantly improve their ability to communicate meaningful insights to stakeholders with varying levels of financial expertise. This enhances client service delivery in a way that complements the analytical depth provided by AIDA technologies.

By combining multiple AIDA use cases of advanced analytics and data visualisation, these firms prioritise the offering of services that are finely tuned to their clients' unique contexts and needs. At the same time, with AIDA technologies enabling them to work better with complex datasets, firms can not only provide solutions to clients' current challenges but also anticipate future needs. Prioritising clients in their AIDA implementation efforts is also indicative of the commitment these firms have towards the provision of personalised services that are keeping up with the constantly evolving business environments which their clients operate in.

While some firms prioritise *Compliance and Risk Management* in their AIDA implementation efforts, this does not preclude them from enhancing the personalisation of their client services. In fact, the adoption of AIDA technologies could sometimes give firms a head-start when they need to advise clients in the face of regulatory changes. In such cases, firms have the opportunities to deliver more customised solutions that address their clients' needs. A partner from Landmark Co sees the global minimum tax rule as an opportunity for them to provide technology-based solutions to serve their clients:

"…one of the big changes that is upcoming is the global minimum tax rule… We see a gap in the market in terms of being able to have something customised to assist clients with their compliance efforts in the future, once the new rules are established… Strategically, we see that due to certain changes in tax rules or changes in the business environment that our clients operate in, there's more and more reliance or need for certain technology or software-based solutions."

(#1-A-Partner)

Strategic anticipation of regulatory changes creates valuable opportunities for developing technology-based client solutions that address emerging compliance challenges. By developing customised tools to help clients comply with complex regulations such as the global minimum tax rule, firms position themselves to address market gaps while providing valuable services to help clients better handle regulatory changes. This forward-looking approach to service development demonstrates how regulatory challenges can be transformed into strategic opportunities through the adoption of AIDA technologies.

In essence, Landmark Co's investment into AIDA solutions serves a dual purpose of regulatory standards compliance while also delivering customised services to meet their clients' needs. By using AIDA technologies to address changes in regulations, Landmark Co ensures that their clients' remain compliant with new standards while remaining adaptable to their clients' changing circumstances. In this way, their prioritising of *Compliance and Risk Management* effectively ties in with being partners that add-value through better provision of services to clients.

7.2.2.2. Priority Area: Operational Efficiency

AIDA technologies with automation functionalities have also considerably changed the way that accounting firms operate. With AI-driven automation deployed across various operations, some of the manual work that accounting professionals are bogged down by can be simplified or automated altogether. At the same time, automation also means that the workforce can be strategically redeployed away from routine tasks to higher-value activities.

The power of automation to transform accounting workflows is evident in the experiences shared by Venture Co's managing partner, who describes their strategic focus:

> *"The focus has been on automating tasks that are repetitive and of relatively low value, thus streamlining processes and enhancing efficiency… By implementing RPA, we can eliminate the need for our staff to spend time on tedious data entry, freeing them up to focus on more strategic and value-added activities."*
>
> *(#23-L-ManagingPartner)*

The strategic targeting of repetitive, low-value tasks for automation reflects the priority that technology implementation improves *Operational Efficiency* while concurrently allowing for professional development. By eliminating tedious data entry and similar routine tasks, firms not only improve process efficiency but also enhance the professional experience of

their staff. This dual benefit of automation creates a virtuous cycle where operational improvements support talent retention and development while enhancing client service quality.

These sentiments are echoed by a senior manager from the same firm with a special mention of the time-saving benefits that automation brings:

"One of the most significant advantages is the tremendous time savings that can be realised by automating manual data entry and streamlining cumbersome processes. Automating data entry and leveraging technologies like OCR and ML can drastically reduce the time spent on these repetitive tasks, freeing up staff to focus on higher-value activities such as analysis, advisory, and client relationship management."

(#24-L-SeniorManager)

The combination of multiple technologies such as OCR and ML creates powerful automation solutions that helps to deal with different aspects of data processing. The significant time savings achieved through these AIDA implementations allow for strategic reallocation of professional resources toward analysis, advisory, and customer relationship management. The shift from data processing to insight generation and advisory services helps with the provision of greater value to clients through improved service delivery.

The appeal of automation is not limited to firms prioritising operational efficiency. Streamlining processes through automation feeds back into other execution priority areas like client-focused enhancements as well as compliance and risk management. This sentiment is captured well by a partner from Trailblazer Co:

"Automation stands out as another significant benefit. Tools like data sniper have simplified tasks that previously required extensive manual effort, such as searching through large documents. This automation is more accurate and time-efficient than manual methods."

(#3-C-Partner)

Automation brings with it multiple benefits including improved accuracy, time efficiency, and reduction of tedious manual effort. Particularly for tasks like searching through large documents for specific information, AIDA technologies simplify such tasks by speeding up the process while strengthening reliability. The reduction in human error combined with

significant time savings further enhances the value that AIDA implementation brings to various accounting service functions.

With a commitment to operational efficiency when adopting AIDA, Venture Co demonstrates that using AI-enhanced automation tools boosts productivity and accuracy, which then helps with their client service delivery. This is likewise seen in Safeguard Co, a Big 4 firm known for focusing on data security and client confidentiality aspect of digital transformation, where these tools are bundled together with customised practice management systems to streamline document processing and also facilitate cross-functional knowledge sharing. Integrated system approaches such as these

A senior manager from Safeguard Co, describes:

"One system enhanced recently is related to OCR, which is used for scanning and reading documents. This was implemented to aid in knowledge sharing within the firm. We often receive tax queries from IRAS (Singapore tax authority), sent by clients, often in a non-selectable format. This OCR tool allows us to select text, anonymise client names, and upload it onto a searchable platform. This helps us see trends in IRAS queries and reach out to relevant teams with prior experience in similar matters."

(#2-B-Director)

OCR implementation serves multiple organisational purposes beyond basic document processing, including enhanced knowledge management and expertise sharing. By converting previously inaccessible document content into searchable text, OCR enables firms to identify patterns in clients' inquiries and facilitate better cross-functional collaboration. This enhanced knowledge-sharing improves both the consistency and quality of client service while optimising the utilisation of firm-wide expertise.

Specific to audit processes, which are generally perceived as being time-consuming and laborious for accounting firms and their clients, automation has prompted a change in the right direction. AIDA technologies raise the efficiency and reliability of audit functions by automating tasks such as data completeness checks, thereby reducing time spent on arduous routines, ultimately improving audit quality. A partner from Foresight Co briefly explains how their audit practices have been changed thanks to automation:

"In auditing, we've implemented a system for general testing, drastically improving data completeness checks over traditional Excel methods. This automation ensures that data analysis is more comprehensive and accurate."

(#18-G-Partner)

The replacement of traditional Excel-based methods with automated systems enhances both the comprehensiveness and accuracy of audit procedures. By ensuring complete data analysis rather than relying on sampling techniques, automation improves the fundamental reliability of the audit process. This improvement in both the quality and efficiency of audit services demonstrates how operational enhancements through AIDA technologies directly translate to improved client outcomes.

This shows that integrating automation into operational workflows allows for more thorough and precise analysis by minimising error occurrence and providing higher-quality service to their clients. This is a further reflection of the widespread adoption of AI-driven automation among accounting firms being a show of desire to work more efficiently and accurately. The transformation in operational workflows consequently enhances the accountant's professional judgement by providing more comprehensive and reliable data foundations.

7.2.2.3. Priority Area: Compliance and Risk Management

As accounting firms further their digital transformation efforts, their use of AIDA technologies has increased. This has led to some firms (Landmark Co, Keystone Co, Reliable Co, Benchmark Co, and Forward Co) focusing on *Compliance and Risk Management* as their execution priority area for AIDA adoption.

The rigorous nature of audit work requires specialised software designed specifically for domain-specific analytical and documentation requirements, as noted by the managing partner of Forward Co, a boutique firm that actively encourages clients to move toward future-ready financial practices:

"Our first investment was in advanced auditing software, improving efficiency and precision. This ensures we meet compliance standards more effectively and minimises the potential for human error."

(#22-K-ManagingPartner)

Through the integration of AI-driven automation and deployment ML models for data analytics, firms are able to streamline workflows to align with changing compliance and regulatory standards. Implementing AIDA technologies has led to a noticeable change in the way routine tasks are handled. One of Reliable Co's partners noted how tools facilitated better compliance with regulations as well as the reduction of manual errors:

"AI and ML have been used to automate client accounting and payroll services, reducing manual errors and ensuring compliance with complex financial regulations across diverse industries."

(#16-E-Partner)

AIDA technologies simultaneously address two critical needs of accounting firms across their clients' diverse industry contexts: error reduction and regulatory compliance requirements. The automation of accounting and payroll services not only reduces the risk of error but also ensures consistent compliance with complex financial regulations. This affords accounting firms an advantage in service areas with strict compliance requirements, where both accuracy and regulatory adherence are crucial.

These tools also help to minimise the need for human intervention in data-intensive processes. This in turn allows firms to turn their attention to tasks of greater importance. A senior manager from Keystone Co elaborates on this within their audit services:

"Predictive analysis and dashboards, supported by AI models, allow us to focus our audits on higher-risk areas. These tools ensure compliance with auditing standards while reducing the manual effort required to analyse extensive datasets."

(#10-D-SeniorManager)

AIDA technologies enable a more strategic approach to audit services by shifting the professional focus toward high-risk areas that require in-depth investigation and expert judgment. By moving away from traditional audit processes requiring comprehensive testing to a risk-based investigation model, AIDA technologies enhance both the efficiency and effectiveness of the audit and assurance process. This approach allows auditors to uphold auditing standards while also improving the focus and precision of their audit procedures.

Using AIDA technologies now has a big influence on firms identifying high-risk areas to investigate while concurrently supporting compliance. Through applying advanced analytics to datasets, these tools help accounting professionals identify anomalies and risks to improve

decision-making for themselves and their clients. The gradual replacement of sample-based testing with comprehensive data analytics processes is changing how risk identification is done in accounting and audit services.

For Benchmark Co, they use data visualisation tools coupled with AIDA to work with their clients' complex datasets to find actionable insights, as described by their managing partner:

"Using Power BI, we were able to provide valuable visualisations for our client, showcasing areas with outstanding charges. This not only facilitated their collection efforts but also highlighted areas of financial risk, creating a demand for these insights."

(#17-F-ManagingPartner)

Visualisation tools transform raw financial data into actionable insights that deliver multiple simultaneous benefits to clients. By showcasing areas with outstanding charges, firms help clients improve collection efforts while identifying areas of financial risk that may require management attention. The ability to generate these multi-dimensional insights creates natural market demand for analytics-driven services, as clients recognise their concrete business value beyond traditional compliance reporting.

Keystone Co's senior manager also points out that ML is now integrated into audit work to enhance risk detection:

"We've begun exploring a new tool that studies journal postings from clients but incorporates machine learning. Unlike the previous tool, where we specify criteria, this one identifies atypical behaviours or journal entries that deviate from the norm across the dataset."

(#10-D-SeniorManager)

Going from rule-based to ML-based anomaly detection represents a significant change in audit methodology. Rather than relying on predefined criteria that may miss novel patterns, unusual journal entries are identified through ML algorithms that can do pattern analysis. This enhances the effectiveness of fraud detection and risk assessment processes by identifying anomalies that might evade traditional rule-based detection methods.

Another senior manager from Keystone Co details how tools allowed them to more adequately reassess their risk focus areas because they can better address customer complaints:

"In one of our engagements, we utilised technological tools to analyse customer complaints. These complaints are often extensive and unstructured, making them challenging to process manually. However, by applying technology, we were able to visualise key themes in the complaints, such as issues related to specific branches or relationship managers. This capability to visualise and analyse data enabled us to reassess our areas of risk focus more effectively."

(#9-D-SeniorManager)

AIDA technologies extract meaningful insights from unstructured data sources that would be impractical to analyse manually. By identifying patterns and themes in customer complaints, firms can redirect their investigative focus toward the most significant risk areas rather than following predetermined audit rules. Likewise, a partner from Reliable Co revealed how they turn to data visualisation tools coupled with AIDA to further sharpen their risk management approach:

"By adopting Power BI for data visualisation and analytics, we've improved our ability to identify high-risk areas, directly supporting compliance with auditing standards and enhancing client value."

(#20-E-Partner)

This highlights how visualisation tools serve multiple concurrent purposes in compliance and risk management contexts. They help firms improve risk identification, enhance compliance with auditing standards while simultaneously delivering greater value to clients through more focused, risk-based approaches. The improvement across the multiple dimensions of compliance, risk management, and client value provides compelling justification for AIDA adoption in accounting services.

Another vital aspect of compliance is document management, where processes are traditionally manual in nature. With the deployment of digital systems that have AIDA technologies integrated within, tasks across different service functions can be completed more efficiently. Benchmark Co's managing partner mentions Data Snipper as a particularly helpful tool to replace the manual vouching process:

"Data Snipper assists us in vouching now that all documents are digital. It helps identify matches or discrepancies among sets of documents, streamlining compliance checks and improving audit accuracy."

(#17-F-ManagingPartner)

Such tools are key to the centralising of documentation and communication, further easing compliance work as described by Keystone Co's senior manager:

"The centralised audit trail maintained by our tools ensures continuity, allowing new team members to quickly get up to speed, which is crucial for compliance purposes."

(#9-D-SeniorManager)

Document processing tools transform traditional vouching procedures by automatically identifying matches and discrepancies between document sets, while simultaneously enhancing knowledge transfer and continuity in compliance work. This automation improves the efficiency of compliance processes and enhances accuracy of audit evidence, with centralised documentation systems ensuring seamless transitions between team members. The transition from manual to automated document comparison represents a big change in the way documents are evaluated, as they address critical challenges in accounting work where staff turnover or rotation can often disrupt audit engagements.

Evidence provided by Landmark Co, Keystone Co, Reliable Co, Benchmark Co, and Forward Co demonstrates how AI-enabled automation and data analytics have enabled them to meet their execution priority of strengthening *Compliance and Risk Management*. This includes the use of *data visualisation* tools, *document processing* systems, and *ML algorithms for advanced analytics* to cut down on errors that tend to arise from manual tasks. In doing so, firms are in a better position to ensure complex regulatory standards are complied with.

7.2.2.4. Integration of AIDA Use Cases and Resource Allocation

Besides the variation in execution priorities, accounting firms typically adopt AIDA for the following four use cases: *Advanced Analytics with ML*, *Data Visualisation*, *Automation*, and *Document Processing*. AI-driven automation tools like RPA help with streamlining repetitive tasks by reducing human error and enhancing efficiency. OCR solutions provide better document processing due to improved accuracy and speed in extracting large volumes of text data. AI models can then carry out advanced analytics processes by using complex

machine learning algorithms to analyse these large datasets, supporting firms with anomaly detection and risk assessment tasks. Subsequently, the complex findings derived from the analysis are translated into intuitive data visualisations, making it easier for decision makers to interpret and then act upon.

The most widely adopted use case was advanced analytics with ML where nine out of eleven firms implementing these to enhance their client servicing, improve their operations, and support risk management. The second most common use case was to support data visualisation, with eight firms actively using visualisation tools to present complex data in easy-to-understand form for clients to act on. Automation was next in line with six firms streamlining routine tasks to meet their execution priorities. While document processing was seen in only three firms, other firms did not explicitly mention this as a use case as it is commonly integrated into tools and systems rather than seen as a standalone.

The integration scope also has a pivotal role in how AIDA technologies are applied across accounting firm operations. Firms with a *Targeted Departmental Rollout* would start introducing AIDA within specific departments or functions. This builds upon the exploratory activity of technology piloting, allowing firms to test out tool effectiveness and refine processes in specific areas before expanding into others. *Firm-Wide Integration* is more holistic, where implementation is done across multiple departments within the firm. This requires a lot more commitment but could yield better efficiencies and alignment across departments. Others take a more gradual approach with a *phased rollout*, where AIDA technologies are deployed in stages but not specific to any department or function. The staging provides flexibility for adjustments to be made between phases prior to broader rollouts being carried out.

Firms' level of commitment towards integrating AIDA technologies are observed in the extent of their resource allocation, with the evidence showing that all firms exhibit either significant or moderate investment and none demonstrating minimal investment, indicating a strong dedication to adopting AIDA solutions. *Significant investment* is seen when firms commit a high level of resources to promote AIDA adoption by allocating dedicated budgets and personnel. In contrast, *moderate investment* is identified by firms being more cautious with their approach, choosing to focus on more narrowly defined applications within specific departments.

Looking across firms' approaches, those following a targeted departmental rollout (Landmark Co and Catalyst Co) focus their AIDA adoption within select business units to

validate tool effectiveness and optimise implementation first before broadening its use. Others choose phased rollouts (Safeguard Co, Keystone Co, Foresight Co, Forward Co, and Venture Co) to allow for flexibility to when adjustments are required between implementation phases instead of focusing on specific departments. In both of these partial rollouts, firms maintain moderate investment levels, preferring to allocate resources to facilitate a more steady-paced AIDA integration while balancing it with implementation costs and risks. Meanwhile, those that go down the firm-wide integration route (Trailblazer Co, Reliable Co, Benchmark Co, and Synergy Co) are typified by extensive deployment of AIDA technologies while having significant resources invested to ensure that adoption is carried out comprehensively.

The firms' adoption of AIDA for different use cases, the extent of their integration, and how much resources they are committing to the implementation ultimately tie back to the firms' execution priority areas. Whether a firm's execution priority is *Client-Focused Enhancements, Operational Efficiency,* or *Compliance and Risk Management*, automation provides the foundational support needed to achieve these objectives. By streamlining processes and reducing manual effort, automation enables firms to allocate their resources more effectively, ultimately enhancing the value they deliver to clients. Building on the benefits from automation, firms can deploy AI models to carry out advanced analytics on complex data to enhance the value of the services provided to their clients.

Analysis of the implementation approaches of the eleven firms reveals a clear pattern regarding their use cases, integration scope, and resource allocation, all of which align with their respective execution priorities. **Table 7-2** summarises these cross-case findings, providing a structured view of how each firm implements AIDA to enhance services for their clients.

Table 7-2: Cross-case findings on seizing AIDA opportunities for enhanced client services

		AIDA Use Cases					
Firm	**Priority Area (Seizing)**	**Advanced Analytics with ML**	**Automation**	**Data Visualisation**	**Document Processing**	**Integration Scope**	**Resource Allocation Levels**
Landmark Co (Firm A)	Compliance and Risk Management	✓		✓		Targeted Departmental Rollout	Moderate Investment
Safeguard Co (Firm B)	Operational Efficiency	✓	✓	✓	✓	Phased Rollout	Moderate Investment
Trailblazer Co (Firm C)	Client-Focused Enhancements	✓	✓	✓	✓	Firm-Wide Integration	Significant Investment
Keystone Co (Firm D)	Compliance and Risk Management	✓	✓	✓		Phased Rollout	Moderate Investment
Reliable Co (Firm E)	Compliance and Risk Management	✓	✓	✓		Firm-Wide Integration	Significant Investment
Benchmark Co (Firm F)	Compliance and Risk Management		✓		✓	Firm-Wide Integration	Significant Investment
Foresight Co (Firm G)	Operational Efficiency	✓		✓		Phased Rollout	Moderate Investment
Synergy Co (Firm H)	Client-Focused Enhancements	✓		✓		Firm-Wide Integration	Significant Investment
Catalyst Co (Firm J)	Client-Focused Enhancements			✓		Targeted Departmental Rollout	Significant Investment
Forward Co (Firm K)	Compliance and Risk Management	✓				Phased Rollout	Moderate Investment
Venture Co (Firm L)	Operational Efficiency	✓	✓			Targeted Departmental Rollout	Moderate Investment

Having examined how accounting firms sense and seize opportunities for AIDA adoption in RQ1, the analysis now shifts to explore how these firms reconfigure their organisational structures, processes, and practices to effectively integrate these technologies. This represents a critical dimension of digital transformation, revealing how firms adapt their internal operations to fully leverage the potential of AIDA technologies.

7.3 RQ2: How do accounting firms reconfigure their structures, processes, and practices to integrate Artificial Intelligence-driven Analytics tools?

The cross-case findings presented in this section are centred on the organisational changes that accounting firms undergo as they integrate AIDA as part of their digital transformation. Similar to 7.2, the analysis uses the Miles and Huberman (1994) approach of data display using a table to organise and present patterns. The analysis here highlights how accounting firms are transforming as they reconfigure their organisational structures to support AIDA initiatives and redesign operational processes to maximise efficiency. In doing so, they are adapting internal practices to foster collaboration, upskill employees, and transition roles towards higher-value strategic functions. These changes collectively enable firms to better align their capabilities with the demands of a technology-driven business environment. The following sub-sections examine these changes in detail by focusing on: *structural changes* enabling AIDA integration (7.3.1), *process changes* driven by AIDA adoption (7.3.2), and culminating in the reshaping of internal practices to foster AIDA integration (7.3.3).

7.3.1. Structural Changes

With the adoption of cognitive technologies, accounting firms have started to make structural changes to simplify the integration process. From analysing the 11 firms, two key structural changes emerged: the formation of *innovation and digital teams* and the emphasis on *coordination*. These changes indicate that firms are intentional when it comes to aligning their organisational structures to meet the demands of AIDA integration while balancing their respective needs and priorities.

7.3.1.1. Innovation and Digital Teams

Often referred to as Centres of Excellence (CoE), these *Innovation and Digital Teams* tend to be the ones piloting the use of AIDA technologies in their work first. Once they have

made meaningful progress, they are then tasked to champion the efforts to scale the integration. With this centralised approach, firms are more consistent in the way they adopt technology as they can balance it out with tackling other operational challenges in various service functions.

Benchmark Co has prioritised establishing specialised innovation teams to lead their digital transformation efforts, as their managing partner explains:

"Our firm has prioritised three main areas. First, we've heavily invested in performance dashboarding. This involves providing detailed analytics not only from a financial data perspective but also incorporating operational data."

(#17-F-ManagingPartner)

These specialised teams act as both technology explorers and implementation guides, establishing the foundations for wider adoption. The managing partner further elaborates:

"We've established an innovation team within our organisation. This team plays a crucial role in boosting confidence among our less tech-savvy staff and provides necessary support in technology implementation."

(#17-F-ManagingPartner)

Innovation teams serve to drive technological exploration while concurrently supporting staff through the transition, building confidence and facilitating adoption throughout the firm. The strategic positioning of these teams between technology providers or vendors and operational staff creates a crucial and helpful bridge that supports effective knowledge transfer and AIDA implementation. Foresight Co has taken a similar approach by bringing in specialists with specific digital transformation expertise, as one partner shares:

"Recently, we've appointed a digital transformation expert to help both internally and in assisting our clients to automate their processes, which is proving to be a valuable step forward."

(#18-G-Partner)

The partner further details their strategy of identifying project champions from within existing teams:

"We've also appointed project champions from our audit teams to understand IT tools' functionality and potential workflow redesigns. These champions are audit managers interested in process improvement."

(#18-G-Partner)

A thoughtful approach to digital team formation combines external expertise with internal champions who understand the firm's existing operations. By selecting audit managers with an interest in process improvement, firms ensure that technological innovations align with practical operational needs and client service requirements. Combining external expertise and internal domain knowledge creates a powerful synergy for effective digital transformation.

Innovation and Digital Teams are unique in their commitment to spearheading and setting in motion technology initiatives like using AIDA technologies. In the case of Benchmark Co and Catalyst Co, these teams experiment with new tools in order to design digital solutions that have a practical and positive impact to improving accounting work. Their specialised focus allows for systematic testing of AIDA technologies in controlled environments before wider deployment without neglecting the accounting domain aspect.

While the key structural change seen in Benchmark Co and Foresight Co involve dedicated teams focused mainly on digital innovation, other firms (Landmark Co, Trailblazer Co, Keystone Co, Reliable Co, and Catalyst Co) have adjusted their organisational structure to combine *Innovation and Digital Teams* with *Coordination* activities. These firms place an even stronger emphasis on bridging the gap between accounting and technology so that innovation matches up with the needs of accounting work. They highlight the importance of having well-coordinated digital innovation teams to aid effective firm-wide and cross-functional implementation of AIDA technologies.

Landmark Co emphasises the importance of staff with hybrid skill sets who can bridge the worlds of accounting and technology:

"I think people with a unique combination of accounting and technology backgrounds are quite helpful, because accounting and technology together were never a traditional combination."

(#1-A-Partner)

The partner further elaborates on the communication challenges that arise without these hybrid skills:

"When I deal with them, I'm talking tax, but the technology side is talking codes, flows, and charts. We're not communicating effectively. So having someone with both backgrounds can create a consistent level... they can tell me immediately what the other side is trying to say in simple English."

(#1-A-Partner)

The communication gap that exists between accounting professionals and technology specialists represents a significant obstacle to effective digital transformation. By developing teams with hybrid skills, firms train up "translators" who can bridge this gap, ensuring that technological solutions truly address accounting needs and service requirements. These "translators" prove critical as coordinators who help to overcome the terminological and conceptual differences between accounting and technology domains.

Trailblazer Co has created a more distributed network of digital champions across organisational levels:

"We established a network of 'digital champions' across various levels of the organisation, from senior staff to managers and partners. These champions are tasked with delivering training, promoting digital initiatives, and gathering feedback from their peers."

(#3-C-Partner)

The partner also highlights their commitment to ongoing technology education:

"We recognise the importance of keeping both new and existing staff updated with technological advancements, we regularly conduct technology classes."

(#3-C-Partner)

Such digital teams tend to be structured as networks rather than centralised units, with champions embedded at various organisational levels to encourage adoption and continuous learning. This creates multiple points of technology advocacy throughout the firm, facilitating both top-down and peer-to-peer knowledge sharing while ensuring that practical implementation challenges at different organisational levels are effectively addressed.

Reliable Co has established a specialised team specifically focused on ensuring the sustainability of digital initiatives:

"To address this, we've established a digitalisation consulting team. This team works on both external and internal projects, facilitating interactions with vendors and ensuring the sustainability of our digital initiatives."

(#14-E-Partner)

Creating teams that focus not only on implementation but also on ensuring the long-term sustainability of digital initiatives is a crucial part of successful transformation. By managing ongoing vendor relationships and providing internal support to their colleagues, these specialised teams ensure that digital investments deliver sustainable value rather than becoming obsolete or underutilised over time. They long-term focus suggests that firms acknowledge and recognise the ongoing nature of digital transformation.

These *Innovation and Digital Teams* prioritise the use of technology for operational benefits like reducing costs (#10-D-SeniorManager, #12-D-Director), improving efficiency, and meeting clients' expectations (#9-D-SeniorManager). They also serve as digital champions providing necessary support in technology implementation (#3-C-Partner, #5-C-Partner) and internal digital consultants working on both internal and external projects to ensure sustainability of digital initiatives (#14-E-Partner, #21-J-ManagingPartner). These dedicated teams coordinate and align digital transformation efforts across various departments with a view to long-term digital sustainability. As will be reflected in **Table 7-3**, later in this section, such teams are usually made up of those with "a unique combination of accounting and technology backgrounds" (#1-A-Partner). This sets Landmark Co, Trailblazer Co, Keystone Co, Reliable Co, and Catalyst Co apart from the other firms which lean towards a more singular focus in the structural changes that they make.

7.3.1.2 Coordination

As dual focus firms (Landmark Co, Trailblazer Co, Keystone Co, Reliable Co, and Catalyst Co) have shown, coordination is crucial to how firms adopt AI as part of their digital transformation. It promotes alignment across departments, sometimes even geographical locations, ensuring consistency in the deployment of AIDA technologies and how they are used. Coordination through integrated platforms enables better resource allocation and knowledge sharing, creating operational synergies that would be impossible with siloed systems. The implementation of unified technology platforms serves as a powerful

coordination mechanism by creating a single source of truth that enhances enterprise-wide visibility and facilitates more efficient resource allocation across service lines and client engagements.

Synergy Co has implemented a multi-tiered approach to coordination that ensures organisational alignment:

"The first initiative has been ensuring organisational buy-in across all levels... Second, we adopted a phased approach to digital transformation, allowing us to effectively assess and adapt using experiences from our international counterparts."

(#19-H-SeniorManager)

A deliberate coordination strategy combines internal alignment with learning from international offices, allowing for a more controlled and informed transformation process. This multi-tiered approach addresses both the human and technological dimensions of coordination. It is an acknowledgment that effective digital transformation requires both organisational buy-in and structured implementation processes that incorporate lessons from similar contexts.

The managing partner of Forward Co highlights that there also needs to be a careful, measured approach to coordination:

"We start with small, manageable projects that do not have tight deadlines and ensure our clients are digitally ready for these innovations. This approach allows us to pilot new technologies with a lower risk of disruption."

(#22-K-ManagingPartner)

Coordination extends beyond internal operations to include client readiness, with implementation done in sequential phases to minimise disruption risks. Including the clients as part of the coordination approach recognises that successful digital transformation must consider the readiness and capabilities of external stakeholders. Selecting small, manageable projects without tight deadlines is one way that firms can create optimal conditions for learning and adaptation while minimising the potential for client disruption.

It is also important for robust processes to be established first before technology is introduced, as alluded to by Venture Co's managing partner:

"We believe that establishing a solid foundation in terms of process efficiency and effectiveness is essential before layering on technology. This ensures that when technology is introduced, it acts as a complement to an already robust process."

(#23-L-ManagingPartner)

It is implied here that a key coordination principle is ensuring that processes are optimised before technologies are applied, rather than using technology to compensate for inefficient processes. Such a process-first approach avoids the common pitfall of implementing technology solutions for fundamentally flawed processes. This often results in automating inefficiency rather than creating genuine operational improvements.

A director from Safeguard Co raises another issue of how siloed operations can impede digital transformation:

"We found that siloed operations can impede progress. By encouraging and facilitating interaction and cooperation among different divisions, we aim to foster a more integrated approach to digital innovation."

(#2-B-Director)

The negative impact of siloed operations hinders effective digital transformation, highlighting the critical importance of cross-divisional collaboration. With closer interaction and cooperation between divisions, firms create a conducive environment for better and more effective integration of AIDA technologies. This emphasis on *Coordination* as a structural change ensures that divisions align their efforts, facilitating smoother integration of AIDA technologies throughout the firm.

For Synergy Co, *Coordination* is supported by their learning and development function, with the necessary digital infrastructure in place and ready for staff, who are well-equipped and trained to use it in their work (#19-H-SeniorManager). In Forward Co, this is seen through their measured approach to technology adoption by first engaging in smaller projects so that pace of implementation is more carefully managed (#22-K-ManagingPartner). This greatly eases the pressure on its staff internally and also for their clients.

Coordination is also achieved through digital platforms that integrate internal processes with clients' workflows, as seen in Safeguard Co. This cuts down on redundancies that are the result on teams working in silos (#13-B-Director). Internally, this also puts the various service functions and the technology support teams on the same page where the technology

tools work as intended (#2-B-Director). This is a similar approach taken by Venture Co as they emphasise transparency and coordination in processes so that their clients all have a consistent experience (#24-L-SeniorManager).

7.3.1.3. Structural Synergies for AIDA Integration

The two key structural changes made by accounting firms to promote firm-wide implementation of AIDA technologies are seen in: (1) the formation of dedicated innovation and digital teams to spearhead digital transformation initiatives and (2) the emphasis on coordination to ensure consistency in adoption. These changes are indicative of firms adapting their internal structures so that they can find a balance between use of AIDA technologies with their work and the needs of their clients.

As will be presented in **Table 7-3**, majority of the firms set up innovation and digital teams (Landmark Co, Trailblazer Co, Keystone Co, Reliable Co, Benchmark Co, Foresight Co, and Catalyst Co) to focus on pilot testing the AIDA technologies internally first before scaling them firm-wide. After testing out the new tools and deeming them suitable for use throughout the firm, they then step up as digital champions providing support to the rest of the firm on matters relating to effective use of AIDA technologies. Functioning effectively as internal consultants, these teams develop technical capabilities and expertise that they can share with colleagues who wish to explore the use of AIDA technologies in their work.

The other firms (Safeguard Co, Synergy Co, Forward Co, and Venture Co) prioritise consistency in technology adoption. Coordination helps prevent fragmented implementation of tools and in doing so, provides quality assurance to clients and internal staff. More importantly, well-coordinated implementation cultivates standardisation in the way that tools are used so that staff deploy them appropriately to get their desired outcomes.

Seeing the significance of both structural changes, it is no surprise that a select handful of firms have integrated them together (Landmark Co, Trailblazer Co, Keystone Co, Reliable Co, and Catalyst Co). These firms are unique in how they involve dedicated innovation and digital teams in coordination initiatives. Such teams collaborate closely with others to keep the focus of technology adoption on addressing accounting-specific needs.

The common thread running through both structural changes is the firms' focus on their clients' needs, which serves as the motivation for these changes. Whether directly or indirectly, firms have taken steps to align their digital transformation initiatives with their

clients' expectations. These initiatives are evidence that firms adopt AIDA technologies not only to improve their operations internally but also to deliver better service to their clients.

7.3.2. Process Changes

Besides structural changes, accounting firms have also made changes to their operational processes so that they can benefit from the efficiency that cognitive technologies bring. Across the 11 firms, the process changes fall within three main categories: adjustments made to *system infrastructure*, *automation of manual processes*, and *implementation of data analytics*. These changes reflect firms' efforts to fine-tune their operations, cut down on errors, and reallocate resources to services where they are needed most.

7.3.2.1 System Infrastructure

Several firms (Landmark Co, Keystone Co, Benchmark Co, Foresight Co, and Forward Co) prioritised upgrading their system infrastructure to support AIDA integration as part of their digital transformation journey. These upgrades included the implementation of cloud-based enterprise solutions, centralised databases for secure data management, and document management systems.

Landmark Co highlights the evolution of their infrastructure from error-prone manual systems to more accurate digital platforms:

> *"In the past, let's say something as simple as a payroll. If you calculate manually using Excel like 10 years ago, that method was good because it's easy to understand, easy to access, easy to type in and key in data, but it was always subject to a lot of inaccuracies."*
>
> *(#1-A-Partner)*

The partner further elaborates on the risks associated with their previous systems:

> *"There could be human error in terms of accidentally deleting something, and who has changed what. As a result, there were a lot of errors as well, and on top of that, they used to keep a manual file, for example, to maintain a hard copy of invoicing, whereas now, when we fast forward 10 to 15 years later, where everything is sort of online-based, it's much faster and more accurate."*
>
> *(#1-A-Partner)*

The integration of enterprise systems has revolutionised both internal operations and client service capabilities. At Keystone Co, a senior manager highlights how unified platforms enhance their business visibility, while the managing partner at Forward Co points to broader benefits in service delivery:

"With everyone now on the same CRM and ERP platform, we have a much clearer view of what's happening across the business. We can more easily identify synergies, share knowledge, and mobilise the right resources for each client engagement."

(#10-D-SeniorManager)

"The digital transformation has made our client service more agile. We've significantly reduced hard copy wastage, emphasising storage space and the flexibility to work from anywhere, across different time zones."

(#22-K-ManagingPartner)

Infrastructure upgrades deliver benefits beyond simple efficiency improvements. It brings positive changes to operational workflows by enabling better resource allocation, improved knowledge sharing, and enhanced coordination across the firm. Such changes lead to the reshaping of the way accounting work is done, as noted by the managing partner of Benchmark Co and a partner from Foresight Co:

"Recently, we updated our practice management system, enhancing data extraction for better analysis. We've introduced various applications for training, desk booking, and administrative tasks, streamlining our processes."

(#17-F-ManagingPartner)

"We've been experiencing a significant shift in our strategy over the past 10 to 15 years. Originally, auditing involved a lot of physical verification, but now we're adapting to dynamic new business models."

(#18-G-Partner)

These infrastructure upgrades have transformed accounting operations from error-prone manual systems to more accurate, flexible digital platforms. The transition away from legacy systems has built operational efficiency, improved scalability, and streamlined workflows (#10-D-SeniorManager). Cloud-based solutions provide remote access and real-time visibility of data, simplifying collaboration (#4-B-Partner) and enabling secure data handling

during remote work conditions (#1-A-Partner, #22-K-ManagingPartner). This shift allows firms to adapt flexibly to clients' changing needs, providing value-added services such as real-time data insights (#18-G-Partner). Centralised platforms consolidate data securely while integrating workflows from various service functions (#17-F-ManagingPartner), supporting both internal and client needs through improved computational accuracy, efficient data processing, better traceability of key financial metrics (#1-A-Partner), and real-time reporting capabilities (#4-B-Partner, #18-G-Partner). Additionally, document management systems incorporating OCR technology simplify the handling of the large volume of documents that accounting firms process, making it easier to search for details within them (#17-F-ManagingPartner).

The infrastructure evolution from manual, error-prone systems to digital platforms has brought with it improvements to both speed and accuracy in accounting operations. Previous systems, while easier to use, were subject to numerous errors and needed redundant manual record-keeping that led to additional operational inefficiencies and risks. Switching to online-based systems changes how accounting information is processed, stored, and accessed throughout the firm but is an important transition that supports AIDA initiatives. This transition has brought on enhanced operational efficiency, improved scalability, and streamlined workflows (#10-D-SeniorManager). Similarly, cloud-based solutions provide remote access and real-time visibility of data, simplifying collaboration (#4-B-Partner) and enabling secure data handling during remote work conditions (#1-A-Partner, #22-K-ManagingPartner). As such, firms can more flexibly adapt to clients' changing needs, providing value-added services such as real-time data insights (#18-G-Partner). Centralised platforms consolidate data securely while integrating workflows from various service functions (#17-F-ManagingPartner), supporting both internal and client needs through improved computational accuracy, efficient data processing, better traceability of key financial metrics (#1-A-Partner), and real-time reporting capabilities (#4-B-Partner, #18-G-Partner). Additionally, document management systems incorporating OCR technology simplify the handling of the large volume of documents that accounting firms process, making it easier to search for details within them (#17-F-ManagingPartner).

7.3.2.2 Process Automation

Among the process changes triggered by the adoption of AIDA, automation of routine tasks stands out as one of the most prevalent tweaks that firms have made. In particular, seven out of eleven firms (Landmark Co, Safeguard Co, Trailblazer Co, Reliable Co, Synergy Co,

Catalyst Co, and Venture Co) alluded to process automation being a core element of their digital transformation efforts, as will be presented in **Table 7-3** later in this section.

Landmark Co describes the integration of OCR technology into their document processing workflow, highlighting how human oversight remains an important part of the automated process:

"Sometimes it's OCR scanned, someone reviews it, someone approves it, and then there's a second approval before it's recorded directly into the accounting system, because it's all SAP based and it helps with the kind of flow."

(#1-A-Partner)

Safeguard Co shares their innovative approach to automating tax asset classification, moving beyond manual methods to handle complex classification tasks at scale:

"Another tool comes to mind in terms of the assets that we do computations for. If a company acquires fixed assets, you need to claim tax depreciation, but the rules differ from asset to asset. Some companies acquire millions in assets, and this used to be done manually."

(#2-B-SeniorManager)

The senior manager further details their solution that combines OCR with intelligent classification:

"We built a tool, I believe it's called CA automation tool, which utilises OCR technology. It reads the assets and classifies them. For example, if it reads 'computer' or 'table', it categorises them into the correct group for tax depreciation – one year, three years, etc."

(#2-B-SeniorManager)

The benefits of automation extend beyond efficiency to include enhanced accuracy and quality improvements as was mentioned by a partner from Trailblazer Co (quoted earlier in 7.2.2.1). Catalyst Co experiences something similar with their managing partner explaining how automation has transformed their work processes:

"Digital transformation allows us to replace preparer roles with AI, leading to roles focused on quality checking and decision-making. This shift means our staff engage in meaningful work that demands a comprehensive understanding of various aspects of our business."

(#21-J-ManagingPartner)

This is similar to what was mentioned by

System integration through automation represents another key advancement, as noted by the leadership at Venture Co, who highlight how RPA bridges technological gaps and enhances operational reliability:

"We've leveraged RPA tools like UiPath to create a centralised system that bridges these gaps. This approach has been instrumental in enabling seamless communication between these different systems."

(#23-L-ManagingPartner)

"By implementing RPA, we can automate routine tasks, which not only saves time but also reduces the likelihood of errors, leading to more efficient and reliable operations."

(#24-L-SeniorManager)

Firms are increasingly minimising dependency on manual processes, particularly those prone to human errors, by introducing cognitive technology tools that improve work accuracy, simplify operational workflows, and redirect resources towards higher-value tasks. With automation handling arduous, time-consuming tasks, accounting professionals spend less time sifting through transaction data, manually classifying documents, and searching for relevant details (#1-A-Partner, #2-B-Director, #3-C-Partner, #21-J-ManagingPartner). RPA tools further streamline processes by automating essential but time-consuming tasks such as data entry, reconciliations, and report generation (#23-L-ManagingPartner, #24-L-SeniorManager), thereby reducing errors, increasing efficiency, and redirecting resources to higher-value client services (#5-C-Partner, #16-E-Partner, #24-L-SeniorManager).

These efficiency gains directly enhance client service by relieving firms of laborious workloads, enabling them to take more proactive roles in client engagements and transitioning from reactive service providers to strategic advisors. For instance, Synergy Co

uses RPA to simplify financial statement consolidation across multiple entities, reducing reporting turnaround times and ensuring clients receive timely, accurate insights (#19-H-SeniorManager), while Catalyst Co leverages automation to provide more reliable and consistent services, strengthening client partnerships.

The strategic targeting of repetitive, low-value tasks for automation reflects a sophisticated approach to technology implementation that prioritises both operational efficiency and professional development. By eliminating tedious data entry and similar routine tasks, firms not only improve process efficiency but fundamentally enhance the professional experience of their staff. This dual benefit of automation creates a virtuous cycle where operational improvements support talent retention and development while enhancing client service quality.

7.3.2.3 Implementation of Data Analytics Processes

With greater access to more data, accounting firms have either explicitly or implicitly *incorporated data analytics processes* into their workflows. By using AIDA technologies, firms are able to drill into the details of the raw data for findings and insights that will be of value to their clients.

Safeguard Co describes how they've expanded their data analytics tools beyond internal efficiency applications to become client-facing services that offer direct value:

> *"We invested in a tool called CA automation tool, which has been rolled out not just internally but also as a service we can offer to clients. If they have a large volume of assets, they can either integrate this module into their systems or use our platform to classify assets themselves."*
>
> *(#2-B-SeniorManager)*

The transformation of data analytics from an internal capability to a central value proposition is evident in how a partner from Trailblazer Co positions analytics and describes evolving client demand patterns:

> *"Data analytics has become a vital part of our process. It allows us to perform in-depth relationship and process mapping, providing valuable insights to our clients that were previously not as accessible."*
>
> *(#3-C-Partner)*

"The success of our digital transformation initiatives is primarily evident in how they're adopted by both our staff and clients. A clear indicator of success is the increased demand for digital tools and licenses within the firm."

(#5-C-Partner)

Keystone Co's evolution from rule-based to machine learning analytics illustrates the progressive sophistication of firms' analytical capabilities:

"We've been actively working with analytics, artificial intelligence, blockchain, cloud computing, and the Internet of Things. […]We now utilise a tool that aids in analysing general ledger transactions and journal entries. This tool operates based on predetermined criteria we set to identify unusual transactions."

(#9-D-SeniorManager)

The senior manager also references a new tool that incorporates ML to help with reviewing of journal entries:

"Recently, we've begun exploring a new tool that also studies journal postings from clients but incorporates machine learning. Unlike the previous tool, where we specify the criteria for what's considered unusual, this new tool uses machine learning to identify atypical posting behaviours or journal entries that deviate from the norm across the dataset."

(#9-D-SeniorManager)

Analytics capabilities are fundamentally transforming client relationships, as highlighted by a senior manager at Venture Co who note the shift from service provider to strategic partner:

"We've moved beyond just providing a service, we're now able to be true strategic partners, helping clients navigate the digital landscape and transform their own businesses."

(#24-L-SeniorManager)

Venture's senior manager also mentions Power Query[1] as a tool that helps them serve their clients better.

[1] Although in itself just a data transformation and data preparation tool, Power Query can be integrated with AI features and would therefore still be considered an AIDA technology based on the definition of AIDA used in this research.

"Power Query has been a game-changer for us, enabling us to quickly and easily extract, transform, and combine data from various sources, such as Excel spreadsheets, databases, and web APIs. This has greatly enhanced our ability to provide insights and analysis to our clients."

(#24-L-SeniorManager)

While most firms have integrated data analytics with other work processes, Safeguard Co, Trailblazer Co, Keystone Co, and Venture Co are more explicit about its central role in their digital transformation. Through AIDA technologies, accounting firms can expand client engagements beyond traditional sampling approaches to more comprehensive, data-driven methodologies. During audit engagements, these technologies allow them to pre-emptively detect risk and inefficiency through analysis of entire datasets rather than samples.

In Keystone Co, ML identifies outliers and irregularities without predefined criteria (#9-D-SeniorManager), while Safeguard Co and Trailblazer Co use AIDA to support early risk identification (#4-B-Partner, #5-C-Partner) and shift from traditional compliance checks to comprehensive data analysis that uncovers strategic insights (#3-C-Partner, #7-C-SeniorManager, #13-B-Director). AIDA enables accounting professionals to quickly aggregate, clean, and analyse large datasets (#24-L-SeniorManager), enhancing audit efficiency when paired with journal entry testing (#4-B-Partner, #11-C-SeniorManager) and allowing firms to expand audit scope without proportionally increasing workload (#4-B-Partner, #10-D-SeniorManager, #12-D-Director).

Where accounting work used to lean heavily on rule-based methods, advancements in AIDA technologies have changed how accountants across different service functions do their work. Traditional methods relied on predetermined criteria, which was effective in many cases in the past. However, they are limited in their ability to identify irregularities or evolving patterns unlike ML algorithms, which can analyse large datasets to detect outliers and anomalies that would have otherwise gone unnoticed. The shift to integrating AIDA technologies into their workflows mean that accountants, especially auditors, can more effectively and precisely detect outliers. Instead of focusing on specific tools, firms concentrate on how AIDA processes enable new data-centric workflows that enhance their advisory capabilities and deliver transformative value for clients.

7.3.2.4 Converging Process Innovations for AIDA Integration

The three core process changes made by accounting firms as they adopt AIDA are seen in: (1) *system infrastructure upgrades*, (2) *automating of manual processes to improve efficiency*, and (3) *implementing data analytics processes*. The changes demonstrate the firms' commitment to refreshing their operational workflows to adapt to AIDA adoption. It also signals their intent in keeping clients' needs at the core of their efforts to improve internal efficiency through technology use.

For the effective integration of AIDA technologies across the various service functions, several firms (Landmark Co, Keystone Co, Benchmark Co, Foresight Co, and Forward Co) have turned to *upgrading their system infrastructure* as a priority, as will be reflected in **Table 7-3**. The rolling-out of cloud-based solutions improved accessibility and flexibility while switching to centralised databases helped with standardisation. The upgrading of document management systems to include OCR capability made it easier to handle documents and search within them.

With AIDA technologies and other cognitive tools like RPA at their disposal, the large majority of firms (Landmark Co, Safeguard Co, Trailblazer Co, Reliable Co, Synergy Co, Catalyst Co, and Venture Co) have zeroed in on *automation as main process improvement*. Process automation streamlines tasks like data entry, document classification, and reconciliation checks, bringing greater accuracy, efficiency, and faster reporting times. As a result of automation improving internal processes, firms are better able to deliver more consistent and timely services for their clients.

Across the board, firms have *integrated the data analytics process into their workflows* but Safeguard Co, Trailblazer Co, Keystone Co, and Venture Co have notably been more explicit about it. Through the use of AIDA, firms are able to be more extensive in their client engagements. Traditional approaches such as sampling and relying on intuition have given way to data-driven methodologies that support decision-making. As opposed to being preoccupied with what tools to use, firms concentrate on how data analytics processes make it possible for new data-centric operational workflows that would help them better serve and advise their clients.

Some firms have opted to make simultaneous process changes to reap more benefits from their AIDA adoption. Landmark Co and Reliable Co combine system infrastructure upgrades with process automation so that they can streamline workflows through automation by

building on strong scalable digital foundations. On the other hand, by incorporating data analytics processes with automation, Safeguard Co, Trailblazer Co, and Venture Co use AIDA technologies to transform their accounting processes, pivoting away from reactive, manual workflows to proactive, data-driven analysis that value-adds to their clients. Keystone Co integrates data analytics processes with system infrastructure upgrades by anchoring on the foundation of cloud-based platforms that enable the use of AIDA to analyse complex datasets. Through the overhaul of legacy systems, this combination has helped to equip their accountants with AIDA technologies that provide deeper analysis that surpasses traditional methodologies.

As these process changes reinforce one another, the firms concurrently engaging in two together enabled firms to more adequately address their immediate operational needs and long-term strategic objectives as part of their digital transformation journey. However, even for the firms which focused on one process change, what was common in all firms was that these process changes were not made merely as a result of AIDA adoption but a calculated and measured plan to use technology to boost productivity and improve the delivery of service to their clients. By upgrading system infrastructure, automating processes, and incorporating data analytics processes into their operational workflows, firms are better positioned to scale their digital initiatives to foster firm-wide use of AIDA technologies to meet their internal needs for greater efficiency and their clients' demands for better value as part of their service engagements.

Having examined the *structural* and *process changes* made by firms to accommodate AIDA integration, **Table 7-3** presents a summary of these changes alongside the *reshaping of internal practices* that will be discussed in the following section.

Table 7-3: Cross-case findings on reconfiguring structures, processes, and practices to integrate AIDA

			Reshaping of Internal Practices		
Firm	**Structural Changes**	**Process Changes**	**Cross-Functional Collaboration**	**Digital Upskilling**	**Role Transformation**
Landmark Co (Firm A)	Innovation and Digital Teams, Coordination	System Infrastructure, Process Automation	Moderate	Moderate	Moderate
Safeguard Co (Firm B)	Coordination	Data Analytics Implementation, Process Automation	Moderate to High	Moderate	Moderate to High
Trailblazer Co (Firm C)	Innovation and Digital Teams, Coordination	Data Analytics Implementation, Process Automation	Moderate to High	Moderate	Moderate to High
Keystone Co (Firm D)	Innovation and Digital Teams, Coordination	Data Analytics Implementation, System Infrastructure	Moderate	High	Moderate to High
Reliable Co (Firm E)	Innovation and Digital Teams, Coordination	System Infrastructure, Process Automation	Low to Moderate	Moderate	Moderate
Benchmark Co (Firm F)	Innovation and Digital Teams	System Infrastructure	Moderate	Moderate	Moderate
Foresight Co (Firm G)	Innovation and Digital Teams	System Infrastructure	Low to Moderate	Moderate	Moderate
Synergy Co (Firm H)	Coordination	Process Automation	Moderate	High	Moderate to High
Catalyst Co (Firm J)	Innovation and Digital Teams, Coordination	Process Automation	Moderate	Moderate	Moderate to High
Forward Co (Firm K)	Coordination	System Infrastructure	Low to Moderate	Moderate	Moderate
Venture Co (Firm L)	Coordination	Data Analytics Implementation, Process Automation	Low to Moderate	Moderate	Moderate to High

7.3.3. Reshaping Internal Practices to Foster AIDA Integration

The reshaping of internal practices represents the culmination of the changes in organisational structures and processes discussed in 7.3.1 and 7.3.2. Accounting firms have made structural changes to simplify the process of integrating AI and other cognitive technologies. They have also revamped their operational processes to capitalise on the efficiency gains these technologies offer. These structural and process changes can only happen when firms reshape their internal practices so that employees are motivated to collaborate, develop skills, and take on new roles.

To optimise AIDA integration and utilisation, accounting firms' internal practices have been reshaped in three areas: forming collaborative and dedicated cross-functional teams, investing in upskilling initiatives, and transitioning employee roles away from manual tasks to higher-value strategic work. The changes in these three areas are interconnected and take place throughout the firm across organisational levels. By reshaping these internal practices, firms are in a better position to make the most of out of having integrated AIDA into their daily workflows and operations.

As shown in **Table 7-3**, accounting firms exhibit varying levels of *reshaping internal practices* across three key dimensions: *cross-functional collaboration*, *digital upskilling*, and *role transformation*. Most firms maintain at least moderate levels in all three areas, with some achieving higher ratings, particularly in digital upskilling (Keystone Co and Synergy Co) and role transformation (Safeguard Co, Trailblazer Co, Keystone Co, Synergy Co, Catalyst Co, and Venture Co). These practices represent how firms are internally adapting to support the structural and process changes described earlier.

7.3.3.1. Fostering Cross-Functional Collaboration

In establishing dedicated teams and cross-functional collaboration practices, the firms have shown varying levels of progress. Most of them maintain a moderate level while Safeguard Co and Trailblazer Co demonstrate slightly higher levels of cross-functional collaboration. This variation is evidenced in how the firms are structured and how they deploy their specialised teams.

Cross-functional collaboration ties in with one of the structural changes where firms have CoEs that pilot the use of AIDA technologies. These innovation and digital teams combine their accounting expertise with their knowledge of the tools while concurrently working with

technology specialists to customise tools for usage across various functions. A director in Keystone Co elaborated:

"... we do have special centres of excellence within those different functions (assurance function for audit of financial services or non-financial services) to get their people on board such that if they have use cases, they will let this CoE know, and either co-create or the CoE will actually build it for them."

(#12-D-Director)

This approach to collaboration creates a partnership where specialised CoEs work with functional teams to either co-create solutions or build them based on identified use cases. Such a model ensures that technological innovations directly address operational needs while leveraging specialised expertise. The emphasis on co-creation further enhances the relevance and adoption of AIDA technologies

Pilot programmes have proven to be effective in helping to overcome initial client resistance as successful implementations provide proof of the tools' value and hence encourages adoption. Benchmark Co's managing partner explained that on the firm's digital strategy that starts with piloting:

"Our strategy begins with piloting, which allows us to test solutions before full implementation. However, we encountered challenges, such as resistance to adoption and the need for extensive training… We started with a few willing clients to pilot the new technology, which helped to build trust and demonstrate the value of these tools."

(#17-F-ManagingPartner)

The strategic value of piloting serves as both a technical validation and a change management approach. By demonstrating success with willing clients first, firms build evidence that helps overcome resistance and builds trust in new AIDA technologies. With an evidence-based approach to change management, a strong foundation for broader adoption is established through list of success stories.

In addition, several firms made special mention to digital champions who actively promote the success stories of integrating technology into their work (Safeguard Co, Trailblazer Co, Keystone Co, Foresight Co, and Venture Co). A partner from Trailblazer Co shared that:

"...we formed a network of digital champions across various levels within the organisation. These champions were responsible for delivering training, leading digital initiatives, and gathering feedback from peers."

(#3-C-Partner)

Digital champions placed at different levels throughout the organisational hierarchy facilitate adoption by creating a firm-wide collaborative culture that would not have been with centralised teams alone. These digital advocates embedded through organisational levels are among the many points of influence that others can go to when faced with adoption challenges. Furthermore, they are specific to different service function roles and hierarchical positions, thereby providing more targeted help.

Firms deemed to be "more collaborative" demonstrate greater firm-wide clarity in how technology should be developed and then used (Safeguard Co and Trailblazer Co). A director in Safeguard Co mentioned:

"Globally and locally, it's been made very clear that technology is going to be a key player in service delivery… It's imperative that what we develop presents value, either in terms of convenience or reducing administrative tasks. Including business and technical teams from the start is crucial for developing practical and useful tools."

(#2-B-Director)

This is also seen in Trailblazer Co where there is a globally coordinated approach to developing technology solutions as described by one of their senior managers:

"The shift from a scenario where each team worked in a silo, developing custom tools, to a more cohesive and unified global effort was a significant change. It allowed us to streamline our processes, ensuring consistency and scalability in our technological solutions."

(#7-C-SeniorManager)

This consistent approach only came about after they were plagued by lack of coordination initially, as the senior manager from Trailblazer Co elaborated further:

"Initially, the firm faced a significant challenge due to the lack of a coordinated approach. Different teams within the firm were developing their own tools independently. This led to a lot of duplication of effort and inefficiencies… To address this, we focused on

consolidating our efforts and fostering a culture of information sharing and collaboration across the global teams."

(#7-C-SeniorManager)

The learning journey that led to the firm's collaborative approach shows how they recognised the inefficiencies of siloed development and intentionally encouraged knowledge sharing and collaboration to address these challenges. This collaborative model indicates a departure from the conventional team structures in accounting firms, as specialised teams are given the freedom to operate in interconnected networks rather than in silos. The varying levels of collaboration for each firm is reflective of how well they have managed this transition and whether they have made intentional arrangements to facilitate the process. While all firms have shown to be committed to enhancing collaboration, those that regarded as having a higher collaborative level are those with clear directives on how technology should be developed and used in their operations.

7.3.3.2. Investing in Digital Upskilling

With AI impacting many facets of their operations, accounting firms saw the growing need to upskill their employees with the requisite competencies to work well with technology. Consequently, accounting firms are devoting resources to training programmes that develop both technical skills and the ability to identify opportunities for technology implementation in accounting-related tasks. Most firms maintained a moderate level of investment in upskilling initiatives, while Keystone Co and Synergy Co most notably take a more extensive firm-wide approach

Firms whose investment into digital upskilling is regarded as being at moderate levels, their attention is on ensuring that their workforce are equipped with the basic technical competencies so that they can apply them practically at work. A partner from Trailblazer Co explains:

"…upskilling our staff involves teaching them to use new tools like Alteryx and Tableau. This is aimed at giving them a basic understanding of how these tools function and how they can benefit us in our day-to-day operations."

(#5-C-Partner)

With significant changes in the skills required by the workforce so they are capable of operating AIDA technologies, firms have had to rethink their talent development approaches.

Catalyst Co's approach was particularly representative of this mindset shift amongst the firms that had a moderate level of investment in upskilling initiatives, as outlined by their managing partner:

"We've had to rethink our approach to training and skill development, focusing on enabling our team to handle both the technological aspects and accounting principles. This balance between hiring for technological proficiency and accounting expertise is crucial, as the roles today demand a deep understanding of how to integrate these skills effectively."

(#21-J-ManagingPartner)

Accounting firms now recognise that it is of strategic importance for skill development programmes to integrate both accounting domain expertise and technology proficiency, reversing the perception that these two areas do not mix well. It is also a recognition that for accounting professionals to be effective in the modern business environment, they must have a good grasp of both accounting and technology. As a result, training and development programmes have to be tweaked to factor this integrated approach.

The prominent difference that Keystone Co and Synergy Co showed compared to the others were their many firm-wide training programmes that were implemented spanning across organisational levels. As described by a senior manager in Keystone Co:

"In the past three years, our firm has strategically focused on several key areas to enhance our digital talent and culture. Firstly, we have invested heavily in training programmes. These are conducted especially during the off-peak seasons, making them accessible to all employees, from partners to junior staff. The training covers various digital tools and different levels of implementation, ensuring a comprehensive skillset across the organisation."

(#10-D-SeniorManager)

The approach is similar in Synergy Co, as one of their senior managers shared:

"…we underwent a digital upskilling journey that encompassed the entire firm, from administrators and secretaries to partners. This included equipping us with basic knowledge of tools like Power BI, Alteryx, and UiPath."

(#19-H-SeniorManager)

Furthermore, they have integrated digital competencies into their performance framework:

"The first step was to revisit our professional competency framework, which is fundamental to our performance management, appraisals, and feedback processes. We integrated digital competency as a key segment within this framework."

(#19-H-SeniorManager)

This organisation-wide approach to upskilling demonstrates a sophisticated strategy that addresses timing, active participation, and development of relevant skillsets while formally embedding digital competencies within performance management systems. By involving all staff levels from support personnel to partners and scheduling training during off-peak seasons, firms ensure that digital capability development is a firm-wide endeavour. The integration of digital competencies into formal performance frameworks further reinforces the importance of these digital skills, ensuring that there will be a sustained focus on firm-wide digital capability development.

Despite firms investing resources into upskilling, they still faced implementation challenges, regardless of the level of investment. This was particularly true when it came to practically applying various AIDA technologies in their work, as highlighted by a senior manager from Trailblazer Co:

"Training effectiveness is a significant issue; without practical application, staff may resist using new tools in real engagements. There's a lack of clarity on how these tools reduce audit work, leading to misconceptions that they add to the workload instead of enhancing efficiency."

(#11-C-SeniorManager)

The gap between theoretical training and practical application remains a key challenge in digital upskilling. When there is lack of clarity and practical demonstrations of how AIDA technologies reduce workload rather than adding to it, staff may resist adoption despite training investments. This insight highlights the critical importance of addressing the practicality of digital skills development, instead of overloading staff with more technology-based training.

Most accounting firms were found to have a moderate level of *investment into digital upskilling* initiatives where their priority has been on building foundational competencies in technologies and how to practically use them. Keystone Co and Synergy Co, however, have

a greater commitment of their resources towards upskilling as evidenced by their firm-wide training programmes being implemented across all levels of seniority while simultaneously making digital competency part of their performance management tracking. However, irrespective of their level of investment, firms faced a common challenge where there is difficulty in measuring training effectiveness. To overcome this, firms designed their training programmes to clearly demonstrate how AIDA technologies helped to reduce workload and enhance efficiency in day-to-day operations.

7.3.3.3. Transitioning Roles from Routine to Strategic Functions

AIDA integration significantly impacts employee roles, shifting them way from manual, routine tasks to more strategic functions. Using AIDA technologies to automate repetitive tasks, including data entry, payroll, and compliance reporting, enables employees to concentrate on higher-value activities that require professional judgement, strategic decision-making, and client advisory. While accounting firms have all been found to be transitioning their employees' roles from that of a routine nature to those with a more strategic nature, firms have shown varying levels of progress.

Firms where there were moderate levels of role transformation (Landmark Co, Reliable Co, Benchmark Co, Foresight Co, and Forward Co) were inclined towards using AIDA technologies to improve efficiency in existing roles. By becoming more efficient, they were then able to improve client satisfaction with better service quality. The experience shared by Forward Co's managing partner is consistent among "moderate level" firms:

> *"The foremost benefit is efficiency, as digital tools significantly reduce the time required for tasks. Accuracy is another key advantage, minimising human error. Enhanced client satisfaction is a result of faster, more precise services."*
>
> *(#22-K-ManagingPartner)*

AIDA adoption for these firms is focused on efficiency and accuracy improvements as they directly translate to enhanced client satisfaction. This analysis deems this to just be a moderate level of role transformation, where the accountant's role remains largely the same, but AIDA technologies enhance its efficiency and effectiveness. Their focus is on enhancing the performance of traditional professional roles through technological augmentation, maintaining the core nature of the role while improving its execution quality and efficiency.

Firms at moderate-to-high levels (Safeguard Co, Trailblazer Co, Keystone Co, Synergy Co, Catalyst Co, and Venture Co) take it a step further by redirecting their staff to higher-value activities that are strategic in nature such as analysis and advisory. A senior manager in Venture Co specified how AIDA technologies have considerably reduced the time needed to execute repetitive tasks, allowing staff to turn their attention to analysis and advisory tasks instead:

"One of the most significant advantages is the tremendous time savings that can be realised by automating manual data entry and streamlining cumbersome processes. By automating data entry and leveraging technologies like OCR and machine learning, firms can drastically reduce the time spent on these repetitive tasks, freeing up their staff to focus on higher-value activities such as analysis, advisory, and client relationship management."

(#24-L-SeniorManager)

This is consistent with the audit practices in Synergy Co, where one of their senior managers noted that:

"…in the past, auditing groups of companies with numerous entities involved manually consolidating accounts, trial balances, and general ledgers in Excel. This process was incredibly labour-intensive. However, with the introduction of tools like RPA, we've been able to automate many of these processes… Moreover, the saved manpower hours allow staff to be deployed for more value-added tasks."

(#19-H-SeniorManager)

With manual tasks being automated, accountants have now been diverted to areas that are more complex and that require domain knowledge. A partner from Trailblazer Co alluded to this, specifically in the audit function:

"Tools like data sniper have simplified tasks that previously required extensive manual effort, such as searching through large documents. This automation is more accurate and time-efficient than manual methods… Automation allows our human resources to focus on more complex and risk-prone areas of audits."

(#3-C-Partner)

Similarly, a director in Safeguard Co revealed that with staff being freed up to focus on analysis and advisory work, the firm has been able to scale its operations without pressing for an increase in headcount:

"By automating repetitive tasks through RPA, we can free up our staff time to focus on higher-value activities such as analysis and advisory. This shift has not just improved efficiency but also allowed us to scale our operations more easily without necessarily adding headcount."

(#13-B-Director)

A senior manager from Keystone Co also disclosed how the switch away from manual tasks has allowed them to provide solutions that are tailored to their clients' distinctive needs:

"Once we've achieved efficiencies in handling routine tasks, we can redirect our attention and resources toward more high-value activities. These activities include in-depth analysis, the development of tailored recommendations, and devising solutions that are particularly suited to our clients' unique needs and contexts."

(#9-D-SeniorManager)

This "moderate to high" level of role transformation is regarded as such because it leads to changes in what professionals do rather than merely how effectively they do it, representing a shift towards insight generation and strategic advisory for clients. The consistent theme across these firms is the strategic reallocation of professional resources toward complex, risk-focused, and client-specific activities that better leverage their accounting domain expertise while simultaneously enhancing both operational efficiency and service quality through AIDA adoption. By automating repetitive tasks across multiple service functions, these firms have created scalable service delivery models that allow business growth without proportional headcount increases, improved professional satisfaction among their staff through more intellectually engaging work, and the provision of more personalised client services that address unique needs and contexts. This transformation changes the way accounting services are delivered as accountants move from routine processing roles to strategic advisors who provide tailored insights through technology-enhanced judgment.

7.3.3.4 Transformation of Internal Practices for AIDA Integration

Accounting firms were found to be distinctly segmented in the way they have transitioned away from roles that largely involve manual and routine tasks to higher-value strategic

functions. For firms that were regarded as having moderate levels of role transformation, their AIDA implementation typically centres on tools that help reduce task completion time and minimise errors so they can improve service quality. Those that demonstrate moderate-to-high levels of role transformation typically move beyond efficiency gains, shifting employee roles toward strategic responsibilities that require critical thinking, professional judgment, and domain expertise. By systematically automating complex presses across multiple functions, staff have now transitioned to higher-order tasks such as comprehensive risk assessment, advanced analytics, and providing advisory services. This role transformation has allowed firms to scale operations efficiently while delivering tailored solutions that address their clients' unique needs.

The analysis of the data through RQ1 and RQ2 has provided insights into how accounting firms sense opportunities, implement AIDA technologies, and reconfigure their structures, processes, and practices to support digital transformation. The next section shifts focus to examine why firms choose specific AIDA tools over others, providing deeper understanding into the strategic rationale behind technology selection decisions.

7.4 RQ3: Why do accounting firms adopt specific Artificial Intelligence-driven Analytics tools over others?

This section presents the cross-case findings on the rationale behind the adoption of specific AI-driven tools. Building upon the firm-level analysis in RQ1 and RQ2, which examined how firms sense opportunities and restructure their organisations for adoption of AI-driven tools, RQ3 shifts the focus to understanding the decision-making logic behind the selection of specific AI-driven technologies. Given that accounting firms of similar sizes exhibit consistent adoption approaches, the analysis moves from individual firms to firm types—Big 4s, mid-tiers, and boutiques—to uncover the underlying motivations shaping their adoption of AI-driven tools pathways.

The differences in how big 4s, mid-tiers, and boutiques identify and evaluate opportunities for adoption of AI-driven tools is observed across three key areas: (1) *the strategic drivers that motivate them to explore AI opportunities*, (2) *the approaches they take to identify specific AI use cases*, and (3) *the organisational decision-making structures that govern the adoption of AI-driven tools*. The variations in these three areas not only highlight the differences in firm size and resource availability but also reflect each firm type's varied approach to pursuing digital transformation according to their scale and market position. **Table 7-4** summarises the cross-case findings from each firm type across these three key areas.

The following sub-sections detail the rationale behind firms' AI tool selection by examining: the underlying motivations guiding firms' selection of AIDA technologies, specifically the *strategic drivers* (7.4.1), *selection criteria* (7.4.2), and *decision-making structures* (7.4.3), influencing why certain tools are chosen over others; 7.4.4. is the synthesis of AIDA adoption rationales across firm types, which consolidates the insights from 7.4.1, 7.4.2, and 7.4.3 to illustrate how firms of different sizes conceptualise AIDA adoption as a strategic decision.

Table 7-4: Cross-Case Findings on the Rationale for Adopting AIDA technologies across Firm Types

Firm Type	Strategic Drivers for Selecting AIDA technologies	Approach to Identifying Use Cases	Decision-Making Structures
Big 4s	Market leadership through global scalability	Proactive monitoring of emerging client needs and regulatory shifts	Centralised global coordination with local and regional flexibility
Mid-Tiers	Competitive positioning through cost efficiency and workflow optimisation	Incremental adoption to address operational bottlenecks	Decentralised with pragmatic implementation
Boutiques	Differentiation through client-specific, high-value advisory services	Selective adoption tailored to clients' needs and niche market demands	Agile and client-driven

7.4.1. Strategic Drivers for Selecting AIDA technologies

The rationale behind selecting AIDA technologies is deeply rooted in each firm's strategic priorities. Accounting firms do not adopt AIDA technologies in a haphazard manner; instead, their selections are an indicator of how they perceive AI to be an enabler of their long-term strategic objectives which is anchored by their common desire to provide better service to their clients. The search for AIDA technologies is impacted by strategic drivers that vary by firm type, reflecting distinct market positions and capabilities.

(1) Big 4s strive to reinforce their market dominance by looking out for solutions that support global scalability and regulatory compliance, (2) Mid-tiers work towards positioning themselves competitively by seeking out AIDA technologies that help with cost efficiency, (3) Boutiques are dedicated to providing tailored solutions for their clients and thus pursue tools that afford them this differentiating factor. These distinct strategic factors drive how accounting firms choose specific AIDA technologies over others and are in line with the market position of each firm type and their organisational capabilities.

Big 4s: Market Leadership Through Global Scalability

Big 4s consistently focus on preserving their positions as market leaders. They are on the active look out for AIDA solutions that are scalable across their international operations. This indicates their objective of tapping on AIDA technologies to ensure regulatory compliance and firm-wide transformation. Doing so would allow them to make data-driven decisions that would strengthen the services they provide and help them sustain their market dominance. For Big 4s, their choice of certain AIDA technologies goes beyond efficiency improvements; it is about proactively supporting their clients who are faced with complex regulatory requirements and asserting their dominance as market leaders.

#1-A-Partner describes how Landmark Co views the selection of AIDA technologies through the lens of anticipating changes to regulations and market developments:

"Strategically, we see that due to certain changes in tax rules or changes in the business environment that our clients operate in, there's more and more reliance or need for certain technology or software-based solutions [...] We foresee that there's a voluminous data that tax teams or finance teams need to deal with."

(#1-A-Partner)

Similarly, Safeguard Co identifies tools that enables them to provide better services. #13-B-Director highlights how this has allowed Safeguard Co to transition from being just a service provider to a strategic partner that supports their clients' transformation:

"Instead of just providing a service, we're now able to be true strategic partners, helping clients navigate the digital landscape and transform their own businesses."

(#13-B-Director)

Trailblazer Co's AIDA adoption strategy is underpinned by scalability as a core selection criterion, ensuring that chosen tools can be deployed across global offices:

There is also an explicit focus on scalability and global deployment as tool selection criteria which suggests that Big 4s are motivated to develop adaptable technological capabilities that can be applied across their global offices. #7-C-SeniorManager illustrates Trailblazer Co's approach as follows:

"One of the key factors in our technology strategy is scalability, as we deploy solutions globally. This need for scalability has led us to closely partner with Microsoft. Their products offer a comprehensive environment that supports a range of functions essential to our operations."

(#7-C-SeniorManager)

Another common feature among the Big 4s that reinforces a centralised approach to choosing the right AIDA technologies is the top-level management's drive to ensure alignment between technology investments and strategic objectives.

Keystone Co's commitment to integrating AI and ML with its corporate strategy is representative of how the Big 4s take a centralised approach to choosing the right AIDA

technologies is the top-level management's drive to ensure alignment between technology investments and strategic objectives. #10-D-SeniorManager shares:

"The integration of AI and ML into our corporate strategy is primarily driven by top-level management [...] This adoption is led by our partnership, which not only initiates but also closely monitors the integration process. They ensure that the tools are being used effectively in each project and that their implementation aligns with our broader strategic objectives."

(#10-D-SeniorManager)

Big 4s choose AI tools that offer global scalability, compliance alignment, and high-value data insights, reinforcing their position as industry leaders. Their selection process is highly structured, ensuring that AIDA adoption supports both operational efficiency and strategic market dominance. By prioritising AIDA technologies that can adapt to and support regulatory changes, improve service quality, and scale seamlessly across global operations, Big 4s go beyond merely being service providers but also become trusted advisors to their clients.

Mid-tiers: Competitive Positioning Through Cost Efficiency

Mid-tiers take a different approach when selecting AIDA technologies as they place a strong emphasis on managing costs and improving operational efficiency. They seek out AIDA technologies that help to cut down on manual tasks, improve productivity, and streamline costs. By optimising these resources, they can maintain their competitive positioning in the market where they serve the needs of their clients that are typically local or regional mid-sized companies.

Reliable Co had initially faced many operational challenges on the back of rushing their technology implementation. #14-E-Partner reflects on how Reliable Co changed their approach to one that is carefully planned out such that adoption is done so incrementally:

"Our initial foray into automation was overly ambitious, resulting in challenges. [...] We've also learned the importance of breaking down larger projects into smaller modules to manage them more effectively."

(#14-E-Partner)

While not explicitly modular in their approach like Reliable Co, Benchmark Co identifies viable AIDA technologies by running pilot tests on them first before considering a larger-scale adoption. goes about identifying AI opportunities by trial and error with a strong emphasis on pilot testing the technologies and tools first before considering a larger-scale adoption. #17-F-ManagingPartner describes the iterative process in Benchmark Co:

"Our journey with digital technologies has been one of trial and error, with piloting at its core. We experimented with various software, adopting less than half of those tried due to various challenges [...] Once a solution proves successful in these pilot tests, we extend the trial to a larger group."

(#17-F-ManagingPartner)

Foresight Co is now more focused when identifying use cases for AIDA by prioritising the finding of work processes that have become operational pain points. This is after they realised, based on past implementation efforts, that combining technology with operational workflows is highly technical. The pragmatic approach would then be to focus on using available technology tools to resolve existing workflow challenges, as noted by #17-G-Partner:

"Understanding which work processes can be automated is crucial [...] We've realised embedding data analytics into the core audit role is quite technical. Our past efforts to teach auditors to use data visualisation tools were not fully successful. Now, our approach is more about effectively utilising existing tools rather than delving into deep coding."

(#17-G-Partner)

Like Benchmark Co, Synergy Co also assesses the effectiveness of AIDA technologies through pilot testing. #19-H-SeniorManager shared how they first identified that they wanted to automate their work processes before running pilot engagements:

"The key technology we focused on was RPA [...] Initially, we had pilot engagements where not everyone was required to submit documents, but select teams were involved. Once we had sufficient input, we tested the tool's effectiveness."

(#19-H-SeniorManager)

Mid-tiers choice of AIDA technologies is driven by a clear objective, which is to enhance operational efficiency and cost management. They then look to tap on these efficiency

improvements to better serve their target market of local and regional mid-sized clients. They focus on tools that directly reduce manual tasks, streamline workflows, and improve cost recovery, ensuring that there are tangible benefits to using them such that they align with operational goals. Where pilot testing of tools is involved, firms will carefully monitor utilisation rates and cost recovery metrics before deciding on the viability of firm-wide adoption. This measured strategy enables them to continue serving their clients well while maintaining competitive service fees to stay accessible to their target market segment.

Boutiques: Differentiation Through Client-Specific Solutions

To make themselves stand out from among their larger counterparts, boutiques focus on creating value for niche client segments. As such, boutiques actively seek out AIDA technologies that allow them to deliver highly customised solutions that help address specific needs of their clients. This will deepen their expertise in niche areas so that they the capabilities to become specialist advisors to their clients.

#21-J-ManagingPartner discusses how Catalyst Co is proactively seeking out AIDA technologies that enhances client engagement can help them provide customised solutions to their clients:

> *"We also plan to deepen our focus on client-centric services, leveraging technology to provide more tailored and efficient solutions [...] The use of data analytics and AI has enabled us to provide deeper insights and proactive advice, rather than just reactive services."*
>
> *(#21-J-ManagingPartner)*

Clients' needs are a key factor in Forward Co's choice of which AIDA technologies to adopt. #22-K-ManagingPartner mentions how they have resolved the challenge of choosing the right tools to meet those needs:

> *"Choosing appropriate technologies was another challenge, resolved by detailed research and expert consultations, ensuring we adopt solutions that align with our clients' needs."*
>
> *(#22-K-ManagingPartner)*

Venture Co's adoption of AIDA technologies is guided by their ability to deliver practical, high-value, and customised solutions for their clients. Despite initial client hesitancy, they took time to educate clients on the practical benefits of these tools. This is a common

approach taken by boutiques as they are motivated to differentiate themselves and strengthen client relationships through the use of these AIDA technologies. As #24-L-SeniorManager explains:

"Many clients were initially hesitant to embrace change and were comfortable with the traditional ways of working. We had to put in a concerted effort to educate them about the benefits of these tools... Over time, as we were able to demonstrate the tangible benefits and build trust, we found that clients became more receptive and even began to proactively seek out our expertise in this area. […] This has helped us differentiate ourselves in the market and strengthen our client relationships."

(#24-L-SeniorManager)

Boutiques committing to specific AIDA technologies stems from their motivation to deliver customised solutions for niche segments. As such they are incentivised to identify the right AIDA technologies that enable them to develop client-specific solutions which enables them to have a competitive differentiation in the market. This allows them to stand out as niche service providers compared with the services offered by the Big 4s and Mid-tiers.

Differences in Strategic Priorities across Firm Types

The rationale for selecting specific AIDA technologies is shaped by each firm type's strategic positioning and market focus. While Big 4s prioritise globally scalable AIDA technologies that reinforce their dominant position as market leaders, Mid-tiers seek cost-efficient solutions that improve their operations so they can maintain competitiveness in their target market of local and regional mid-sized clients. On the other hand, Boutiques adopt AIDA technologies that facilitate customisation so that they can provide value-added services through niche specialisation. These distinct strategic drivers illustrate how adoption of AIDA technologies is not a uniform process but a deliberate and calculated decision that aligns with each firm's long-term objectives.

7.4.2. Approach to Identifying Use Cases

In addition to the strategic drivers that are strong indicators of the firms' perception of how AIDA technologies will help them better serve their clients, the process of identifying specific use cases is a reflection of how firms assess which tools are better aligned with their objectives. The approach taken to identify use cases for AIDA technologies differs across firm types and is shaped by their differing operational priorities and service provision focus

areas. (1) Big 4s are actively monitoring market dynamics and the regulatory environment so that the AIDA technologies they have identified can be used to meet client needs and compliance expectations. (2) Mid-tiers zero in on operational inefficiencies and pick out AIDA technologies that can be incrementally adopted without being overwhelmed. (3) Boutiques, given their commitment to provision of services that are tailored to their clients' needs, favour AIDA technologies that can be used to develop customised solutions. These varied approaches to identifying use cases for AIDA technologies taken by Big 4s, Mid-tiers, and Boutiques guide the firms' choice of tools to ensure they stay responsive to market demands and remain competitive.

Big 4: Proactive Monitoring of Emerging Client Needs and Regulatory Shifts

When identifying use cases for AIDA technologies, Big 4s put emphasis on the alignment of their strategic plans with prospective trends and evolving market demands. They are constantly tracking market developments, regulatory changes, and emerging client needs. Their efforts revolve around finding tools that will make it possible for them to quickly respond to these shifts. Their goal is to ensure they are in the best position to strategically invest in technology that equips them to address evolving client demands and business environment changes.

#1-A-Partner shares how Landmark Co anticipates opportunities arising from regulatory changes and how they are exploring tools that will make it easier for them to support their clients' compliance efforts:

> *"So, in areas such as the upcoming pillar two global minimum tax reporting in the next couple of years, we see a gap in the market in terms of being able to have something (technology tools) customised to assist clients with their compliance efforts in the future, once the new rules are established."*
>
> *(#1-A-Partner)*

In response to market pressures, AIDA technologies present firms with a pathway to differentiate their services. This is in view of the evolving professional services landscape where there is increasing commoditisation of traditional compliance work, as described by #2-B-Director:

"There's also a trend where tax and audit compliance work is becoming more commoditised. Clients can easily switch service providers, with cost being a primary consideration. In recent years, clients are more cost-conscious and less willing to accept fee increases."

(#2-B-Director)

The changes to the business environment that trigger changes in clients' demands have pushed Trailblazer Co to look into integrating AI into their work to find more efficient ways to address them. #5-C-Partner highlights how Trailblazer Co has been exploring AIDA technologies to better handle data and manage risks:

"Looking ahead, the use of AI is prominent in our strategy. We're exploring AI to interpret massive data sets and identify risks. The integration of AI in our work, especially for risk identification and making sense of data, is where I see the future heading."

(#5-C-Partner)

Furthermore, #7-C-SeniorManager notes that Trailblazer Co's approach to AI and ML is rooted in supporting their clients:

"Our firm's message regarding AI and ML is centred around assisting our clients in adapting to this AI environment."

(#7-C-SeniorManager)

In Keystone Co, they focus on two areas when identifying AI opportunities, one influenced by regulatory expectations and the other by their clients' own digital transformation roadmap. #9-D-SeniorManager discloses how their work is guided by requirements from MAS, the financial regulatory authority of Singapore:

"Our work is largely driven by regulatory expectations, such as from the MAS. There has been an increasing focus on technology risk and cyber hygiene, especially given the IT incidents and operational issues arising in banks. Consequently, a lot of our regulatory focus has shifted towards technology-based concerns."

(#9-D-SeniorManager)

#9-D-SeniorManager further elaborates on how Keystone Co's regulatory awareness is being complemented by monitoring their clients' digital transformation needs:

"Another important strategic aspect is staying in sync with our clients' evolving technological landscapes, particularly in the financial services sector where many of our clients are actively pursuing their own digital transformation journeys."

(#9-D-SeniorManager)

Big 4s are proactively monitoring market developments, regulatory changes, and emerging client needs to identify potential use cases for AIDA technologies. Through the careful assessment of AIDA technologies' suitability, they ensure that using these tools will help with meeting clients' changing demands. By providing technology-enhanced services to their clients, they are then able to maintain their competitive edge in an increasingly commoditised professional services landscape.

Mid-Tiers: Incremental Adoption to Address Operational Bottlenecks

Mid-tiers choose to take a measured, step-by-step approach to identifying AI use cases. By reviewing their service delivery process thoroughly, they seek out operational bottlenecks and internal process inefficiencies where AIDA technologies can address. This is characterised by their detailed reviewing of past implementation challenges and their pragmatic response to resource constraints.

Reliable Co had initially faced many operational challenges on the back of rushing their technology implementation. #14-E-Partner reflects on how Reliable Co changed their approach to one that is carefully planned out such that adoption is done so incrementally:

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(#17-F-ManagingPartner)

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(#17-G-Partner)

Like Benchmark Co, Synergy Co also assesses the effectiveness of AIDA technologies through pilot testing. #19-H-SeniorManager shared how they first identified that they wanted to automate their work processes before running pilot engagements:

"The key technology we focused on was RPA [...] Initially, we had pilot engagements where not everyone was required to submit documents, but select teams were involved. Once we had sufficient input, we tested the tool's effectiveness."

(#19-H-SeniorManager)

Mid-tiers are meticulous in the review of processes across their service engagement lines to identify use cases for AIDA technologies. By first flagging out internal process inefficiencies and operational bottlenecks that were identified during initial trials of the tools, these firms then proceed with targeted tool implementations and do so incrementally. This approach also considers the practical aspects related to resource constraints so that the AIDA technologies can be deployed to specifically deal with operational pain points. By progressively adopting tools, Mid-tiers gradually improve their operational efficiency which enhances the value of

the services they provide without being overwhelmed by the changes that arise from technology changes.

Boutiques: Selective Adoption tailored to Clients needs and Niche Market Demands

Boutiques pride themselves on the provision of client-driven specialised services and thus incline towards AIDA technologies that facilitate the development of bespoke solutions. As such, they typically focus on customisation to highlight their adaptability to changing requirements. Their use cases for AIDA technologies, therefore, are a reflection of their desire to specialise in niche areas to meet their clients' needs so as to differentiate themselves from the Big 4s and mid-tiers.

#21-J-ManagingPartner explicitly states how Catalyst Co uses technology to develop tailor-made solutions that help them to pay closer attention to clients' needs:

"We also plan to deepen our focus on client-centric services, leveraging technology to provide more tailored and efficient solutions. […] Digital transformation has significantly enhanced our client relationships and service delivery. By adopting new technologies, we've been able to offer more personalised and efficient services."

(#21-J-ManagingPartner)

Forward Co carefully evaluates the various AIDA technologies as part of identifying the appropriate use cases for them. #22-K-ManagingPartner mentions how this is a challenge there is a need for alignment with their operations and client expectations:

"We didn't just adopt technology for the sake of it; we took the time to assess what would work best for our firm and our clients."

(#22-K-ManagingPartner)

The digital transformation that Venture Co underwent brought about a mindset shift in the way they approach difficult tasks. #24-L-SeniorManager shares that the go-to approach is now to find ways that AIDA technologies can help:

"In the past, when faced with a complex or time-consuming task, our default response was often to throw more people at the problem. […] But now, our first instinct is to ask how we can leverage technology to make the task more efficient and manageable. This shift in mindset has been a game-changer."

(#24-L-SeniorManager)

#24-L-SeniorManager further elaborates that this technology-first mindset has changed the way they service clients in that they go beyond the basic accounting services but also develop customised solutions for them:

"We no longer just provide accounting services; we build client-specific financial ecosystems"

(#24-L-SeniorManager)

Through the careful selection of AIDA technologies that enhance customisation and value-adds to their service delivery, Boutiques cement their standing positioning as specialist advisors. This ensures that any of their investments in AIDA technologies directly translate to client satisfaction and showcase their differentiating factor. By rigorously evaluating AIDA technologies before they are adopted and following this up with a technology-first mindset, Boutiques can tap onto these tools to further improve client-centric services and specialise in niche markets, giving them further credibility and setting them apart from the Big 4s and Mid-tiers.

Differences in Approaches to identify use cases for AIDA technologies across Firm Types

The approaches taken by each firm type to identify use cases for AIDA technologies is guided by their competitive standing in the market, their operational priorities, and their strategic objectives. Big 4s are proactively monitoring trends in the market and changes to regulations to identify the appropriate AIDA technologies to be used in the right contexts so that there is alignment with evolving client needs and compliance with regulatory changes. Mid-tiers are often constrained by resource limitations and therefore take a more incremental approach when adopting AIDA technologies to ensure that the tools help to address operational inefficiencies. Boutiques' top priority is for adoption of AIDA technologies with customisability that allow them to adapt to their clients' specific needs and achieve niche specialisation. Boutiques prioritise the adoption of customisable AIDA technologies,

enabling them to tailor the services they provide to their clients' unique needs and achieve specialised expertise in their niche. Whether motivated by regulatory shifts, operational pragmatism, or adaptability to clients' changing needs, these differing approaches to identifying use cases for AIDA technologies are carefully considered by each firm type. It ultimately comes down to firms striving to maintain market sensitivity while reinforcing the value they bring to their clients through their service offerings.

7.4.3. Decision-Making Structures Governing Selection of AIDA technologies

The decision-making structures within accounting firms play a defining role in how AIDA technologies are selected, assessed, and eventually adopted. The degree of centralisation, measure of hierarchical influence, and amount of flexibility in decision-making differs across firm types. When deciding on which AIDA technologies to select: (1) Big 4s are centralised and globally synchronised with strong hierarchical influence, (2) Mid-tiers are decentralised by focusing on department-driven evaluation and pilot testing, while (3) Boutiques prioritise client-driven agility and responsiveness. These decision-making structures not only govern the pace and extent that AIDA technologies are adopted but also influence why firms choose specific tools over others.

Big 4s: Centralised Global Coordination with Local and Regional Flexibility

Although Big 4s tend to be hierarchical in structure, it works in their favour as they can ensure global consistency when deploying AIDA technologies that have been selected for wider adoption. Initiatives involving AIDA technologies are often mandated by leadership and are closely aligned with the firms' broader strategic objectives. While the decision-making process is typically highly centralised at global and regional levels, there is an acknowledgement that flexibility at the local level is needed. This gives local offices the freedom to tailor their deployment of AIDA technologies according to the unique needs of their local clients and regulations.

Landmark Co exemplifies this top-down strategic approach as #1-A-Partner explains how global leadership sets a directive for the adoption of AIDA technologies:

"To make this process (of implementing AIDA technologies into operations) more successful, sometimes it requires a very strong message from the top that we are going to head in this direction, this is the new generation of technology we're supposed to be adopting, whether internally or externally, for work delivery…"

(#1-A-Partner)

Likewise, Safeguard Co has a globally integrated directive to ensure consistency in the use of AIDA technologies to make services more efficient. #2-B-Director describes this push for digital transformation globally, regionally, and locally:

"About six or seven years ago, there was a significant push towards digital transformation, not just locally or in South Asia, but as part of a broader global program, especially in the tax function. This initiative, driven by global directives, recognised the need to digitalise to provide services more efficiently."

(#2-B-Director)

Although centralisation helps to bring uniformity and standardisation in AIDA capabilities, Big 4s also recognise the need for adapting to local and regional contexts. #7-C-SeniorManager shares that Trailblazer Co had initial difficulties in balancing the global standardised directive with the different local offices' varied practices:

"Our shift towards global common platforms and standardisation was initially challenging, given the diverse practices across different offices. However, this move laid a strong foundation for our future, particularly in the context of AI […] The global level does have a standardised process flow, which ensures consistency but also allows for adaptability (to local and regional applications) where necessary."

(#7-C-SeniorManager)

In Keystone Co, leadership also plays a pivotal role driving the use of AIDA technologies. #10-D-SeniorManager reveals that adoption is closely monitored by the partners:

"The integration of AI and ML into our corporate strategy is primarily driven by top-level management [...] This adoption is led by our partnership, which not only initiates but also closely monitors the integration process. They ensure that the tools are being used effectively in each project."

(#10-D-SeniorManager)

Across the Big 4s, there is a distinct pattern that shows a global top-down approach in their implementation of AIDA technologies, which helps ensure homogeneity in application. At the same time, there is a recognition that flexibility at local and regional levels is needed to accommodate specific needs. Maintaining this fine balance of this hierarchical yet flexible

structure facilitates the effective adoption of AIDA technologies that correspond with their strategic objectives.

Mid-Tiers: Decentralised Decision-making with Pragmatic Implementation

Mid-tiers take a decentralised approach when selecting and adopting AIDA technologies, where the authority to make decisions are spread across departments and service lines. Adoption of AIDA technologies is primarily driven by practical issues that arise from operations instead of top-down mandates. Pragmatism is the driving force of this approach because firms can narrow down on critical operational issues while preserving flexibility in how they go about the adoption of the AIDA technologies.

Reliable Co's department-led approach to selecting and adopting AIDA technologies meant that firm-wide integration might pose some challenges. #14-E-Partner describes how they overcome this by engaging with vendors for support as well as creating an internal consulting team to oversee the integration:

> *"One of our primary challenges is selecting appropriate applications from the myriad available in the market. Our approach involves individual departments exploring their tools, though integrating these tools firm-wide is complex. Often, we depend on vendor support for our digitalisation efforts. For instance, in RPA initiatives, while I can coordinate, I'm not equipped to design the system, necessitating external maintenance support, which incurs additional costs. To address this, we've recently established a digitalisation consulting team, catering to both external and internal project needs."*
>
> *(#14-E-Partner)*

Benchmark Co leans on their external networks to stay up to date with the AIDA technologies available in the market and then run pilot tests on those tools. #17-F-ManagingPartner outlines how they tap on multiple information sources before considering firm-wide implementation:

> *"The journey involved piloting various technologies to identify what works best for us. This approach required keeping abreast of available solutions through our network, discussions with academic institutions, and consultations with accounting bodies. […] Our strategy begins with piloting, which allows us to test solutions before full implementation."*
>
> *(#17-F-ManagingPartner)*

Instead of pursuing comprehensive transformation, Foresight Co focuses on incremental improvements through designated project champions. #17-G-Partner shares how the domain expertise that these project champions have in audit help to bridge the gap with technology as they know best which AIDA technologies are most appropriate:

"We've found that tackling smaller projects is more effective than attempting large-scale changes all at once. [..] We've appointed project champions from our audit teams to understand IT tools' functionality and potential workflow redesigns. These champions are audit managers interested in process improvement. […] Our approach doesn't require staff to become IT experts but to understand and apply IT solutions effectively. Training our team to use IT tools efficiently, without needing to learn coding, is part of our strategy."

(#17-G-Partner)

Mid-tiers pace themselves steadily when it comes to implementing digital initiatives as evidenced from how Synergy Co pursues targeted unit-level initiatives rather than firm-wide rollouts. #19-H-SeniorManager outlines their progression from Excel to AIDA technologies (like RPA), with pilot testing confined to select teams:

"In my current firm, the drive towards digitalisation and automation is still strong, albeit on a smaller scale. We've invested in tools like CaseWare, moving away from being heavily reliant on Excel, to more efficient solutions. [...] The key technology we focused on was RPA. Initially, we had pilot engagements where not everyone was required to submit documents, but select teams were involved."

(#19-H-SeniorManager)

The decentralised approach that Mid-tiers take in the selection of AIDA technologies and their subsequent adoption is apparent in various forms of localised decision-making, from department-selective pilot testing to project champions driving implementation. Rather than firm-wide directives from management, implementation is done incrementally such that operational challenges are overcome by targeted and practical solutions. Combining decentralised decision-making and pragmatic implementation of AIDA technologies affords Mid-tiers the freedom to move forward in their digital transformation with a steady pace. As such, they are able to ensure that the adopted AIDA technologies address specific operational needs adequately rather than feel pressured by firm-wide mandates.

Boutiques: Agile and Client-Driven

Boutiques exhibit agility in their integration of AIDA technologies where their decision-making is aligned with meeting the needs of their clients and their own needs to improve operational efficiencies. Despite being smaller in size, they choose to prioritise using these tools selectively in ways that provide tangible benefits and value-add to the services they are offering to clients. This allows them to focus primarily on niche specialisations because they have the flexibility to iteratively test out AIDA technologies before adopting them and then adapting them according to their clients' specific needs.

Catalyst Co is focused on enhancing business value by using AIDA technologies to enhance capabilities required in specific service functions. #21-J-ManagingPartner outlines the various functions that they have been looking to use technology in:

"The transformation includes leveraging technology to enhance our financial controller capabilities and everything under that role, like accounting operations, bookkeeping, accruals, management report preparation, and setting up controls. We're also expanding into CFO office functions, requiring us to develop connections to banks for treasury functions and delve into budgeting and forecasting. The aim is to use technology to enhance these capabilities."

(#21-J-ManagingPartner)

Forward Co's priority is ensuring that they service their clients well. As such, they are committed to selecting the appropriate AIDA technologies that will ensure that their staff are well-equipped to work efficiently, as described by #22-K-ManagingPartner:

"Our primary focus is client service, involving investing in talent and equipping them with efficient tools. Secondly, we are selective in tool adoption, using auditing software and communication tools for enhanced productivity. The third area is enhancing accessibility and cost-effectiveness"

(#22-K-ManagingPartner)

Before adopting AIDA technologies, Venture Co carefully evaluates rollout timelines and efficiency gains. #23-L-ManagingPartner explains how they weigh the trade-offs between simple and complex technological solutions:

"Sometimes, deploying simple technologies is beneficial for immediate impact, while complex technologies take longer to implement and may only offer temporary solutions. The factors we evaluate include the pace of change and requirements at different stages."

(#23-L-ManagingPartner)

The integration of AIDA technologies in Boutiques is characterised by agile decision-making that tailors to specific client needs while also using them to achieve operational efficiency gains. The flexibility in their approach is evidenced by how tools are assessed first before adoption, whether through enhancing specific service functions, equipping staff with efficient tools, or considering implementation trade-offs. Placing clients' needs front and centre of technology adoption decisions gives Boutiques the competitive edge in niche markets, ensuring that their investments in AIDA technologies have a positive impact on their service delivery.

Differences in Decision-Making Structures across Firm Types

Different firm types vary in how they make decisions on AIDA technologies, from selection and evaluation to implementation. These differences are shaped by their priorities and the contexts they operate in. Big 4s take a globally coordinated approach that centralises decision-making but allow for some local and regional flexibility. This promotes a level of standardisation in the adoption of AIDA technologies across their global networks, ensuring consistency in service delivery while allowing for adaptability to local and regional needs. Conversely, Mid-tiers tend to adopt a more decentralised approach, with decisions driven by individual departments or service lines. The practicality of not being constrained by firm-wide top-down directives means operational issues can be directly addressed by the departments or service lines facing them. Consequently, the use of AIDA technologies to resolve these issues becomes more targeted and context-specific. Boutiques have agile decision-making structures where the choice of AIDA technologies is primarily motivated by clients' needs and an internal pursuit of operational efficiency gains. They have the versatility to specialise in niche markets and leverage upon their investments into technology tools to improve their service delivery. The differing decision-making structures across firm types reflect not only the scope and complexity of their operations but also influence the pace of their digital transformation journey, responsiveness to client and market needs, and their overall competitive edge.

7.4.4. Synthesis of AIDA Adoption Rationales across Firm Types

The analysis detailed in 7.4.1, 7.4.2, and 7.4.3 of why accounting firms adopt specific AIDA technologies reveals a complex interplay between strategic priorities, use case identification approaches, and decision-making structures. It observed that firm type impacts the firms' rationale for selecting AIDA technologies. AIDA adoption is a strategic decision, and each firm type approaches it differently, with varying patterns in conceptualisation and implementation shaped by their market position, operational priorities, and organisational capabilities.

Big 4s adopt AIDA technologies with a focus on market leadership and global scalability. Their choice of AIDA technologies is prompted by the strategic imperative to retain their market dominance, which is evident in three key aspects. Firstly, they priorities AIDA technologies that can be implemented throughout their international network so that there is some form of standardisation in the services they provide to their clients. Secondly, they are also regularly monitoring market trends, including shifts in regulatory standards, to identify new opportunities for AIDA adoption. Thirdly, they have a centralised decision-making structure that ensures strategic consistency throughout their operations worldwide but affords local offices with the flexibility to adapt according to market needs and scale. This multifaceted approach allows Big 4s to capitalise on the AIDA technologies they have implemented strengthen their position as market leaders while meeting the changing needs of clients as well as regulatory requirements.

Conversely, Mid-tiers, see AIDA adoption as a means to improve operational efficiency. Their preference for certain AIDA technologies is determined by practical considerations over process improvements and cost management. As part of incrementally adopting AIDA, they typically start off with pinpointing inefficiencies in their operations followed by assessing technologies through pilot testing before firm-wide implementation. By decentralising their decision-making, initiatives are driven by departments and service functions as opposed top-down directives. This ensures that AIDA solutions used will directly address the pain points felt at the operational level and done so within resource constraints. This well-calibrated approach helps mid-tiers focus concentrate on improving the efficiency of their services so they can remain competitive in servicing clients from the local and regional mid-market segment.

Finally, Boutiques regard AIDA technologies as the catalyst for honing their expertise in niche areas so they can value-add to their clients. Their decision on which AIDA

technologies to use is influenced by their strategic objective of differentiating themselves through niche specialisations and tailor-made solutions for their clients. They achieve this by first seeking out technologies that enables and enhances service customisation. This is followed by a thorough evaluation of the tools' suitability by benchmarking against client needs and carefully weighing implementation trade-offs. Their agile structure leads to a measured approach to AIDA adoption, which strengthens their capacity to provide specialised services while maintaining flexibility and responsiveness to changing client needs.

Integrating the above findings indicates that accounting firms all want to improve client service delivery and their approaches to AIDA adoption are geared towards that objective. However, the rationale behind the specific AIDA technologies they choose to use differs based on firm types and is influenced by their market positioning, operational priorities, and organisational capabilities. Big 4s have a coordinated global strategy that seeks to further establishes their market dominance, as seen in their focus on scalable solutions and standardised execution across their international networks. In contrast, mid-tiers take a more pragmatic approach, with their technology selections arising from operational requirements and being supported by extensive pilot testing prior to broader firm-wide implementation. On the other hand, boutiques are distinct from their larger counterparts in that their AIDA adoption choices are intricately linked to their drive towards providing customised solutions and specialised service offerings for their clients. The varying approaches by each firm type imply that firms' technology selection processes are deeply embedded in their organisational structures and strategic priorities. This analysis at the firm type level reveals that accounting firms' decisions to adopt specific AIDA technologies are driven not only by technological factors but also by market position, operational capabilities, and strategic goals. These insights illustrate how AIDA adoption is not simply a technological upgrade but a decision closely tied to each firm type's operations and long-term objectives.

7.5 RQ4: How do accounting firms overcome barriers and cultivate enablers for AI-driven digital transformation?

This section examines how accounting firms of varying sizes overcome the barriers they face and cultivate enablers for AI-driven digital transformation. Building upon the findings in RQ1, RQ2, and RQ3, which analysed the sensing and seizing of opportunities, reconfiguration of structures, and rationale for technology selection, RQ4 looks into the day-to-day issues these firms encounter and the approaches they take to address them. The analysis finds that accounting firms face barriers that differ based on their size and resource availability, which leads to them having to formulate strategies unique to their circumstances to overcome these obstacles.

The cross-case findings highlight three key dimensions that set apart how different firm types navigate their digital transformation journeys: (1) *the primary barriers that inhibit their progress*, (2) *the approaches they take to overcome these barriers*, and (3) *the key enablers they cultivate to support successful transformation*. These dimensions reflect the operational realities of firms of varying sizes and are also reflective of how their strategic responses are shaped by their organisational contexts and market positions. **Table 7-5** summarises these cross-case findings across each firm type.

The following sub-sections outline how accounting firms overcome barriers and cultivate enablers by examining: *the primary barriers that hinder AI-driven digital transformation* (7.5.1), *the approaches taken to overcome these barriers* (7.5.2), and *the key enablers cultivated to facilitate successful transformation* (7.5.3). Section 7.5.4 is a synthesis of these findings, illustrating how firms of different sizes conceptualise and implement their strategies for overcoming barriers and cultivating enablers in AI-driven digital transformation.

Table 7-5: Cross-Case Findings on Barriers, Approaches, and Enablers of AI-driven Digital Transformation across Firm Types

Firm Type	Primary Barriers	Overcoming Approaches	Cultivating Enablers
Big 4s	Scepticism and Structural Fragmentation	Centralised innovation teams with comprehensive formal training programmes	Strategic technology partnerships with proprietary tool development
Mid-Tiers	Resource Constraints and Change Resistance	Project champions with protected learning time and gamification initiatives	Pragmatic technology implementation with client analytics focus
Boutiques	Client technology resistance and infrastructure limitations	Process-first approach with selective client engagement	Digital-first culture with tiered expertise development models

7.5.1. Primary Barriers

The barriers hindering AI-driven digital transformation in accounting firms vary based on firm size and organisational complexity. While all firm types encounter challenges when integrating new AIDA technologies into their operations, the nature and magnitude of these barriers differ across Big 4s, Mid-tiers, and Boutiques, reflecting their distinct operational contexts and resource capacities.

Big 4s: Scepticism and Structural Fragmentation

For Big 4s, the most significant barrier lies in notable scepticism toward AIDA technologies and structural fragmentation within their operations. This was seen in their reluctance to fully trust technological solutions, either due to unfamiliarity or a perception that technology adds complexity, which results in disjointed efforts from siloed technical and accounting teams. These barriers led to a challenging environment where AIDA adoption struggled to take root amid differing priorities and fragmented approaches.

One of the clearest examples of structural fragmentation is the disconnect between technology teams with the various accounting service functions. difficulty in aligning tax and technology teams within firms. This is particularly evident in Landmark Co, where #1-A-Partner describes how this fragmentation created incompatible languages and mindsets:

"Both of these teams speak very different languages. I am working with a team that is working on a digital transformation and (a software) upgrade for clients. The team is very (software)-driven, so they're familiar with how it works, what the functionalities are, but they cannot understand what the client's tax teams' requirements are... When I deal with them, I'm talking tax, but the technology side is talking codes, flows, and charts. We're not communicating effectively."

(#1-A-Partner)

There exists also a misunderstanding that technology does not gel well with accounting. This scepticism toward AIDA technologies translates into accountants' reluctance to trust outputs from automated systems, preferring familiar manual processes despite their inefficiency. In Safeguard Co, #2-B-Director captures how this unfamiliarity with technology led to resistance that permeated even senior levels

"Practically, if you don't understand the technology or its logic, you tend not to trust it. So even if the output is done, partners or directors might ask staff to double-check, even if it's 200 pages long. Some choose not to use it, saying it's more work to redo it if classified wrongly. They prefer doing it from scratch using Excel."

(#2-B-Director)

Structural fragmentation further compounds the problem when siloed departments develop technological solutions in isolation, creating an organisational landscape where duplication and inconsistency multiply. #5-C-Partner explains how this led to inefficiencies in Trailblazer Co:

"Initially, the firm faced a significant challenge due to the lack of a coordinated approach. Different teams within the firm were developing their own tools independently. This led to a lot of duplication of effort and inefficiencies, as similar tools were being developed in isolation across various teams. There was a clear need for a unified direction and a collaborative effort on a global scale."

(#5-C-Partner)

Adding to these complexities, #9-D-SeniorManager points out how evolving regulations further complicate technology adoption in Keystone Co:

"Recently, with changes in auditing standards, especially regarding technology solutions, there's been a heightened emphasis on maintaining quality and documentation standards. This has introduced a challenge: when adopting new technology tools, we must also consider how their output will be reviewed. This has led to a perception that using new technology tools might require even more documentation than traditional methods, which can be a deterrent for some."

(#9-D-SeniorManager)

Across the Big 4s, scepticism and structural fragmentation reveal a complex tension between traditional practices and technological advancement. This dynamic results in Big 4s grappling with inefficiencies and misaligned teams as they navigate client expectations and regulatory shifts. Such challenges complicate the balance between advancing technology and meeting the practical demands of their clients and their internal service functions.

Mid-Tiers: Resource Constraints and Change Resistance

Mid-tiers face a different set of barriers in their AI-driven transformation journey, characterised by resource constraints coupled with considerable amount of resistance to technological change. Unlike Big 4s with their global resources, Mid-tiers must carefully balance limited financial and human resources while simultaneously addressing established work patterns that may not readily align with new digital approaches. This dual barrier creates a complicated environment where technology adoption proceeds cautiously amid competing priorities and organisational inertia.

The human dimension of change resistance is particularly prominent in Mid-tiers. In Reliable Co, #16-E-Partner identifies people-centred challenges as their primary barrier:

"The primary challenge was with the internal resources, particularly the people aspect. Human beings generally resist change, especially when it involves technology."

(#16-E-Partner)

This reluctance to embrace technological change among individuals is compounded by resource constraints that limit implementation options. In Benchmark Co, #17-F-ManagingPartner describes how financial considerations and a tendency to rely on established tools created a cautious approach:

"Another challenge was the commercial aspect of switching to new software, like from (older tool) to a more advanced but less established solution. The high cost and effort required for such a transition, coupled with the scarcity of users familiar with the new software, made us cautious."

(#17-F-ManagingPartner)

The dual nature of resource constraints and change resistance is seen in Foresight Co, as #18-G-Partner pointed out:

"The first challenge is the financial aspect, as the cost of technology can be substantial. Secondly, there's resistance to change within the team, particularly among the older generation, which requires us to educate and ease them into new technologies."

(#18-G-Partner)

Beyond financial limitations, the implementation burden creates additional resource strains. In Synergy Co, #19-H-SeniorManager describes how the front-loaded effort of training the RPA robot discouraged adoption:

"One challenge, particularly for auditors, was the additional work required to extract, download, and save documents to teach the robot (for RPA). This was seen as extra work upfront..."

(#19-H-SeniorManager)

The technical complexity of system integration further stretches limited resources, as described by #20-E-Partner from Reliable Co:

"One significant challenge was integrating two specific software platforms, which proved essential but difficult. A major part of this challenge involved data gathering, particularly in areas like human resources and client engagement."

(#20-E-Partner)

For Mid-tiers, resource constraints and resistance to change create a challenging predicament, leaving them caught between well-resourced Big 4s and nimble Boutiques without the financial capacity for bold initiatives yet facing increasing pressure to digitalise. Contending with limited budgets, implementation complexities, and traditional working patterns, Mid-tiers must be far more selective in their technology choices than their larger counterparts.

This selective approach requires them to carefully demonstrate concrete returns on digital investments and prioritise initiatives that offer clearer pathways to adoption and measurable benefits.

Boutiques: Client Technology Resistance and Infrastructure Limitations

Boutiques contend with two interconnected barriers: clients' aversion to technology and internal infrastructure limitations. Although client resistance to new technologies is a prevalent issue for all firm types, boutiques are more significantly impacted due to their client-centric business models and the closer relationships they have with their clients. This resistance, coupled with constraints on their technological infrastructure, poses substantial obstacles for Boutiques as they pursue AI-driven digital transformation.

Client technology resistance represents a particularly critical barrier for Boutiques, whose business models depend largely on close client relationships and tailored service delivery. #21-J-ManagingPartner from Catalyst Co explains how this has a direct impact on their transformation efforts:

"Another challenge was client education and buy-in. Many clients, especially older ones, had a fixed mindset about how things should be done, based on outdated methods. Convincing them to adopt new, more efficient digital processes was time-consuming and often challenging. We had to do a lot of groundwork with these clients, many of whom were not ready to embrace change readily."

(#21-J-ManagingPartner)

This sentiment is echoed by #24-L-SeniorManager from Venture Co, who describes their struggle to get client buy-in on the value that AIDA technologies bring:

"Another challenge was getting our clients on board with the new technologies and convincing them of the value. Many clients were initially hesitant to embrace change and were comfortable with the traditional ways of working. We had to put in a concerted effort to educate them about the benefits of these tools, such as real-time financial visibility, improved accuracy, and faster turnaround times."

(#24-L-SeniorManager)

While larger firms can often alleviate client aversion through diversified client portfolios, boutiques have to grapple with a more direct impact due to their smaller client pool and

greater client dependencies. This is exacerbated by internal challenges in aligning the team with digital initiatives, as noted by #22-K-ManagingPartner from Forward Co:

"The first challenge involved aligning the team with digital adoption, which required changing mindsets. The second challenge was selecting the appropriate digital tools for our business, addressed through research and experimentation. Ensuring data security and privacy, particularly for remote work, was critical."

(#22-K-ManagingPartner)

Beyond client resistance, another internal challenge they have to deal with is technological infrastructure limitations that impedes their AIDA transformation goals. #23-L-ManagingPartner from Venture Co highlights the system integration challenges they encountered:

"We've faced challenges with different software systems not integrating or communicating effectively."

(#23-L-ManagingPartner)

In Boutiques, client technology resistance and infrastructure limitations necessitate a delicate balancing act between client interactions and advancement of digital transformation. This dynamic compels Boutiques to navigate carefully through a narrow path where they cannot implement digital solutions as extensively as larger firms might, yet must nevertheless remain competitive by pursuing AI-driven digital transformation. These constraints mean that Boutiques have to be highly strategic when implementing digital initiatives, carefully choosing AIDA tools that can accommodate client preferences and still function within their infrastructural capabilities.

7.5.2. Approaches to Overcoming Barriers

To overcome the primary barriers identified in 7.5.1, each firm type adopts a different approach that is indicative of their unique organisational context and strategic priorities. Big 4s devise strategies to tackle scepticism and structural fragmentation, Mid-tiers develop targeted solutions to overcome resource constraints and internal change resistance, while Boutiques take more tailored approaches to deal with their clients' technology resistance and address infrastructure limitations. Each firm type adopts a unique approach of overcoming barriers which lays the foundation for sustainable AI-driven digital transformation that corresponds with their distinct market position.

Big 4s: Centralised Innovation Teams with Comprehensive Formal Training Programmes

To address scepticism and structural fragmentation, Big 4s set up centralised innovation teams that bring together departments that were previously working independently in silos. Complemented further by the running of formal training programmes that are designed to build trust in AIDA technologies, these teams help to ensure that digital transformation initiatives are well-coordinated. This approach draws on their scale and resources to build cohesive organisational structures that enable Big 4s to overcome fragmentation while concurrently addressing scepticism through education and sharing of success stories.

The importance of strong leadership in overcoming structural fragmentation is emphasised by #1-A-Partner from Landmark Co:

> *"To make this process more successful, sometimes it requires a very strong message from the top that we are going to head in this direction, this is the new generation of technology we're supposed to be adopting, whether internally or externally, for our delivery work, and we just have to sort of live with things that we may experience."*
>
> *(#1-A-Partner)*

To overcome scepticism, firms focus on helping their staff make sense of the outputs from these AIDA technologies rather than getting fixated on the technical. In Safeguard Co, #13-B-Director explains this trust-building approach:

> *"Rather than focusing solely on the technical workings of new technologies, we have prioritised training our staff on how to interpret the outputs these technologies produce. We utilise various audit software that produces specific results, and our training programmes are geared towards helping staff understand and make sense of these results."*
>
> *(#13-B-Director)*

A centralised approach taken by the Big 4s is to have dedicated innovation and digital teams in response to structural fragmentation. #3-C-Partner explains how Trailblazer Co established these specialised teams to unify previously siloed technology initiatives:

"Firstly, we established an innovation team within our organisation. This team plays a crucial role in boosting confidence among our less tech-savvy staff and provides necessary support in technology implementation."

(#3-C-Partner)

These teams are also supported by extensive training programmes aimed at addressing technology scepticism throughout the firm. #10-D-SeniorManager highlights the upskilling approach seen in Keystone Co:

"We have invested heavily in training programmes. These are conducted especially during the off-peak seasons, making them accessible to all employees, from partners to junior staff. We've transitioned to more virtual training methods. This shift has not only made training more accessible but also increased participation across the firm, allowing us to effectively disseminate knowledge and skills in digital technologies."

(#10-D-SeniorManager)

Having centralised innovation teams and comprehensive formal training programmes help Big 4s to systematically and gradually overcome the issues of scepticism and structural fragmentation within their firm. With a unified approach to AIDA adoption supported by knowledge-sharing and education, they progressively move past initial resistance towards well-coordinated digital transformation.

Mid-Tiers: Project Champions with Protected Learning Time and Gamification Initiatives

Mid-tiers overcome their resource constraints and change resistance through a pragmatic combination of project champions who drive adoption within operational teams, protected learning time that creates space for skill development amidst client pressures, and gamification initiatives to encourage engagement with AIDA technologies. This approach addresses their primary barriers through targeted, efficient interventions without having to rely on resource-intensive transformation initiatives.

By appointing internal project champions to spearhead AIDA adoption, mid-tiers seek to overcome the deep-rooted issue of change resistance. #18-G-Partner explains how Foresight Co instigates change through these project champions:

"We've also appointed project champions from our audit teams to understand IT tools' functionality and potential workflow redesigns. These champions are audit managers interested in process improvement."

(#18-G-Partner)

Benchmark Co takes a similar approach in the form of pilot teams who are enthusiastic about trying out new technology, as #17-F-ManagingPartner shares:

"Our approach to developing digital talent and culture starts with identifying pilot teams willing to explore new solutions. We aim to address specific pain points with these solutions, thereby incentivising team members who feel these pains more acutely to engage with the new technology."

(#17-F-ManagingPartner)

Acknowledging the resource constraints that hinder the effectiveness of training programmes, prevent extended training programmes, mid-tiers establish protected learning time for staff to set aside for digital upskilling. #19-H-SeniorManager describes this initiative taken by Synergy Co that frees up time for staff to explore new tools:

"To address this, we protected their time by setting aside specific periods for training, ensuring they weren't booked for any jobs during these times. This initiative allowed staff to focus on learning and adopting new tools without the pressure of work commitments."

(#19-H-SeniorManager)

#19-H-SeniorManager also shares about the gamification initiatives introduced by Synergy Co to make technology adoption an engaging process so as to counter change resistance in staff:

"In terms of promoting a culture of adoption, we introduced gamification elements. For example, staff were encouraged to solve problems using tools like Alteryx, with rewards for successful problem-solving. This approach, along with digital certificates and badges for completing certain stages of learning, helped to make the learning process more engaging and incentivising."

(#19-H-SeniorManager)

Realising that pushing for firm-wide transformation initiatives would put strain on their limited resources, mid-tiers choose to take an incremental approach by prioritising the tasks that could be digitalised easily. #15-E-Partner describes how Reliable Co needed a top-down approach to overcome the initial resistance so this could pave the way for future initiatives:

"To counter this (resistance to change and limited resources), we implemented a top-down strategy where certain new digital practices, such as digitalised journal entry testing, were made compulsory. This directive approach helped in breaking through the initial resistance and facilitated a smoother transition to new methods."

(#15-E-Partner)

Mid-tiers are finding innovative ways to overcome resource constraints and resistance to change by using practical, targeted interventions. Instead of pushing for sweeping, resource-heavy transformations, they identify internal project champions and pilot teams to lead by example, carving out dedicated time for digital upskilling and making the learning process engaging with gamification. This incremental approach not only smooths the transition to new technologies but also builds a culture of continuous improvement and digital confidence, creating a greater acceptance for future AIDA adoption.

Boutiques: Process-First Approach with Selective Client Engagement

Boutiques tackle the challenges of client technology resistance and infrastructure limitations with a process-first approach. Instead of rushing to adopt new tools right away, they first concentrate on reshaping how work is done, ensuring that any AIDA technologies that get introduced builds on an already strong operational base. Alongside this, they carefully choose their clients, opting for those already inclined toward digital solutions. This dual focus allows them to stretch their modest resources effectively while staying true their commitment to putting their clients first.

#23-L-ManagingPartner laid out the reasoning for Venture Co's process-first approach plainly:

"A critical part of our approach has been to focus first on designing and stabilising the processes that these technologies are meant to enhance or support. We believe that establishing a solid foundation in terms of process efficiency and effectiveness is essential before layering on technology. This ensures that when technology is introduced, it acts as

a complement to an already robust process, rather than as a premature addition that might not align well with the existing workflow."

(#23-L-ManagingPartner)

Boutiques' process-first approach is not applied only to clients but also internally, where digitalisation is made a core strategic imperative for all levels within the firm. #24-L-SeniorManager elaborates on how this was implemented in Venture Co:

"We had to make digitalisation a top strategic priority for the firm, not just a 'nice to have' or side project. This required getting full buy-in and support from leadership at all levels, from senior management down to junior staff. By clearly communicating the benefits and importance of these initiatives, we were able to secure the necessary resources and commitment."

(#24-L-SeniorManager)

Similarly, Forward Co put in place a clear process for how technology was to be adopted within the firm so as to overcome infrastructure limitations. #22-K-ManagingPartner describes this pragmatic approach:

"We managed this through targeted training and emphasising the benefits. We also implemented on-the-job training, where experienced users guide newcomers. This approach led to varied learning speeds, but ultimately, everyone adapted, developing muscle memory over time with regular usage."

(#22-K-ManagingPartner)

Dealing with clients who balk at technology change is a common occurrence, which has led to Boutiques becoming selective of the clients they engage with. #21-J-ManagingPartner explains how Catalyst Co approaches this:

"One key lesson is the power of patience and timing. Since I'm relatively young, I had the advantage of time, allowing me to wait for industry changes and retirements, which opened up new opportunities. We focused on targeting trailblazing businesses and startups that were more receptive to technological advancements. This approach helped us avoid clients resistant to change. Another lesson was sticking to our guns and being selective with clients. We realised that not every client is right for our transformed services.

Sometimes, we had to turn down projects if we felt the client wasn't open to our approach. This selectiveness ensured that we didn't compromise our values or service quality."

(#21-J-ManagingPartner)

Boutiques approach client technology resistance and infrastructure limitations by pairing pragmatic process-first approaches with being selective about clients they engage with. They ensure that business process foundations are well-established for themselves and for their clients first before sourcing out for the appropriate tools. This ensures that when technology is implemented, it serves as a complementary enhancement rather than being disruptive to operations. Their selectivity in choosing clients who are receptive to digital solutions directly supports this approach. Combined, this helps Boutiques to reinforce their client-centric commitment as they work within infrastructure limits while encouraging their clients to be more receptive to technology.

7.5.3. Cultivating Key Enablers

Faced with the primary barriers mentioned in 7.5.1 that hinder AI-driven digital transformation, accounting firms have taken different approaches to overcome them, as seen in 7.5.2. To take the transformation further, accounting firms must actively cultivate specific enablers. Likewise, these enablers differ across firm types and are based on their available resources, organisational context, and strategic priorities. Beyond just addressing immediate challenges, they also lay strong foundations for continuous digital transformation in an increasingly technology-driven accounting industry.

Big 4s: Strategic Technology Partnerships with Proprietary Tool Development

Big 4s capitalise on their strong international networks and access to larger resource pools through a two-pronged approach: forming strategic partnerships with leading technology providers while simultaneously investing in their own proprietary tool development. This balanced approach gives them access to cutting-edge external technologies while they develop internal firm-specific capabilities that deliver competitive advantages.

Big 4's investment in technology and strategic partnerships help to enhance client service and improve operational efficiency. #1-A-Partner describes one such example for the tax service function in Landmark Co:

"For us, we've invested in a lot of in-house-built technology that supports us with client delivery. This includes tools that could help with transfer pricing, deals, or compliance-related work. We've also started to be more coordinated, using things that are maybe (software)-based to help with the information and data flow. Selectively, we've also had some alliances or partnerships, joint projects with some other external parties as well to help go to market with a client that has specific needs."

(#1-A-Partner)

Developing proprietary tools is also something the Big 4s have committed to as #13-B-Director from Safeguard Co highlights:

"In terms of digital infrastructure and specific technologies, our firm has made significant investments in two key areas over the past three years. The first is data analytics, particularly in the form of Power BI dashboards for management. Power BI is a business analytics service by Microsoft that provides interactive visualisations and business intelligence capabilities."

(#13-B-Director)

Taking this internal development a step further, Big 4s have also begun initiatives to develop their own digital platforms to facilitate the connecting of data from different sources. #12-D-Director elaborates on one such platform in Keystone Co that came about through their digital accelerator initiative:

"Another initiative we have is the digital accelerator whereby we have different teams trying to create a product and trying to go to market with that product. We have this data platform initiative whereby it's a single platform for many different data sets for anyone in the firm to actually tap onto that resource and then interrogate data, visualise data, analyse data, and so on."

(#12-D-Director)

Finding the right balance between scalability needs and internal development efforts is another crucial aspect which #5-C-Partner from Trailblazer Co sheds light on:

"One of the key factors in our technology strategy is scalability, as we deploy solutions globally. This need for scalability has led us to closely partner with Microsoft. Their

products offer a comprehensive environment that supports a range of functions essential to our operations."

(#5-C-Partner)

Big 4s leverage on their extensive global networks to establish strategic partnerships with leading technology providers. This provides them access to the latest tools, which when coupled simultaneously with proprietary tools they develop internally, help cultivate firm-specific capabilities. This synergy further strengthens their competitive advantage.

Mid-Tiers: Pragmatic Technology Implementation with Client Analytics Focus

Mid-tiers are noticeably pragmatic in their approach to implementing AIDA technologies. They place a strong emphasis on strategically adapting readily available commercial technologies instead of investing heavily into developing proprietary tools. This allows them to work within resource constraints while still delivering value to clients they service.

Mid-tiers rely on commercially-ready and easy-to-access AIDA tools, like Power BI with AI Insights functionality to improve operational efficiency and service quality. #14-E-Partner describes how this is done in Reliable Co:

"Using data analytics tools like Power BI has increased the accuracy, efficiency, and quality of our work. Before, we manually reviewed vouchers; now, analytics automate this process, enhancing efficiency in accounting."

(#14-E-Partner)

This was echoed by #15-E-Partner, who emphasised their focus on analytics capabilities of Power BI that supports their analysis work:

"Firstly, we have extensively integrated Power BI tools into our operations. These tools have revolutionised our data analytics capabilities, enabling us to conduct in-depth analyses on large data sets."

(#15-E-Partner)

Through the introduction of client-focused analytics-enabled insights, Mid-tiers have observed a surge in demand for data-driven solutions, highlighting their keen understanding of clients' needs. #17-F-ManagingPartner shares one such example for Benchmark Co's client:

"An interesting outcome from our exploration of data analytics was the increased demand from clients for the insights generated. For example, using Power BI, we were able to provide valuable visualisations for a (client), showcasing areas with outstanding (due payments). This not only facilitated their collection efforts but also created a demand for these services, illustrating the client-driven need for digital capabilities."

(#17-F-ManagingPartner)

Mid-tiers tend to also focus on the practical applications rather than the sophisticated technical details of the AIDA technologies they implement. #18-G-Partner explains how this helps to make technology accessible to staff in Foresight Co who are less technical:

"We've integrated Microsoft tools for both internal efficiency and client services, along with UiPath for automating processes. Our approach doesn't require staff to become IT experts but to understand and apply IT solutions effectively. Training our team to use IT tools efficiently, without needing to learn coding, is part of our strategy. The objective is to leverage these tools for value-added services and problem-solving."

(#18-G-Partner)

This applies also to how Mid-tiers structure their data processes, as they might choose to use complementary tools for different stages of the analytics workflow. #19-H-SeniorManager describes how Power BI and Alteryx are used hand-in-hand at Synergy Co:

"Power BI is another tool that proved very useful, especially for auditors. It's beneficial for creating dashboards and reports for audit committees, allowing for better visualisation of information. The general approach was to clean and organise data using Alteryx and then present it through Power BI dashboards."

(#19-H-SeniorManager)

The pragmatic approach to implement commercial technologies taken by Mid-tiers is a key enabler for their AI-driven digital transformation. By focusing on practical applications rather than technical complexity, they make these tools accessible firm-wide so that staff can deliver greater value to clients. Through the deployment of ready-made technologies in ways that both enhance internal efficiency and deliver tangible client insights, Mid-tiers are able to maximise value while working within resource constraints.

Boutiques: Digital-First Culture with Tiered Expertise Development Models

Without a wealth of resources at their disposal, Boutiques turn to talent development and cultural transformation as strategic priorities. Through inculcating a digital-first mindset firm-wide while implementing a tiered expertise model, they can maximise their limited human resources. Boutiques focus on tweaking their talent approach and organisational culture to develop capabilities that enhance their client-centric focus and niche specialisation.

Building a digital-first culture is crucial to Boutiques, as it enables them to leverage their workforce talents as the primary driver of transformation despite infrastructural limitations. #22-K-ManagingPartner elaborates on how this is the cultural emphasis in Forward Co:

"First, it's about talent development through training and using digital tools effectively. We're focusing on equipping our team with the skills necessary for digital tasks. Second, we've emphasised the importance of a digital-first mindset among our employees. It's not just about using tools but also understanding and embracing digital transformation. Lastly, we've been fostering a culture of continuous learning and adaptability, which is crucial in the fast-paced digital world. This includes encouraging our staff to stay updated with the latest digital trends and technologies."

(#22-K-ManagingPartner)

Another significant cultural transformation in Boutiques is the redesigning of roles to shift away from traditional accounting tasks that are routine in nature. #21-J-ManagingPartner explains how Catalyst Co has transitioned their staff to use technology to provide higher-value advisory services to clients:

"Our journey in digital transformation has shown several benefits. Internally, it has significantly impacted our workplace culture. Traditionally, accounting firms struggle with work-life balance, which motivated me to explore ways to improve this aspect. One of our hypotheses was to enable graduates to engage in more analytical tasks from the outset. Digital transformation allows us to replace preparer roles with AI, leading to roles focused on quality checking and decision-making. In terms of corporate strategy, we've invested in redesigning our processes and job descriptions. Our roles now differ significantly from traditional accounting firms, with a strong focus on managing technology and processes."

(#21-J-ManagingPartner)

A distinctive characteristic of boutiques is their implementation of tiered expertise models that ensures appropriate skill distribution throughout the firm so that talent utilisation can be optimised. #23-L-ManagingPartner describes this structured approach in Venture Co:

"The development of digital talent and culture in our firm is structured around a multi-tiered approach. The initial level involves ensuring that every member of our team gains at least a fundamental understanding of technology and its application in our context. Moving to the second level, we have identified specific individuals within various segments of our firm who can act as 'digital champions.' For scenarios that demand a higher degree of complexity and specialisation, we have a group of experts who handle these advanced digital challenges."

(#23-L-ManagingPartner)

Faced with resource limitations, Boutiques make a strategic choice to focus on developing their workforce to become their greatest asset. By nurturing a digital-first culture and building a tiered expertise in throughout the firm, they develop capabilities in their workforce to better serve their clients' needs. As such, they are able to overcome infrastructural limitations and clients' resistance to technology by leveraging on a continuously learning workforce that keeps them agile and competitive.

7.5.4. Synthesis of Barriers and Enablers across Firm Types

The barriers encountered during AI-driven digital transformation, the approaches taken to overcome them, and the enablers cultivated to sustain progress vary across accounting firms of different types (sizes). This synthesis brings together these interconnected dimensions covered in sections 7.5.1, 7.5.2, and 7.5.3 to present a clearer picture of how firm type impacts digital transformation strategies. The evidence suggests that AI-driven digital transformation is not a homogenous process but rather a strategic endeavour influenced by firm size, resource availability, organisational context, and market positioning.

Big 4s approach AI-driven digital transformation with an emphasis on infrastructure and standardisation. The primary barriers they face are from within the firm, where there is scepticism towards AIDA technologies and structural fragmentation internally. These issues are evident in the disconnect between technology and accounting teams, staff's hesitation with trusting outputs derived from the tools, and isolated technology initiatives across different departments. To overcome these barriers, Big 4s tap on their global networks for scale and resources to set up centralised innovation teams that consolidate previously

disjointed initiatives while formalising extensive training programmes to foster confidence in AIDA technologies among their staff. This two-pronged approach promotes strategic alignment across their global networks while concurrently addressing the scepticism that hampers adoption. Building upon these foundational efforts, Big 4s cultivate strategic partnerships with technology industry leaders whilst simultaneously investing in proprietary tool development. Through this balanced strategy, they have access to the latest technologies in the market while developing firm-specific capabilities that deliver competitive advantages. The combination of centralised coordination, formal training programmes, strategic partnerships, and internal technology development creates a robust ecosystem that reinforces their position as market leaders and enables standardisation of AIDA capabilities across their global operations.

For Mid-tiers, AI-driven digital transformation is seen primarily as a means to improve operational efficiency because they are faced with financial and human resource constraints as well as resistance to technological change. Such barriers require mid-tiers to be prudent in their implementation approaches as they carefully balance competing priorities and established work patterns. To overcome these barriers, a targeted approach is needed, combining projects champions who drive AIDA adoption, protected learning time to give staff the space and freedom to develop technology skills, and gamification initiatives to encourage engagement with AIDA technologies. The findings reveal a pattern of focused, efficient interventions that address primary barriers without relying on resource-intensive transformation initiatives. Mid-tiers enhance their transformation capabilities further by implementing practical and commercially available technologies with a specific focus on client analytics. Rather than pursuing proprietary development, they adapt such readily available tools strategically to work within resource constraints while ensuring they are still delivering value to clients. By emphasising practical applications rather than technical complexity, they make these tools accessible firm-wide, allowing staff to enhance internal efficiency and deliver data-driven client insights. This measured, incremental approach ultimately allows mid-tiers to steadily build digital capabilities that maintain their competitiveness in serving their local and regional mid-sized clients.

Boutiques, on the other hand, view AI-driven digital transformation through the lens of client-centric specialisation. Due to their client-centric business models, their digital transformation journey is greatly affected by clients' technology resistance. At the same time, they are faced with infrastructure limitations, which further restricts their development of technological capabilities. To address these challenges, they take a process-first approach

where technology is introduced only after strong operational foundations have been established while concurrently being intentional about engaging with clients who are receptive to digital solutions. This structured response allows Boutiques to make the most of their limited resources while remaining dedicated to providing clients with tailored services. To supplement their digital transformation pursuits further, Boutiques nurture a firm-wide digital-first culture and implement tiered expertise development models to optimise talent utilisation. This fosters a continuously learning workforce where their traditional roles have been redesigned so they focus on higher-value advisory services, thereby turning their workforce into Boutiques' greatest assets. Their firm culture and talent-focused strategy helps them overcome infrastructural limitations and client resistance supported by a workforce that is agile and digitally confident, which then strengthens their provision of specialised services to niche markets.

The cross-case analysis finds that the approach to AI-driven digital transformation varies across firm types and is based on each firm type's unique organisational context and strategic objectives. Big 4s pursue an infrastructure-centric transformation to strengthen their market dominance through digital capabilities that stem from standardisation and the development of proprietary solutions. Mid-tiers favour a pragmatic, incremental approach that prioritises operational efficiency improvement within resource constraints so they can maintain competitiveness in their target market segment. Boutiques commit to a people-centric, specialised transformation to differentiate themselves from their larger counterparts by training up a digitally confident workforce that can deliver client-specific solutions.

The evidence suggests therefore that, successful AI-driven digital transformation in accounting firms goes beyond merely adopting technology. Instead, it also requires strategic alignment between technological initiatives, organisational context, resource capabilities, and market positioning. The barriers firms encounter, approaches they take to overcome those barriers, and the enablers they cultivate are intricately linked with their firm type (size) and strategic objectives. As such, the transformation journeys that each firm type go on are found to be quite unique from each other. The analysis finds that accounting firms' approaches to overcoming barriers and cultivating enablers for AI-driven digital transformation are fundamentally shaped by their perceptions of transformation relative to their distinct organisational identities and market positions.

7.6. Summary of Cross-Case Analysis

In conclusion, this chapter reports the cross-case findings on how accounting firms build DCs in AIDA as they pursue digital transformation. **Table 7-6** summarises these cross-case findings across all four research questions.

Table 7-6: Tabulated Summary of Cross-Case Findings

	Summary of Cross-Case Findings
Research Objective 1 – To explore how accounting firms sense and seize opportunities for adopting AIDA technologies.	**RQ1: How do accounting firms sense and seize opportunities for adopting Artificial Intelligence-driven Analytics technologies?**
	Evidence demonstrates that accounting firms employ two distinct *organisational focuses* and four types of *exploratory initiatives* when recognising AIDA opportunities.
	The two organisational focuses identified across the 11 firms are (a) *Client-Centred* approach (Landmark Co, Safeguard Co, Keystone Co, Reliable Co, Forward Co, Venture Co) and (b) *Process-Oriented* approach (Trailblazer Co, Benchmark Co, Foresight Co, Synergy Co, Catalyst Co).
	Firms engage in four types of exploratory initiatives: (a) *Client Readiness Profiling*, (b) *Tech Trends Tracking*, (c) *Workflow Mapping*, and (d) *Technology Piloting*.
	All 11 accounting firms conduct *Client Readiness Profiling* and *Workflow Mapping*, indicating these are fundamental activities in identifying AIDA opportunities regardless of firm size.
	10 of the 11 firms *actively track technology trends*, with only Forward Co not explicitly engaging in this exploratory initiative.
	8 firms conduct *Technology Piloting* to assess AIDA solutions' effectiveness before wider deployment.
	Responsiveness levels vary, with 8 firms categorised as "*Highly Proactive*" and 3 firms as "*Moderately Proactive*" in their approach to identifying AIDA opportunities.
	When implementing AIDA for client services, firms prioritise three distinct areas: *Client-Focused Enhancements* (Trailblazer Co, Synergy Co, Catalyst Co), *Operational Efficiency* (Safeguard Co, Foresight Co, Venture Co), and *Compliance and Risk Management* (Landmark Co, Keystone Co, Reliable Co, Benchmark Co, Forward Co).
	Implementation spans four primary AIDA use cases: *Advanced Analytics with ML* (9 firms), *Data Visualisation* (8 firms), *Automation* (6 firms), and *Document Processing* (3 firms).
	Integration approaches vary from *Firm-Wide Integration* (4 firms) to *Phased Rollout* (5 firms) and *Targeted Departmental Rollout* (3 firms).
	Resource allocation demonstrates firms' commitment to AIDA adoption, with 5 firms making *Significant Investment* and 6 firms making *Moderate Investment*.

	Evidence points to all firms undertaking significant reconfiguration efforts, though approaches vary based on firm size and strategic priorities.
	Firms with *Client-Focused Enhancement* priorities (Trailblazer Co, Synergy Co, Catalyst Co) restructure operations to deliver personalised insights through AIDA tools, enhancing the value proposition for clients.
	Firms focusing on *Operational Efficiency* (Safeguard Co, Foresight Co, Venture Co) reorganise workflows to incorporate AI-driven automation, significantly reducing manual tasks and improving productivity.
	Firms prioritising *Compliance and Risk Management* (Landmark Co, Keystone Co, Reliable Co, Benchmark Co, Forward Co) reconfigure processes to standardise data handling, improve risk detection, and strengthen regulatory alignment.
	Client expectations have evolved from viewing compliance as a baseline requirement to *demanding data-driven insights* that empower better business decisions.
	The integration of AIDA technologies follows a progressive trajectory, beginning with basic *process improvements* before advancing to *sophisticated data analytics capabilities*.
	Firm-Wide Integration approaches typically correspond with *Significant Investment*, reflecting comprehensive commitment to transformative AIDA adoption.
	Partial implementation strategies (*Phased* or *Targeted*) are generally supported by *Moderate Investment* levels, balancing transformation goals with implementation costs and risks.
Research Objective 2 – To examine how accounting firms reconfigure their structures, processes, and practices to integrate AIDA technologies.	**RQ2: How do accounting firms reconfigure their structures, processes, and practices to integrate Artificial Intelligence-driven Analytics technologies?**
	Evidence points to all firms undertaking significant reconfiguration efforts across *structural*, *process*, and *practice* dimensions.
	Structural changes include establishing *innovation and digital teams* (seven firms: Landmark LLC, Trailblazer LLC, Keystone LLC, Reliable LLC, Benchmark LLC, Foresight LLC, and Catalyst LLC) and implementing *coordination mechanisms* across departments and service lines.
	Process changes encompass three main areas: *system infrastructure* upgrades (Landmark LLC, Keystone LLC, Benchmark LLC, Foresight LLC, and Forward Pte Ltd), *process automation* (seven firms including Landmark LLC, Safeguard LLC, Trailblazer LLC), and *data analytics implementation* (most explicitly in Safeguard LLC, Trailblazer LLC, Keystone LLC, and Venture Pte Ltd).
	Firms reshape *internal practices* through *cross-functional collaboration* (highest in Safeguard LLC and Trailblazer LLC), *digital upskilling* (highest in Keystone LLC and Synergy LLC), and *role transformation* from routine to strategic functions (most advanced in six firms including Safeguard LLC and Trailblazer LLC).
	The reconfiguration approaches align with firms' strategic priorities, with some emphasising *structural innovations* while others focus on *process improvements* or *practice transformations*.

	Firms' reconfiguration efforts demonstrate progressive maturity, with *initial focus on structural adjustments* leading to *process refinements* and ultimately to *fundamental practice transformations*.
	Evidence indicates that successful AIDA integration requires multi-dimensional reconfiguration rather than isolated technological implementations.
Research Objective 3 – To determine why accounting firms adopt specific AIDA technologies over others.	**RQ3: Why do accounting firms adopt specific Artificial Intelligence-driven Analytics technologies over others?**
	Clear evidence indicates that firm type (Big 4s, Mid-tiers, Boutiques) significantly influences AIDA technology selection, with distinctive patterns in *strategic drivers*, *use case identification* approaches, and *decision-making structures*.
	Strategic Drivers for Selecting AIDA Technologies:
	Big 4s (Landmark Co, Safeguard Co, Trailblazer Co, Keystone Co) prioritise *market leadership through global scalability* and regulatory alignment, selecting AIDA solutions deployable across international networks.
	Mid-tiers (Reliable Co, Benchmark Co, Foresight Co, Synergy Co) focus on *competitive positioning through cost efficiency and workflow optimisation*, choosing technologies that address operational bottlenecks.
	Boutiques (Catalyst Co, Forward Co, Venture Co) emphasise *differentiation through client-specific, high-value advisory services*, adopting tools that enhance customisation capabilities.
	Approach to Identifying AIDA Use Cases:
	Big 4s *proactively monitor emerging client needs and regulatory shifts*, ensuring firm-wide AIDA standardisation while maintaining market leadership.
	Mid-tiers implement AIDA *incrementally*, focusing on minimising operational bottlenecks and optimising resource allocation through pilot testing.
	Boutiques *selectively adopt* AIDA technologies tailored to niche market demands and bespoke client needs, emphasising specialisation.
	Decision-Making Structures for AIDA Selection:
	Big 4s employ *centralised global coordination with local and regional flexibility*, ensuring strategic consistency while adapting to market-specific needs.

	Mid-tiers utilise *decentralised, pragmatic implementation* approaches, with department-driven evaluation guiding technology selection.
	Boutiques maintain *agile, client-driven decision processes* that enable rapid adaptation to changing client requirements in niche markets.
Research Objective 4 – To analyse how accounting firms overcome barriers and cultivate enablers for digital transformation driven by AIDA technologies.	**RQ4: How do accounting firms overcome barriers and cultivate enablers for digital transformation driven by Artificial Intelligence-driven Analytics technologies?**
	Implementation challenges vary substantially by firm size and type, with distinct barriers and enablers emerging across the spectrum of accounting practices.
	Big 4s navigate global standardisation complexities by leveraging *centralised coordination* while allowing for *necessary local adaptations* to market and regulatory requirements.
	Mid-tiers address resource constraints through *incremental implementation strategies*, carefully evaluating ROI before expanding AIDA deployments.
	Boutiques overcome client adoption resistance by demonstrating tangible value through *customised AIDA applications* that address specific client pain points.
	Initial resistance from staff is mitigated through *education and skill development programs*, with firms demonstrating measurable improvements in service quality.
	Technology selection challenges are resolved through *structured assessment frameworks* and *rigorous pilot testing* to ensure alignment with strategic objectives.
	Technical integration challenges are addressed through *vendor partnerships*, *internal consulting teams*, and *project champions* who bridge domain expertise with technological implementation.
	Cultural transformation emerges as a critical enabler, with firms transitioning from traditional approaches to technology-first mindsets in problem-solving.
	Regulatory compliance functions as both a barrier (due to complex requirements) and an enabler (driving innovation in risk management solutions).
	Successful firms demonstrate an *iterative learning approach*, systematically *applying lessons* from previous AIDA implementations to *refine future adoption strategies*.

Firstly, **Table 7-6** indicates that this chapter achieves research objective one by examining how accounting firms sense and seize opportunities for AIDA adoption. A key finding to emerge from this research objective is that firms utilise two distinct organisational focuses combined with four exploratory initiatives to recognise AIDA opportunities which relates to the sensing component. Six of the eleven firms demonstrate a *Client-Centred* approach, while five firms exhibit a *Process-Oriented* focus. All firms engage in *Client Readiness Profiling* and *Workflow Mapping*, with most also *Tracking Technology Trends* and conducting *Technology Piloting*. These activities help firms identify where AIDA can deliver value, with varying *levels of proactiveness* observed across the cases.

The analysis also reveals that firms prioritise different areas when implementing AIDA, corresponding with the seizing component: *Client-Focused* Enhancements (Trailblazer Co, Synergy Co, Catalyst Co), *Operational Efficiency* (Safeguard Co, Foresight Co, Venture Co), and *Compliance and Risk Management* (Landmark Co, Keystone Co, Reliable Co, Benchmark Co, Forward Co). Building on these priorities, firms deploy AIDA across four main use cases: *Advanced Analytics with ML*, *Data Visualisation*, *Automation*, and *Document Processing*. The integration scope ranges from *targeted departmental rollouts* to comprehensive *firm-wide implementations*, with corresponding resource commitments reflecting each firm's transformation strategy.

Secondly, **Table 7-6** shows that this chapter achieves research objective two by exploring how accounting firms reconfigure their structures, processes, and practices to integrate AIDA. The analysis reveals that firms make significant structural changes, with seven firms establishing innovation and digital teams while others emphasise coordination mechanisms. Process changes include system infrastructure upgrades (five firms), process automation (seven firms), and data analytics implementation (four firms). Firms also reshape internal practices through varying levels of cross-functional collaboration, digital upskilling (with Keystone LLC and Synergy LLC showing particularly high levels), and role transformation (where six firms demonstrate moderate-to-high levels). These multi-dimensional reconfigurations create the organisational foundations necessary for successful AIDA integration, with firms adopting approaches that align with their strategic priorities and resource capacities.

Table 7-6 also demonstrates that this chapter fulfils research objective three by determining why accounting firms adopt specific AIDA technologies over others. Firm type emerges as a significant factor influencing technology selection. Big 4s (Landmark Co, Safeguard Co,

Trailblazer Co, Keystone Co) select technologies that can scale globally and allow them to maintain market leadership. Mid-tiers (Reliable Co, Benchmark Co, Foresight Co, Synergy Co) choose tools that improve cost efficiency and workflow optimisation that will help to enhance their competitive positioning. Boutiques (Catalyst Co, Forward Co, Venture Co) adopt technologies that enable client-specific, high-value services to differentiate themselves in niche markets. These strategic drivers guide the decisions that each firm type makes in relation to the AIDA technologies they choose to adopt.

Finally, **Table 7-6** reports that research objective four is addressed through the analysis of how accounting firms overcome barriers and cultivate enablers for AI-driven digital transformation. Big 4s primarily deal with scepticism and siloed structures, Mid-tiers contend with limited resources and change resistance, while Boutiques struggle with clients' technology aversion and infrastructure constraints. Big 4s set up centralised innovation teams, formalise training programmes, and establish strategic tech partnerships (including proprietary tool development) to overcome scepticism and fragmentation; Mid-tiers combine project champions, protected learning time, gamification, and pragmatic use of commercial tools to address resource constraints and change resistance; and Boutiques use a process-first approach, selective client engagement, and a digital-first culture with tiered expertise to tackle clients' aversion to technology and internal infrastructure limitations. All of these help accounting firms overcome the primary barriers and cultivate enablers for sustainable AI-driven transformation.

The cross-case analysis finds that although accounting firms pursue AI-driven digital transformation primarily to enhance client service delivery, they take different approaches based on their firm type (size), market position, and strategic goals. These findings provide insight into how accounting firms develop DCs in AIDA as they pursue digital transformation in order to stay competitive amid an increasingly technology-driven professional services landscape. The subsequent (and final) chapter will discuss these findings through the context of existing literature before concluding with the implications of this research.

CHAPTER 8. DISCUSSION AND CONCLUSION

8.1 Introduction

The transformative impact of AIDA on accounting goes beyond operational efficiency to fundamental changes in the way accounting firms deliver services to their clients. The findings from this thesis show how the accounting profession is reshaping. Instead of being eliminated, accounting work is being redefined, as routine tasks are automated and professionals engage increasingly in higher-value advisory activities. This transformation aligns with previous research challenging Frey and Osborne's (2013, 2017) deterministic views of technological displacement (Arntz et al., 2017; Stephany and Lorenz, 2021) while stressing the need for systematic capability development at the firm level.

Against this backdrop, this thesis aimed to explore how accounting firms build DCs in AIDA as they pursue digital transformation. Through a rigorous analysis of 24 participants from 11 accounting firms in Singapore, spanning Big 4s, Mid-tiers, and Boutiques, this research has revealed the complex processes through which these firms sense and seize AIDA opportunities, reconfigure their structures and practices, select specific technologies, and overcome barriers to transformation. In doing so, this research addresses a critical gap identified by Warner and Wäger (2019), who emphasise that digital transformation, with AIDA adoption as a critical component, represents not a one-time event but rather a continuous process requiring firms to build, maintain, and enhance their DCs to remain competitive.

The objectives of this concluding chapter are fourfold:

1. To synthesise the empirical findings through the theoretical lenses of DCs, SAP, and TIP, while considering the impact of digital transformation

2. To propose the ADAPT Model as a theoretical framework for understanding how accounting firms build capabilities for AIDA

3. To identify key practical insights emerging from the theoretical contribution for accounting practice, policy, and education

4. To acknowledge the limitations of this research while outlining areas for theoretical extension and empirical validation through future research

This chapter will synthesise the empirical findings in Chapter 7 (gathered from the semi-structured interviews) in relation to existing literature on DCs, practice-based theories (SAP and TIP), and digital transformation. It will present the ADAPT Model and its implications for accounting firms of different types as they navigate AIDA adoption. The chapter will also discuss the limitations of this research and suggest directions for future studies, while outlining recommendations for policy-makers and practitioners. Finally, this research will close with concluding remarks on the economic impacts of AIDA adoption in the accounting profession.

8.2 Synthesis of Cross-Case Findings with Theoretical Frameworks

This section integrates the empirical findings summarised in Tables 7-1 through 7-6 with the theoretical foundations established in Chapters 2-5, consolidating the theoretical insights from the DCs framework (Teece, 2007), SAP (Jarzabkowski, 2004, 2005; Whittington, 1996, 2003, 2006), and TIP (Orlikowski, 2000), while taking into account the implications of digital transformation (Hanelt et al., 2021; Hess et al., 2016; Vial, 2019, 2021). Following the structure of the four research objectives, this synthesis reveals how accounting firms of different types develop capabilities for AIDA adoption through distinct but related processes.

8.2.1 Sensing and Seizing AIDA Opportunities

The cross-case findings presented in Tables 7-1 and 7-2 reveal accounting firms' approaches to recognising and pursuing AIDA opportunities. Through careful analysis of the data, two organisational focuses emerged: Client-Centred (Landmark Co, Safeguard Co, Keystone Co, Reliable Co, Forward Co, Venture Co) and Process-Oriented (Trailblazer Co, Benchmark Co, Foresight Co, Synergy Co, Catalyst Co). What stands out in the cross-case analysis is that regardless of their focus, all firms engaged in client readiness profiling, workflow mapping, and technology trends tracking, while the majority also conducted technology piloting.

Teece's (2007) DCs framework offers a theoretical context for these findings, particularly regarding sensing and seizing capabilities. The empirical data collected from the case studies extends beyond abstract capabilities, revealing how these capabilities materialise in the everyday practices of accounting firms. By examining these practices through the SAP lens (Jarzabkowski, 2004, 2005; Whittington, 1996, 2003, 2006), a deeper understanding of capability development emerged from the analysis.

One of the key practices identified in the cross-case analysis was client readiness profiling, which represents a tangible manifestation of sensing capabilities in practice. The findings demonstrated how this practice enables firms to identify opportunities for AIDA adoption based on client needs and technological readiness. Similarly, the cross-case data showed firms doing workflow mapping to identify process inefficiencies that could be addressed through AIDA implementation. These activities are examples of strategy being "a socially accomplished, situated activity" rather than a static organisational characteristic (Jarzabkowski, 2005). This insight contributes to understanding how abstract DCs materialise in accounting firms' everyday activities, extending Schilke et al.'s (2018) work on the microfoundations of capabilities.

Besides client readiness profiling, the findings also highlight that accounting firms engage in technology trends tracking, which is another form of environmental scanning that plays a key role in developing DCs by enabling firms to identify external opportunities (Bititci et al., 2011). These environmental scanning activities can be viewed as a form anticipatory innovation that allows firms to strategically position themselves in relation to emerging technologies (Ates et al., 2023). In the accounting industry, where constant changes in regulatory requirements and client expectations are commonplace, the strategic response of proactively monitoring emerging technologies such as AI and other cognitive technologies becomes all the more important if they want to integrate AIDA into their work.

Another interesting finding was the varying degrees of proactiveness, with eight firms categorised as "*Highly Proactive*" and three as "*Moderately Proactive*," indicating that there are differences in how sensing capabilities are developed and deployed across the sample. As shown in **Table 7-1**, highly proactive firms often engaged in all four exploratory initiatives, developing monitoring protocols that spanned both internal operations and external market developments. These firms are typically highly committed to identifying suitable technologies and maintain systematic processes for evaluating potential AIDA applications. Teece (2007) would regard such firms as having superior sensing capabilities. The different proactiveness levels discovered in the analysis extend Yigitbasioglu et al.'s (2023) research on digital advisors in accounting, showing how firms that proactively sense technology opportunities are better positioned to develop advisory capabilities that combine accounting expertise with technological knowledge.

The systematic approach to sensing activities observed across the cases aligns with what Rikhardsson and Yigitbasioglu (2018) documented in their study of accounting firms' technology adoption practices. However, as Buchheit et al. (2020) emphasise, clients'

impressions of value often drive actual adoption of these technologies. The cross-case analysis revealed that firms must not only improve their internal capacity but also match their strategies with client expectations to properly implement AIDA solutions. These insights advance understanding by demonstrating how sensing activities vary based on organisational focus and strategic priorities.

What was also noteworthy is the variation in organisational focus presented in **Table 7-1** showing how strategic intentions shape sensing activities. The findings showed that client-centred firms perceived AIDA opportunities as a means to bring clients more value through enhanced service delivery, while process-oriented firms emphasised internal efficiency and operational improvements. This distinction influenced not just how firms identified opportunities but also which opportunities they prioritised for action. These findings echo the notion that successful digital transformation requires overcoming cognitive barriers to recognise appropriate digital opportunities within firms' specific contexts. The evidence from the cross-case analysis reveals how accounting firms' different cognitive frameworks, which is operationalised as their organisational focus (being either client-centred or process-oriented) create distinct approaches to identifying technological opportunities (Volberda et al., 2021).

When examining how firms move from sensing to seizing opportunities through implementation, the cross-case analysis presented in **Table 7-2** identified three distinct priority areas: Client-Focused Enhancements (Trailblazer Co, Synergy Co, Catalyst Co), Operational Efficiency (Safeguard Co, Foresight Co, Venture Co), and Compliance and Risk Management (Landmark Co, Keystone Co, Reliable Co, Benchmark Co, Forward Co). These priorities guided firms' implementation based on specific AIDA use cases, where Advanced Analytics with ML and Data Visualisation emerging as the two most common use cases across the sample. This finding extends conceptualisations of digital transformation stages by showing how accounting firms move from basic digitisation (converting analogue information to digital) toward more sophisticated digitalisation (process optimisation) and full digital transformation (business model innovation) based on their strategic priorities (Verhoef et al., 2021).

Digital transformation research has increasingly recognised that organisations progress through sequential phases of transformation, each requiring distinct capabilities for successful execution, as the cross-case findings also show. The findings reveal how accounting firms prioritise different aspects of transformation based on their strategic positioning and operational context (Ates and Acur, 2022). This supports the notion that

digital transformation is not a uniform journey but a multifaceted process requiring different capabilities at different stages.

These implementation priorities revealed by the cross-case analysis also align with Kokina et al.'s (2025) findings regarding AI adoption in auditing, which distinguished between "simple AI" applications (focused on data extraction and process automation) and "complex AI" applications (including deep learning and GenAI). The research found that most firms focus their initial AIDA implementation on more established applications like advanced analytics with ML and data visualisation, while taking a more experimental approach with emerging technologies. This reflects the practical challenges of implementing cutting-edge or "complex AI" in a highly regulated profession like accounting.

With accounting being a highly regulated industry, it did not come as a surprise that the findings highlighted "compliance and risk management" as ranking highly among concerns for accounting firms. The analysis revealed that AIDA tools help firms standardise customer data in an easily accessible manner so they can proactively manage risks at different assertion levels. The findings also showed that these tools optimise continuous monitoring, data analytics, and reporting, thus enabling firms to more effectively identify and mitigate risks while providing assurance of regulatory compliance (Davenport and Ronanki, 2018; Issa et al., 2016; Vasarhelyi et al., 2015). This insight from the research contributes to understanding how AIDA adoption addresses the distinctive regulatory pressures within the accounting profession.

Another notable finding from the cross-case analysis was the variation in integration scope, with firms adopting three different approaches: targeted departmental rollouts (3 firms), phased rollout (5 firms), and firm-wide integration (4 firms). This observed variance, documented in **Table 7-2**, relates to the contextual nature of capability development (Eisenhardt and Martin, 2000), with firms adapting their seizing strategies to align with their organisational structures, resource availability, and strategic objectives. Similarly, the data showed resource allocation levels among all 11 firms were either "Significant" or "Moderate"), reflecting their strategic commitment to AIDA adoption. This finding connects with Verhoef et al.'s (2021) assertion that successful digital transformation requires dedicated digital resources and appropriate organisational restructuring, indicating that accounting firms allocate resources differently based on their strategic priorities and transformation goals.

These findings expand the DCs framework by revealing that sensing and seizing capabilities are not uniform across organisations but are shaped by firm-specific characteristics and strategic priorities. The SAP perspective further enhances this understanding by showing how these capabilities are observed through specific organisational practices instead of abstract processes. Integrating these two theoretical perspectives together with the empirical findings highlights how effective capability development requires alignment between strategic intent, organisational structure, and day-to-day practices.

8.2.2 Reconfiguring Structures, Processes, and Practices

Table 7-3 presents the cross-case analysis findings that highlight the differences in how accounting firms reconfigure their organisational structures, processes, and practices to integrate AIDA technologies. These reconfigurations encompass structural changes (establishing innovation teams and enhancing coordination mechanisms), process changes (upgrading system infrastructure, automating processes, and implementing data analytics), and practice changes (fostering cross-functional collaboration, investing in digital upskilling, and transforming roles).

The 'transforming' component of Teece's (2007) DCs framework provides theoretical insights into these reconfiguration activities, as firms adjust their resource base to accommodate new technologies and capabilities. The empirical findings take things a step further by revealing more granular patterns in how transformation unfolds practically. For example, the research identified two key structural changes: the formation of innovation and digital teams (Landmark Co, Trailblazer Co, Keystone Co, Reliable Co, Benchmark Co, Foresight Co, Catalyst Co) and the enhancement of coordination mechanisms (Landmark Co, Safeguard Co, Trailblazer Co, Keystone Co, Reliable Co, Synergy Co, Catalyst Co, Forward Co, Venture Co). Some firms also pursued both simultaneously, establishing dedicated innovation teams while also strengthening coordination across existing departments.

This finding from the cross-case analysis extends Volberda et al.'s (2021) research on digital transformation by demonstrating how accounting firms create specific organisational forms to facilitate digital innovation. As they suggest, successful digital transformation requires not just technology adoption but new organisational structures that support digital initiatives. The innovation teams identified in the findings represent what Volberda et al. (2021) describe as "flexible organisational structures" that enable firms to implement effective digital strategies by bridging technology expertise with domain knowledge.

Structural changes such as these also reflect the operationalisation of managerial processes like direction setting and change management. While these processes have been identified as important for organisational adaptation, they have often been seen as abstract and conceptual (Bititci et al., 2011). The current findings provide empirical evidence of how accounting firms practically implement these processes through specific structural arrangements in their day-to-day operations.

The data gathered from the interviews highlighted a shift away from the common approach of having independent teams focused only on their expert areas (Vial 2019, 2021). Cross-functional collaboration, as revealed in the findings, makes it possible for the development of AIDA solutions that are targeted at improving operational processes as part of service requirements (Piening and Salge, 2014). The research uncovered how these teams also pilot the use of new tools with willing clients who then become successful use cases that illustrate the benefits of these AIDA solutions. This creates a supportive environment that is eager to embrace emerging technology, leading to smoother onboarding of new technologies (Brynjolfsson and McAfee, 2014; Raisch and Krakowski, 2021). These findings contribute to understanding how cross-functional collaboration helps to overcome the often-siloed environment in accounting firms.

Similarly, the cross-case analysis also identified contextual variations in process changes, with firms pursuing system infrastructure upgrades (Landmark Co, Keystone Co, Reliable Co, Benchmark Co, Foresight Co, Forward Co), process automation (Landmark Co, Safeguard Co, Trailblazer Co, Reliable Co, Synergy Co, Catalyst Co, Venture Co), and data analytics implementation (Safeguard Co, Trailblazer Co, Keystone Co, Venture Co). The evidence gathered demonstrated that the specific mix of process changes in each firm reflected its strategic priorities and operational needs. For example, the findings showed that firms with the priority focus area of compliance and risk management tend to prioritise system infrastructure upgrades to ensure data security and regulatory compliance, while those emphasising operational efficiency typically invested heavily in process automation.

This pattern identified in the cross-case analysis mirrors the need for organisations to find a balance between automation (using machines to replace human tasks) and augmentation (using technology to enhance human capabilities), which Raisch and Krakowski (2021) terms as “the automation-augmentation paradox”. The data collected reveals that accounting firms navigate this paradox by selectively automating routine processes while concurrently developing infrastructure and analytical capabilities that augment professional judgement in more complex tasks. This finding extends Raisch and Krakowski’s framework by showing

how accounting firms exercise professional judgment in establishing balance between automation and augmentation of the services they deliver to their clients.

Viewing these process changes through Orlikowski's (2000) TIP lens reveals how technology enactment varies across organisational contexts. Through AIDA adoption, some firms were found to have fundamentally transformed their processes, creating entirely new workflows and service delivery models. This would tie in with the "change" mode of technology enactment. Others fit within the "application" mode, where they use AIDA to improve efficiency and effectiveness within established frameworks, enhancing existing processes without having to significantly alter their structure. There are none considered to be in the "inertia" state, as the findings showed that all firms remain active in integrating AIDA technologies into their operations even when they are faced with common "inertia" issues like change resistance and resource limitations.

The data shows that reconfiguration culminates in the reshaping of internal practices as daily operations are tweaked in ways so that AIDA technologies can be used effectively. The findings reveal that this is done through three dimensions: cross-functional collaboration, digital upskilling, and role transformation. Due to the differences in how firms integrate their accounting expertise with technology, cross-functional collaboration levels varied from "Low to Moderate" to "Moderate to High". Digital upskilling initiatives ranged from "Moderate" (targeted training for selected staff) to "High" (comprehensive firm-wide programmes). Role transformation also varied from "Moderate" (making incremental adjustments to existing roles) to "Moderate to High" (transitioning to higher-value roles).

The analysis suggest that transformation approaches are influenced by cultural and historical factors. Recent digital transformation research has highlighted that organisational heritage, which includes past learning experiences and established cultural norms, impacts how firms respond to technological change (Ates and Acur, 2022). These historical factors appear to influence the specific approaches taken by accounting firms when it comes to upskilling and role transformation, expanding the understanding of how transformation efforts are influenced by factors beyond explicit strategic decisions.

The cross-case findings highlighted that firms have devoted resources towards upskilling and training programmes as a means to complement cross-functional teams. Such programmes are often organised throughout the firm and combine technical training with practical applications so that accounting professionals learn how to use AIDA technologies in ways that will make them more efficient in their work. This was particularly evident at

Keystone Co, where a senior manager highlighted their investment into training programmes conducted during off-peak seasons that were made available across all levels of the firm's hierarchy (#10-D-SeniorManager). Similarly, in Synergy Co, protected learning time was introduced to free staff from the pressure of their regular work responsibilities so they can focus on developing new skills and familiarise themselves with new tools (#19-H-SeniorManager).

As firms integrate these technologies, the analysis revealed a consistent pattern of routine tasks becoming automated, allowing professionals to focus on higher-value activities requiring professional judgement. This aligns with Kokina et al.'s (2025) finding that the main value that AI brings to accounting firms is augmenting the work that accountants do and thus complements rather than replace human capabilities. Rather than being replaced, the data gathered from the cases revealed that accounting professionals work in tandem with AIDA to be more effective at work, shifting away from roles that involve many manual processes toward strategic decision-making and client advisory roles. This transition was exemplified by Catalyst Co's managing partner, who described how digital transformation has led to new roles in quality checking and decision-making as preparer roles were being replaced with AI (#21-J-ManagingPartner). This transformation aligns with several studies identifying a significant shift in accounting work, with the move from routine activities toward more complex cognitive tasks that require new forms of human-AI collaboration (Boritz and Stratopoulos, 2023; Leitner-Hanetseder et al., 2021; Losbichler and Lehner, 2021).

Empirical support for this transition is provided by detailing how accounting firms actively facilitate it through specific organisational practices, including collaborative structures, upskilling initiatives, and role reconfiguration. This deliberate reconfiguration of professional roles reflects a broader trend observed across various sectors, where organisations strategically reallocate human resources toward higher-value activities as routine tasks become automated (Davenport and Ronanki, 2018). By emphasising advisory and analytical capabilities, accounting firms are creating new professional roles that effectively bridge technological proficiency with accounting domain expertise.

What stands out particularly is how these upskilling approaches vary across firms, reflecting their unique strategic contexts. The different approaches to digital upskilling observed across the cases reveal the evolving advisory role of accountants in digital environments, matching up with previous studies that emphasise how accountants must develop new capabilities combining domain expertise with technological proficiency and social capital (Yigitbasioglu

et al., 2023). These cross-case findings reveal the organisational mechanisms through which these new capabilities take shape, highlighting how firms tailor their investments in upskilling their workforce based on their strategic priorities and market positioning.

These practice changes identified in the research align closely with the SAP perspective, illustrating how abstract strategic plans materialise into tangible day-to-day practices of organisational actors (Jarzabkowski, 2004, 2005; Whittington, 1996, 2003, 2006). The varying degrees of cross-functional collaboration, digital upskilling, and role transformation across firms are indicative of how strategic reconfiguration is executed differently depending on organisational context and priorities. As noted earlier when discussing sensing and seizing capabilities (8.2.1), these findings reinforce Volberda et al.'s (2021) insights regarding contextually embedded transformation strategies. This recurring theme across capability dimensions highlights how accounting firms implement flexible organisational processes specifically calibrated to their transformation needs, suggesting that contextual adaptation and cognitive reframing represent core elements of successful digital transformation rather than secondary considerations.

When integrated with the DCs framework, these findings clearly demonstrate how transformation capabilities operate in practice. Rather than following a generic one-size-fits-all blueprint of transformation, firms develop reconfiguration approaches that align with their respective contexts, strategic objectives, organisational structures, and resource constraints. This contextual dimension advances the DCs framework by revealing how abstract capabilities become operationalised through specific organisational practices. Reinforcing the earlier discussion in section 8.2.1, the reconfiguration activities observed across accounting firms correspond to different stages of their digital transformation journeys, again reflecting the sequential phases identified by Ates and Acur (2022). This recurring theme of transformation phases highlights how historical learning experiences and established cultural norms significantly influence reconfiguration efforts, emphasizing again that digital transformation extends beyond explicit strategic decisions to encompass deeper organisational contexts.

The TIP perspective further enriches this understanding by demonstrating how technology enactment shapes and is shaped by organisational context (Orlikowski, 2000). Whether it is extensive transformation or incremental enhancement, different patterns of enactment reveal variations not only in technological sophistication but also in strategic intent and organisational identity, as seen in how SMEs use digital tools differently depending on their specific situations (Morgan-Thomas, 2016). Besides having an impact on the firm that is

undergoing digital transformation, there is "digital undertow" where digital changes can have broader effects that reshape industry norms (Scott and Orlikowski, 2022).

as seen in how SMEs engage ICT affordances in context (Morgan-Thomas, 2016), and how broader digital shifts generate unintended institutional consequences that reshape industry standards (Scott and Orlikowski, 2022). The findings show accounting firms carefully balancing automation of routine tasks with augmentation of human capabilities, navigating complex trade-offs between these approaches in their daily operations (Raisch and Krakowski, 2021). The integration of the DCs framework with TIP reveals that transformation is not a standardised capability but a contextually embedded process, requiring alignment between organisational structure, technological resources, and strategic objectives to achieve successful digital transformation outcomes (Verhoef et al., 2021).

8.2.3 Rationale for AIDA Technology Selection

Table 7-4 captures the unique patterns in AIDA technology selection across different firm types. These patterns span strategic drivers, approaches to identifying use cases, and decision-making structures that guide technology choices. Examining these patterns through lens of path-dependency from Teece's (2007) DCs framework shows that technology decisions are influenced by firms' past trajectories and existing capabilities.

The findings at firm type level can be summarised into the following: As market leaders, Big 4s place a strong emphasis on selecting technologies which can scale globally and help with regulatory alignment so they can maintain their market dominance. Faced with resource constraints and driven by a desire to maintain competitiveness in the market, Mid-tiers look to technologies that help with cost efficiency and workflow optimisation. Boutiques turn to technologies that help them develop client-specific solutions that fit in with their niche specialisation strategy despite being similarly challenged by resource limitations.

Taking this further, the cross-case analysis shows that technology selection also involves approaches to identifying use cases that vary by firm type: Big 4s are proactively monitoring clients' needs and regulatory changes to identify technologies that can respond quickly to these shifts. Mid-tiers take an incremental adoption approach where they first pilot test the technologies to address operational pain points before then deploying them more extensively. Boutiques selectively adopt technologies that allow them to develop specialised services that are client-specific. Linking this with SAP, these practices shape the selection capabilities within each firm's unique context (Jarzabkowski and Spee, 2009).

Analysing technology selection through the combined theoretical lenses of DCs and SAP shows that it is shaped by past constraints (path dependencies) (Teece et al., 1997), and active choices, through practitioners' agency (Jarzabkowski, 2004, 2005; Whittington, 1996, 2003, 2006). This is observed practically in the findings through the different decision-making structures across firm types that influence their adoption of AIDA technologies:

Big 4s adopt centralised decision-making with controlled local adaptation, allowing them to maintain strategic consistency while accommodating regional variations. This helps to maintain as much uniformity across their international operations whereby technology selections are aligned with firm-wide standards while giving local offices sufficient flexibility to address market-specific needs. This approach enables them to leverage their international networks and ability to scale while maintaining adaptability to diverse regulatory environments (Barrett et al., 2005; Zimmermann and Volckmer, 2015), reflecting the importance of strategic management support and ensuring technological compatibility (Ranganathan et al., 2018).

Mid-tiers take on a more decentralised decision-making approach where individual departments or service functions drive technology selection based on operational requirements. This pragmatic structure allows them to target technology investments toward specific pain points. Their incremental implementation strategy, characterised by thorough pilot testing before broader deployment, reflects a prudent approach to resource allocation that maximises return on technology investments. This aligns with Warner and Wäger's (2019) emphasis on developing DCs through strategic agility, enabling organisations to continually adapt their business models and internal structures in response to technological change.

Boutiques adopt highly agile decision-making structures characterised by client-driven responsiveness and minimal bureaucracy. Their technology selection process emphasises tools that enhance customisation capabilities and specialised service delivery, reflecting their strategic focus on niche differentiation. This selective approach enables them to develop distinctive technology capabilities despite resource constraints, supporting their positioning as specialised service providers. The client-centric approach taken by Boutiques affirms the view that successful AI adoption in accounting contexts requires careful alignment between technological choices and the organisational and client readiness within specific operational environments, particularly in smaller firms (Seethamraju and Hecimovic, 2022).

These distinct decision-making structures guiding the selection of AIDA technologies reveal how firms balance standardisation with flexibility when they adopt technology. Successful digital transformation requires establishing governance mechanisms that enable rapid decision-making while maintaining strategic alignment (Warner and Wäger, 2019). The varying approaches observed across firm types in the findings demonstrate how governance structures evolve to accommodate different organisational contexts, particularly as firms adapt their strategic priorities and operational practices in response to the implications of increasing AIDA adoption (Boritz and Stratopoulos, 2023).

Another important aspect of technology selection identified in the cross-case analysis is how firms factor changes in regulatory requirements as part of their decision-making. As they operate in a highly regulated industry, accounting firms must balance innovation with regulatory and compliance considerations when choosing the appropriate AIDA technologies for use. This is confirmed by the findings from the firm level analysis, specifically in how they prioritise areas for seizing AIDA adoption opportunities. Extending this to firm type level, the cross-case analysis find that each firm type responds differently to these regulatory pressures based on their strategic positioning and capabilities: Big 4s focus on investing in technologies that support comprehensive compliance across multiple jurisdictions, while Mid-tiers and Boutiques develop more targeted approaches that address specific regulatory requirements relevant to their client base. The differentiated response shown by each firm type in the findings extends the understanding of how regulatory contexts influence technology selection decisions, as firms navigate challenges posed by evolving digitalisation demands and related shifts in accounting regulations and standards (Gulin et al., 2019).

This findings from the cross-case analysis, when integrated with DCs and SAP provide a more comprehensive understanding of how accounting firms select AIDA technologies. Rather than being driven solely by technological factors or market pressures, selection materialises as a strategic process shaped by firms' unique contexts, capabilities, and objectives. This perspective enhances the understanding of capability development in digital transformation contexts, showing how selection capabilities are embedded in firms' strategic positioning and organisational practices.

The different decision-making structures across each firm type identified in the cross-case analysis are based on their respective market positions and strategic priorities. Big 4s are centralised with local adaptation, Mid-tiers are departmentally decentralised, and Boutiques are client-responsive, reflecting the strategic agility and responsiveness needed to

successfully adopt new technologies, contingent upon organisational readiness and regulatory contexts (Seethamraju and Hecimovic, 2022; Warner and Wäger, 2019).

8.2.4 Overcoming Barriers and Cultivating Enablers

Table 7-5 identifies how accounting firms overcome barriers and cultivate enablers for AIDA adoption. The learning mechanisms aspect of the DCs framework (Teece, 2007), combined with technology enactment from the TIP perspective (Orlikowski, 2000), provides theoretical insight into these patterns.

The cross-case analysis reveals distinct primary barriers facing different firm types:

Big 4s mainly contend with scepticism toward AIDA technologies and structural fragmentation within their operations. This shows up practically in the disconnect between technology and accounting teams, as well as accountants' reluctance to trust outputs from automated systems, preferring familiar manual processes despite their inefficiency. Such resistance is often the result of security concerns and insufficient understanding of the technology's logic, leading to substantial adoption hurdles in professional service firms (Vitali and Giulani, 2024). The research also uncovered how siloed departments developing technological solutions in isolation creates an organisational landscape where duplication and inconsistency multiply, complicating Big 4s' AIDA adoption.

Mid-tiers face different challenges, primarily resource constraints coupled with resistance to technological change. Unlike Big 4s with access to resources from their large international networks, Mid-tiers must carefully balance limited financial and human resources while addressing established workflows that may not readily align with new digital approaches. The findings reveal that their cautious approach to adoption is mostly due to financial considerations and implementation concerns, which puts further strain on resources and discourages widespread adoption. This measured approach once again aligns with Buchheit et al.'s (2020) finding that slower technology adoption among smaller accounting firms may actually be rational when weighed against investment costs and uncertain returns.

Boutiques have to deal with client technology resistance and infrastructure limitations. Although client resistance affects all firm types, the research shows Boutiques are more significantly impacted due to their client-centric business models and closer client relationships. This challenge is magnified by their smaller client pool and greater client dependencies, while their limited technological infrastructure leads to additional obstacles during AIDA implementation. Seethamraju and Hecimovic (2022) note that successful AI

adoption in accounting contexts requires careful alignment between technological choices and operational environments, which is something particularly challenging for smaller firms where client relationships are central to competitive advantage.

Through the DCs lens, the findings demonstrate how firms develop capability-building routines to address these barriers through different learning mechanisms: Big 4s establish knowledge articulation and codification mechanisms (Zollo and Winter, 2002) through centralised innovation teams, proprietary tool development, and formalised training programmes. These structured approaches overcome structural fragmentation and technology scepticism by creating firm-wide systems for capturing and disseminating knowledge on productive AIDA adoption. This approach mirrors the organisational structures needed for managing the complexity of advanced AI implementation, especially in light of transparency and explainability (Kokina et al., 2025). Mid-tiers develop experiential learning routines through project champions and protected learning time, addressing resource limitations through practical, hands-on engagement. As Moffitt et al. (2018) suggest, such targeted approaches help firms optimise limited resources while developing the specific capabilities needed to implement technology effectively. Boutiques build capabilities in process adaptation through process-first approaches and selective client engagement, enabling them to overcome client resistance despite their much smaller scale. The contextual approaches taken by each firm type reinforces the conclusion that successful digital transformation depends on developing capabilities that align with firms' specific operational contexts and historical trajectories (Ates and Acur, 2022).

These findings on capability-building routines extend prior work on learning mechanisms by demonstrating how these mechanisms are deployed differently based on organisational context. While previous frameworks identify experience accumulation, knowledge articulation, and knowledge codification as primary learning mechanisms (Zollo and Winter, 2002), the current findings reveal that firms prioritise different mechanisms based on their size and strategic objectives (Ambrosini and Bowman, 2009). The differentiated capability-building approaches observed across the accounting firm types in the findings reflect the clear pattern that digital transformation requires dedicated resources and organisational restructuring tailored to firms' strategic contexts (Verhoef et al., 2021).

When viewed through Orlikowski's (2000) TIP perspective, the firms' approaches to cultivating enablers represent different modes of technology enactment. While this overlaps with what was mentioned in 8.2.2, the synthesis here drills down to the specific firm types and their corresponding technology enactment modes: Big 4s predominantly exhibit the

"change" mode, transforming their organisational structures through proprietary tool development and strategic partnerships. Such transformative approaches are increasingly necessary as accounting practices shift toward real-time reporting and "continuous accounting" (Gulin et al., 2019). Mid-tiers typically follow the "application" mode, improving existing routines through pragmatic implementation of AIDA with a focus on acclimatising their clients to analytics-focused processes. Boutiques employ a "application" and "change" hybrid approach, selectively transforming client-facing functions while gradually adapting internal processes, reflecting their need to balance limited resources with ever-changing client expectations.

This variation in technology enactment patterns provides empirical support for Orlikowski's assertion that technology use is not determined by technology itself but instead emerges from the recursive interaction between human agents and technological properties. The empirical findings of this research provide further evidence of how internet-related technologies are reshaping accounting practices through complex interactions between technology features and professional contexts rather than through technological determinism (Moll and Yigitbasioglu, 2019). The cross-case findings reveal how similar and/or identical AIDA technologies are enacted differently across firm types based on their strategic objectives and capability development approaches.

The cross-case analysis also highlights the importance of reflective learning in overcoming barriers to AIDA adoption. As opposed to just addressing the symptoms of resistance or implementation challenges, firms across all types engaged in deeper learning that questioned underlying assumptions about technology adoption. This reflects the concept of "strategic renewal", an ongoing process of adaptation where firms are constantly aligning their capabilities with changing technological landscapes (Warner and Wäger, 2019). This is particularly evident in how Boutiques address client resistance by fundamentally changing their service delivery model to focus on a process-first approach that demonstrates tangible benefits, rather than merely persuading clients to accept new technologies.

The evidence from the findings shows how all firm types seek to demonstrate tangible benefits to overcome initial resistance, which underscores the notion that successful implementation for accounting firms navigating AIDA adoption entails a shift in emphasis away from the technology itself to the value the technology it creates (Kokina and Davenport, 2017). While previously discussed, it bears reinforcing that these findings consistently support Volberda et al.'s (2021) central thesis regarding cognitive barriers and organisational flexibility. Across sensing activities (8.2.1), reconfiguration practices (8.2.2), and now

approaches to overcome barriers, accounting firms demonstrate that contextually appropriate responses, rather than generic implementation strategies, are the key to successful AIDA integration. This consistent pattern emphasises the importance of contextual adaptation as a fundamental principle in digital transformation.

Integrating the DCs framework with TIP brings greater clarity to how capability development and technology enactment are interdependent processes shaped by organisational context (Hanelt et al., 2021). The varied approaches across firm types show how DCs develop through organisational practices reflecting strategic objectives and market positioning, while technology enactment patterns differ based on organisational constraints and capabilities. This integration provides insight into how firms cultivate enablers to support the development of hybrid capabilities that combine accounting domain expertise with technological proficiency as the role of accountants evolve to have a stronger advisory focus (Yigitbasioglu et al., 2023).

While the DCs framework focuses on capability development as an internal process, TIP emphasises how technology use emerges through practice. By bringing these perspectives together, the analysis reveals how capability development and technology enactment shape each other in recursive cycles, creating distinctive patterns of AIDA adoption across different firm types.

8.2.5 Towards an Integrated Model of AIDA Capability Development

The cross-case analysis identifies distinctive patterns in how accounting firms build capabilities for AIDA adoption across the dimensions examined in previous sections. By synthesising these empirical findings with the theoretical frameworks reviewed earlier, several key insights emerge that enrich our understanding of DCs in digital transformation contexts.

First, DCs manifest as contextually embedded processes rather than uniform organisational attributes. The findings challenge homogeneous conceptualisations of capabilities, revealing instead how sensing, seizing, and transforming capabilities develop through specific processes that vary with firm size, resource availability, and strategic positioning. This contextual perspective addresses critiques that the DCs framework lacks empirical grounding by providing concrete evidence of how capabilities develop across different organisational settings, connecting theoretical concepts to observable processes (Eisenhardt and Martin, 2000; Arend and Bromiley, 2009).

Second, practice-based perspectives complement the DCs framework by grounding capability development in tangible organisational activities. The research identifies specific practices through which capabilities develop such as: *client readiness profiling, technology piloting, cross-functional collaboration,* among others, shifting the focus from generic processes to specific activities embedded within organisational routines. Connecting micro-level activities with macro-level outcomes reveals how capabilities develop through specific practices rather than existing as abstract attributes, thereby addressing the "micro-macro paradox" (Jarzabkowski and Spee, 2009).

Third, technological disruption emerges as a process influenced by firms' choices within their existing contexts rather than a deterministic force. The findings demonstrate that firms adopt different AIDA technologies for various strategic reasons according to their market positions and resource availability. This socio-material perspective (Orlikowski and Scott, 2008; Scott and Orlikowski, 2022) overcomes technological determinism by emphasising how firms actively shape their technological environments rather than merely responding to external forces, developing distinct digital ecosystems based on their organisational contexts and objectives (Volberda et al., 2021).

Fourth, AIDA adoption triggers organisational change spanning multiple levels: from strategic decisions at leadership level to day-to-day practices at operational level. This multi-level perspective addresses Schilke et al.'s (2018) critique of capability research being predominantly focused on single-level analyses. By integrating theoretical frameworks addressing different levels (DCs, SAP, and TIP), the research provides a more well-rounded understanding of how accounting firms adapt to technological change across their organisational hierarchies through complex interactions between multiple levels (Burgelman et al., 2018).

Fifth, accounting firms' digital transformation journeys are simultaneously constrained by path dependencies and shaped by strategic choices. The analysis shows that while firms follow different paths based on their historical trajectories and available resources, they still exercise considerable agency in responding to technological disruption. This balanced view reconciles competing perspectives that either emphasise external factors driving change or managerial decisions initiating it, showing how transformation involves both path-dependent elements and strategic agency (Garud et al., 2010; Giddens, 1984).

Recent research by Verhoef et al. (2021) emphasises that successful digital transformation requires dedicated digital resources and appropriate organisational restructuring. The cross-

case findings extend this by showing how accounting firms allocate resources differently based on their strategic priorities and transformation goals. Similarly, the practice of cross-functional collaboration identified in the findings directly addresses what Volberda et al. (2021) describe as a shift away from siloed expertise toward integrated knowledge development.

The varying approaches to digital upskilling observed across the cases provide insight into how firms prepare their workforce for technological change. Continuous learning was found to be a crucial enabler in this upskilling process, as accounting professionals must continually adapt to the evolving demands of AI technologies (Moffitt et al., 2018). The cross-case findings also reveal how firms implement different approaches to upskilling based on their organisational context and strategic priorities, from comprehensive firm-wide programmes in Big 4s to more targeted initiatives in Mid-tiers and tiered expertise models in Boutiques.

The findings also reveal interesting patterns in how firms navigate "the automation-augmentation paradox", where organisations must balance automation (using machines to replace human tasks) with augmentation (leveraging technology to enhance human capabilities) (Raisch and Krakowski, 2021). The evidence shows how accounting firms address this paradox by selectively automating routine processes whilst concurrently developing capabilities that "augment" professional judgement in more complex tasks. This enables firms to derive efficiency benefits from automation whilst preserving and enhancing the value of their professional and domain expertise.

This analysis of AIDA capability development extends the works of Leitner-Hanetseder et al. (2021) and Losbichler and Lehner (2021) on the changing nature of accounting roles and tasks in AI-driven environments. Their research identifies how AI technologies are transforming accounting work from routine activities toward more complex cognitive tasks requiring human-AI collaboration. The cross-case findings provide empirical support for this transition, showing how accounting firms facilitate it through organisational practices that span multiple levels and reflect their strategic contexts.

The integration of the insights from the cross-case analysis suggests that accounting firms develop AIDA capabilities through an iterative, context-specific process. The patterns identified across firm types incorporate assessing technological opportunities, implementing appropriate technologies, and reconfiguring organisational structures, processes, and practices to support effective AIDA adoption. This perspective aligns with the view that

digital transformation requires ongoing strategic renewal rather than one-time technology adoption (Warner and Wäger, 2019). From this emerges a conceptualisation of AIDA capability development as an adaptive, cyclical process that forms the foundation for the ADAPT Model to be discussed in the next section.

8.3 Theoretical Contribution: The ADAPT Model

Building on the cross-case findings in Chapter 7 and the corresponding theoretical synthesis in section 8.2, this section presents the ADAPT Model, a theoretical framework understanding how accounting firms build DCs for AIDA adoption. This section first introduces the ADAPT Model as a theoretical framework (8.3.1), then explains its five stages (8.3.2), and subsequently demonstrates how it is operationalised through the ADAPT Cycle in day-to-day firm operations (8.3.3). Bringing together theoretical insights from the DCs framework, the practice-based perspectives of SAP and TIP, and digital transformation literature, the ADAPT Model proposes a framework for understanding organisational adaptation to technological disruption. As a framework, it offers flexibility by considering the differences in capability development processes across firm types.

8.3.1 Conceptualising the ADAPT Model

The ADAPT Model conceptualises the development of DCs in AIDA adoption as an iterative, firm-size-specific process comprising five interconnected stages: *Assess, Design, Align, Pilot, and Transform*. This process is not linear but cyclical, with firms continuously refining their capabilities through multiple iterations. The model recognises that capability development is not a uniform process but is shaped by organisational characteristics such as size, resource availability, and strategic positioning.

The development of the ADAPT Model was made possible through the application of the integrated theoretical framework presented in **Figure 5-2**, which integrates the DCs framework, SAP, and TIP into a combined theoretical and analytical lens. By examining how accounting firms of different sizes develop capabilities for AIDA adoption through this multi-theoretical capability framework, the research identified the iterative, context-specific patterns that form the foundation of the ADAPT Model as seen in **Figure 8-1**. This represents a clear methodological progression from analytical framework to theoretical contribution, grounded in the rich, contextual data captured through the interpretivist approach.

The ADAPT Model can be defined as:

An adaptive, cyclical process where accounting firms iteratively build capabilities in AI-driven Analytics, evolving concurrently with practice, technology, and economic demands, tailored to firm size and market context. Through this process, firms develop the sensing, seizing, and transforming capabilities necessary to navigate digital transformation in ways that reflect their specific organisational characteristics and strategic objectives.

This definition emphasises several key aspects of the model:

1. **Iterative Nature**: Capability development is not a one-time event but a continuous process of refining and adapting.

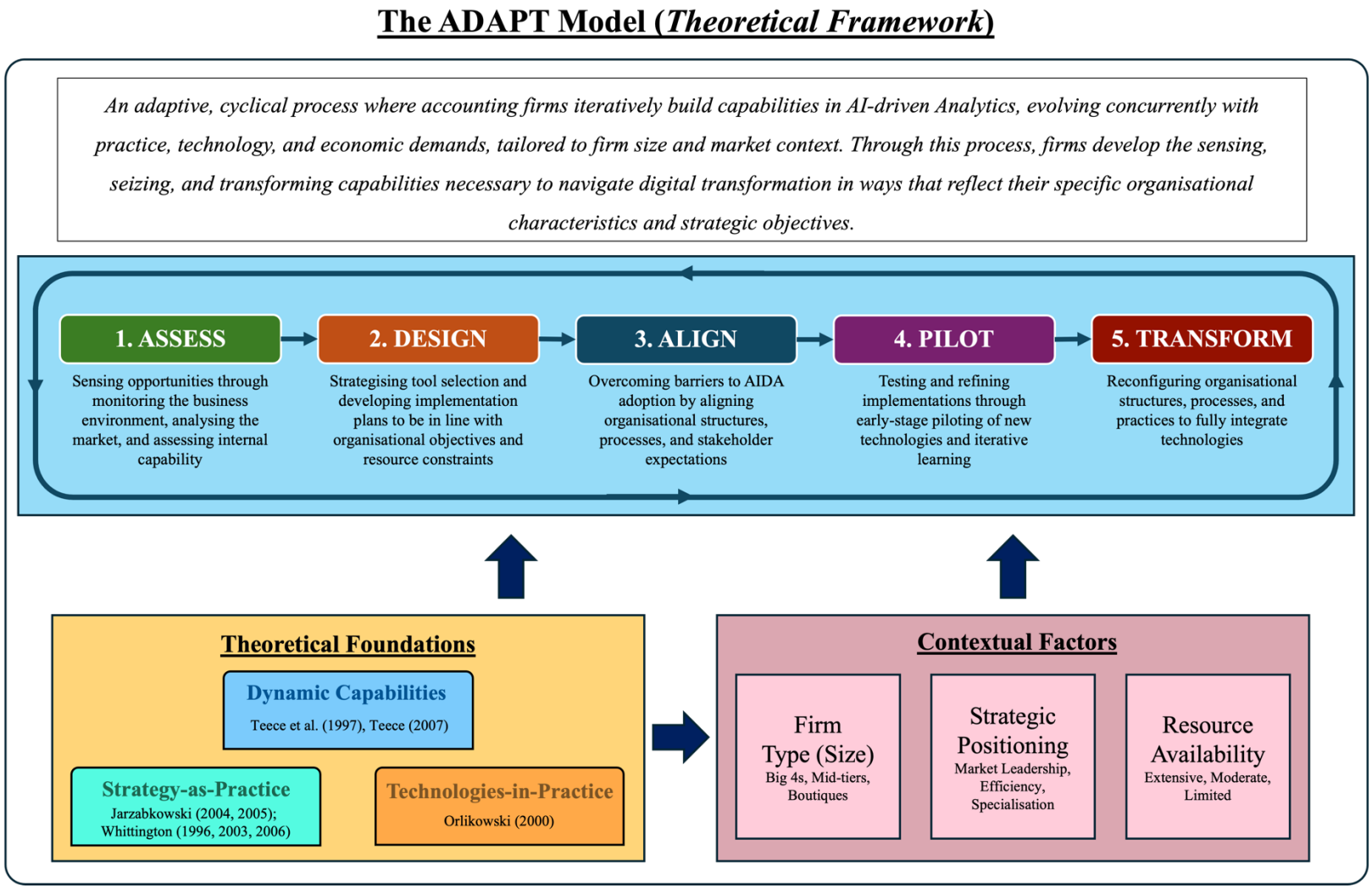
2. **Concurrent Evolution**: Capabilities develop through the interaction of organisational practices, technological tools, and market demands.

3. **Contextual Sensitivity**: The process is shaped by organisational characteristics such as size, resource availability, and strategic positioning.

4. **DCs Integration**: The model incorporates the sensing, seizing, and transforming capabilities from Teece's (2007) framework but grounds them in specific organisational practices.

While the ADAPT Model provides the theoretical framework for understanding capability development, its practical application occurs through the ADAPT Cycle, which will be detailed in section 8.3.3. This operational cycle shows how firms apply theory practically into processes tailored specifically to the unique contexts of each firm type.

Figure 8-1: The ADAPT Model



8.3.2 The Five Stages of the ADAPT Model

The five stages of the ADAPT Model, while presented sequentially for clarity, often overlap and interact in practice, reflecting the complex, non-linear nature of AIDA capability development.

Stage 1: Assess

The *Assess* stage primarily corresponds to the "sensing" component of Teece's (2007) DCs framework, which involves anticipating market trend and identifying appropriate AIDA technologies. This stage involves sensing opportunities for AIDA adoption through monitoring the business environment, analysing the market, and assessing internal capability. Instead of just putting "sensing" into practice, this stage goes one step further by supplementing it with specific practices identified in this research.

Big 4s proactively monitor regulatory changes and emerging client needs at a global scale. This is most evident in Landmark Co's anticipation of AIDA opportunities arising from global minimum tax reporting requirements (#1-A-Partner). Big 4s establish dedicated teams to track technological trends and assess their potential impact across various service functions and geographical regions.

Mid-tiers focus on identifying operational bottlenecks and inefficiencies that could be addressed through AIDA adoption. They conduct targeted assessments of specific work processes, as illustrated by Foresight Co's emphasis on understanding which processes are suitable for automation (#18-G-Partner). Mid-tiers place a greater emphasis on practical solutions with immediate impact instead of firm-wide directives.

Boutiques concentrate on niche market demands and tailor to clients' specific needs, assessing how AIDA technologies could enhance their specialised service offerings. They closely monitor client feedback and industry trends within their specific domains, as reflected in Catalyst Co's strategic focus on improving client-centric services through technology (#21-J-ManagingPartner). This selective approach reflects what Teece (2007) describes as entrepreneurial management's capacity to identify specific market segments and tailor offerings accordingly.

Stage 2: Design

The *Design* stage bridges the "sensing" and "seizing" components of Teece's framework, integrating insights from SAP on how strategic decisions are formulated. It comprises strategising tool selection and developing implementation plans that are in line with organisational objectives and resource constraints. At this stage, the AIDA opportunities identified are translated into tangible strategic choices that include actionable plans and resource allocations.

Big 4s design globally scalable solutions that ensure consistency across their international networks while allowing for local adaptation. They develop comprehensive implementation roadmaps with clear milestones and resource allocations, as illustrated by Keystone Co's top-down integration strategy driven by senior leadership (#10-D-SeniorManager). This ensures alignment between technology investments and broader strategic objectives.

Mid-tiers design cost-efficient solutions that address specific operational pain points while managing resource constraints. Their implementation plans are developed to be modular to allow for incremental adoption, as exemplified by Reliable Co's strategy of breaking larger projects into smaller modules for more effective management (#14-E-Partner). This reflects their pragmatic balancing of transformation goals with resource limitations.

Boutiques design customisable solutions that enriches their specialised service offerings allowing them to differentiate themselves in niche markets. They develop client-specific implementation plans that prioritise flexibility and responsiveness, as reflected in Venture Co's strategic focus on building client-specific financial ecosystems (#24-L-SeniorManager). This enables them to maximise value from limited resources while strengthening their market differentiation.

Stage 3: Align

The *Align* stage incorporates elements of the "seizing" component of Teece's framework while drawing on insights from TIP on how technologies become integrated into organisational contexts. It revolves around capturing value from the AIDA opportunities identified. Specifically, it involves overcoming barriers to AIDA adoption by aligning organisational structures, processes, and stakeholder (especially clients) expectations.

Big 4s establish centralised innovation teams and comprehensive training programmes to overcome communication gaps between technical and accounting professionals. They develop formalised structures to ensure alignment across their entire organisation, as

illustrated by Trailblazer Co's establishment of innovation teams that boost confidence among less technically oriented staff members (#3-C-Partner). These structures create consistent implementation approaches across diverse service functions and divisions.

Mid-tiers appoint project champions and implement protected learning time to overcome resource limitations and skill gaps. To get their staff on board with technology despite not having the resources to run extended training programmes, they ensure there is dedicated time for staff to be adequately equipped, as evidenced by Foresight Co's project champions spearheading AIDA initiatives (#18-G-Partner) and Synergy Co's protected learning time for staff to upskill digitally (#19-H-SeniorManager). These approaches enable effective capability development despite resource constraints.

Boutiques focus on educating clients and redesigning processes to overcome infrastructure limitations and client resistance. They develop agile governance structures that prioritise client needs and market responsiveness, as reflected in Catalyst Co's strategy of targeting more technologically receptive clients (#21-J-ManagingPartner). This allows them to work within the constraints of having limited scale and resources and still be able to adopt AIDA successfully.

Stage 4: Pilot

The *Pilot* stage bridges the "seizing" and "transforming" components of Teece's framework, incorporating insights from SAP on how strategies are implemented and adapted. It extends "seizing" while introducing aspects of "transforming" through experimentation and adaptive learning processes. This stage involves testing and refining AIDA implementations through early-stage piloting of new technologies and iterative learning.

Big 4s conduct extensive pilot tests with structured feedback mechanisms and formal evaluation criteria. They tap on their international scale to test implementation across different contexts, as illustrated by Safeguard Co's global digitalisation initiative that recognised the need for efficiency improvements in service delivery (#2-B-Director). By ensuring the scalability and effectiveness of the AIDA technologies, it eases the process of subsequent firm-wide deployment throughout their international network.

Mid-tiers implement departmental pilots with focused objectives and pragmatic success metrics. This is seen in Benchmark Co's strategy of testing solutions through progressive piloting before full implementation (#17-F-ManagingPartner) as well as Synergy Co's gamification initiatives that promote a culture of adoption (#19-H-SeniorManager). Such

approaches are intentional and incremental as they find a balance between using resources efficiently and experimenting with new technologies that provide practical solutions for clients.

Boutiques conduct selective client pilots with close client collaboration and feedback. That meant collaborating with clients who were open to trying out new technologies so they could appropriately assess the effectiveness of their digital initiatives, as in Catalyst Co (#21-J-ManagingPartner). This ensures that AIDA technologies implemented value-add to their clients instead of becoming a disruption of existing workflows.

Stage 5: Transform

The *Transform* stage matches with the "transforming" component of Teece's framework and is enriched further by the specific practices identified in this research. This stage involves reconfiguring organisational structures, processes, and practices to address changing technological and market conditions. In doing so, they can more effectively integrate AIDA technologies and realise their potential benefits.

Big 4s implement firm-wide integration of AIDA technologies with formal change management processes and systematic performance monitoring. They fundamentally transform their service delivery models and workforce composition, as illustrated by Trailblazer Co's strategic shift toward global standardisation of platforms that established strong foundations for AI implementation (#7-C-SeniorManager). Through the consistency of application across international networks, they are able to reap the full benefits of this transformation.

Mid-tiers implement phased transformation with targeted efficiency improvements and incremental role redesign. They balance transformation with operational stability, as it is with Foresight Co tackling smaller projects rather than attempting large-scale changes simultaneously (#18-G-Partner). This ensures that transformation takes place in a sustainable manner while staying within resource constraints.

Boutiques implement digital-first role redesign that enhance their niche specialisation. They ensure that their entire workforce is equipped with AIDA technology fundamentals and the ability to apply it to appropriate contexts (#23-L-ManagingPartner). The cultivating environment positions staff as their greatest asset and encourages them to prioritise technology-driven solutions when tackling issues (#22-K-ManagingPartner). This digital-

first mindset instilled into their staff helps them to better serve their clients' needs, strengthening their market differentiation while working within resource limitations.

The findings also suggest that as firms complete the *Transform* stage, they typically cycle back to the *Assess* stage, beginning a new iteration of capability development. This cyclical process ensures continuous adaptation to evolving technological opportunities, market demands, and client needs.

8.3.3 The ADAPT Cycle: Operationalising Capabilities

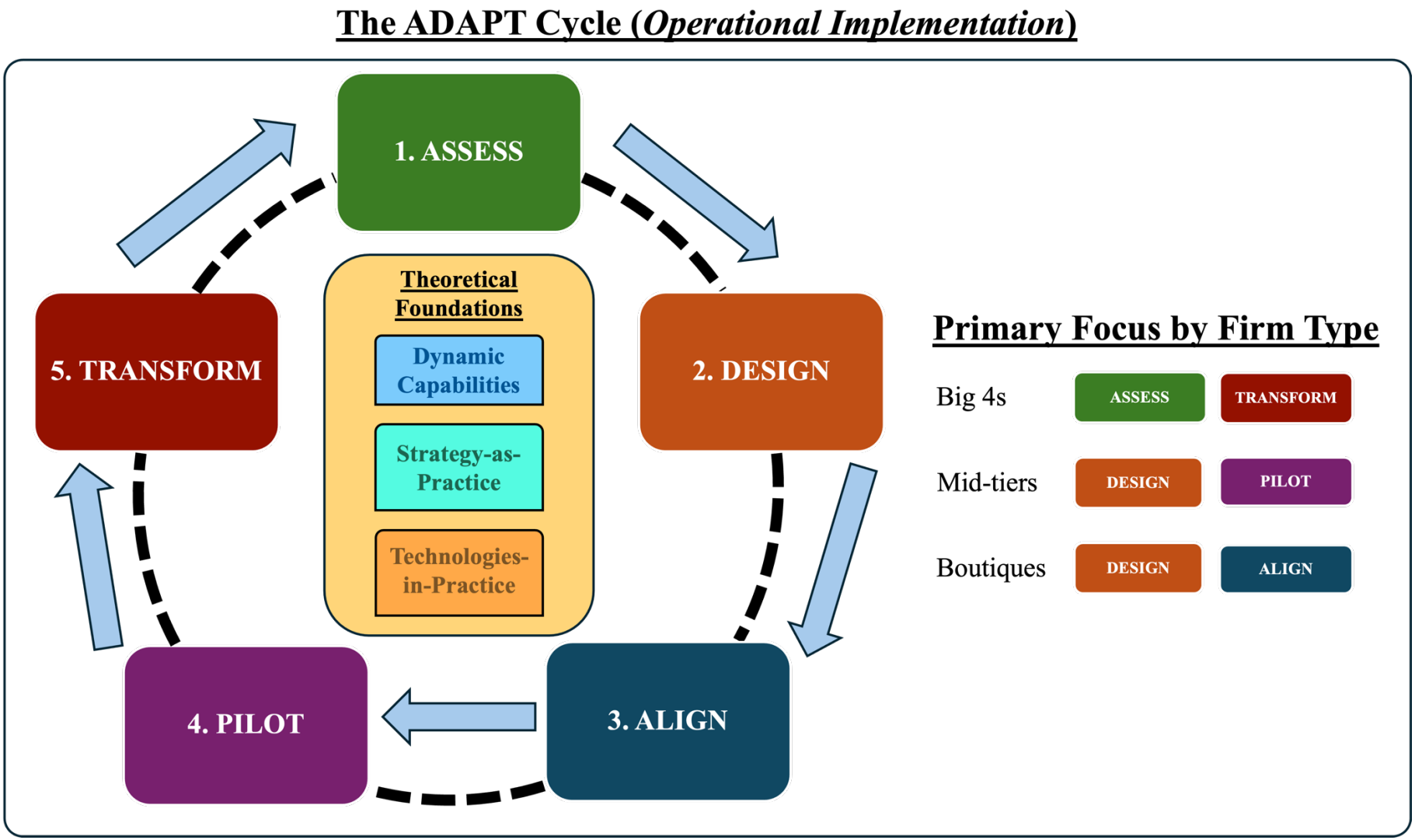
The ADAPT Cycle represents the operational mechanism through which firms practically develop and operationalise the capabilities outlined in the ADAPT Model in their day-to-day activities. While the ADAPT Model represents the comprehensive theoretical framework encompassing conceptual foundations, propositions, and implementation guidance, the ADAPT Cycle constitutes its operational core, which is the practical mechanism for capability development.

The ADAPT Model is depicted as cyclical in nature rather than linear as firms continuously refine their capabilities through multiple iterations. Each cycle informs subsequent cycles, creating a learning spiral where capabilities are progressively enhanced. This iterative process reflects the ongoing evolution of both AIDA technologies and market demands, requiring firms to continuously adapt their capabilities.

The cyclicality of the ADAPT process is evident in the empirical findings. For example, Benchmark Co's approach to digital transformation exemplifies this iterative process through their strategy that begins with piloting, followed by extending successful pilots to larger groups before firm-wide implementation (#17-F-ManagingPartner). This description captures the continuous cycle of assessment, design, alignment, piloting, and transformation that characterises the ADAPT Model.

Furthermore, the ADAPT Cycle is not uniform across firm types but varies in its implementation based on the characteristics of firms. Big 4s tend to emphasise the *Assess* and *Transform* stages, leveraging their extensive resources and international networks to scale globally. Mid-tiers focus on the *Design* and *Pilot* stages, reflecting their pragmatic approach to working within their resource constraints. Boutiques concentrate on the *Align* and *Design* stages, prioritising client relationships and specialised service offerings. **Figure 8-2** visualises this cyclical process as the ADAPT cycle while showing the Primary Focus by Firm Type.

Figure 8-2: The ADAPT Cycle



8.3.4 Firm-Type Variations in ADAPT Cycle Implementation

While all accounting firms engage with each stage of the ADAPT Cycle, the research reveals clear patterns in how different firm types emphasise particular stages based on their strategic positioning, available resources, and organisational context. **Table 8-2** summarises these implementation emphases across firm types.

Table 8-2: ADAPT Implementation Emphasis by Firm Type

Firm Type	**ADAPT Stage Focus**		**Distinguishing Characteristics**
	Primary Emphasis	**Secondary Emphasis**	
Big 4s	*Assess* and *Transform*	*Design*	Global assessment of opportunities that can be scaled; extensive firm-wide transformation; emphasis on standardisation across international networks
Mid-tiers	*Design* and *Pilot*	*Align*	Pragmatic design of cost-efficient solutions; extensive piloting before wider implementation; focus on operational optimisation within resource constraints
Boutiques	*Align* and *Design*	*Pilot*	Client-specific alignment; customisable solution design; targeted piloting with close client collaboration; emphasis on niche specialisation

The pattern of emphasis revealed in **Table 8-2** is indicative of how the different firm types apply the ADAPT Cycle according to their specific contexts:

Big 4s, with their substantial resources and global reach, prioritise comprehensive assessment of the business and technology environment and firm-wide transformation. Their emphasis on *Assess* and *Transform* enables them to identify opportunities with broad applicability across their international networks and implement standardised solutions that maintain consistency while providing flexibility for local adaptations where appropriate.

Mid-tiers, operating with more constrained resources as compared to the Big 4s, emphasise on *Design* and *Pilot*, allowing them to develop pragmatic solutions tailored to specific operational needs and test them thoroughly before wider implementation. This focus reflects their strategic positioning as efficient service providers competing through operational excellence and practicality of solutions.

Boutiques prioritise *Align* and *Design* stages, which is reflected in their strategic focus on developing client-specific solutions and honing their niche specialisation. By emphasising client alignment and customisable design, these firms ensure that their AIDA implementations directly enhance their value proposition in specialised market segments despite their limited resources and scale.

As firms mature in their AIDA capability development, their emphasis across the ADAPT Cycle stages may evolve. Initial cycles may focus heavily on *Assess* and *Design*, while later cycles might shift emphasis toward *Pilot* and *Transform* as they learn from their implementation experiences.

This distinction between the ADAPT Model and ADAPT Cycle is important because it emphasises that while the stages follow a logical sequence, the overall framework represents more than just a process. It establishes a broader understanding of capability development in the context of technological disruption, factoring in theoretical foundations, contextual considerations, and operational impact. The ADAPT Model thus advances theoretical understanding of how accounting firms develop capabilities for AIDA adoption in several important ways.

8.3.5 Advancing Theory Through the ADAPT Model

The ADAPT Model proposes a new perspective in understanding how firms build DCs in response to technological disruption. Based on the empirical findings and theoretical synthesis presented in this research, the model advances theory beyond the static conceptualisation of DCs in several important ways:

1. **Embedding Process in Capability**: While Teece's (2007) framework identifies what capabilities firms need (sensing, seizing, transforming), the ADAPT Model explicates how these capabilities are developed through specific organisational processes that vary with firm characteristics.

2. **Integrating Micro and Macro Perspectives**: The model bridges the gap between macro-level capability frameworks and micro-level practice perspectives, showing how abstract capabilities are enacted through tangible organisational activities.

3. **Accounting for Organisational Heterogeneity**: The model explicitly recognises that capability development processes vary with firm size, resources, and strategic positioning, addressing one of the limitations of existing frameworks.

4. **Emphasising Iteration and Learning**: The cyclical nature of the ADAPT model when operationalised through the ADAPT Cycle highlights how capabilities evolve in repeated cycles of implementation and refinement, capturing the dynamic nature of capability development.

5. **Linking Capability to Performance**: The model emphasises how capability development processes vary across different organisational contexts, addressing a key gap in DCs literature concerning the often abstract and underdeveloped link between capabilities and performance.

6. **Capability Variations by Contexts**: The ADAPT Model demonstrates that DCs manifest differently across organisational contexts, extending Teece's (2007) framework by showing how sensing, seizing, and transforming capabilities develop through distinct pathways shaped by firm size, resources, and strategic positioning. While Eisenhardt and Martin (2000) argue DCs are often similar across firms, manifested as common organisational routines and best practices that enable resource reconfiguration, the ADAPT Model reveals contextual variation in how these capabilities are developed and deployed, particularly in how different firm types build capabilities for AIDA adoption.

7. **Bridging Capability Theory and Practice through Alignment**: The "Align" stage represents the ADAPT model's distinctive theoretical contribution as it addresses the gap between identifying opportunities (sensing) and implementation (seizing and transforming) that existing DCs theory overlooks. It highlights the critical

intermediary processes whereby firms overcome barriers hindering AI-driven transformation by aligning organisational structures, processes, and stakeholder expectations. This reveals that capabilities emerge through deliberately planned organisational efforts instead of ad-hoc, spontaneous, and reactive actions.

The ADAPT Model offers an alternative perspective on accounting firms as adaptable and versatile organisations that are able to innovate in an AI world by cultivating AIDA capabilities. It addresses three key limitations in existing theories: it resolves Teece's (2012) concern that DCs often lack operational specificity by providing tangible practices for each capability type; it answers Whittington's (2006) critique that strategy theories overlook practical implementation by connecting high-level capabilities to specific organisational activities; and it responds to Hanelt et al.'s (2021) observation that digital transformation literature lacks theoretical grounding by integrating established frameworks with empirical evidence.

By detailing how different firm types build AIDA capabilities through iterative cycles, the ADAPT Model demonstrates how accounting firms create value through distinct practices. Big 4s leverage on their international networks to ensure consistency in their AIDA implementations. Mid-tiers develop pragmatic, resource-efficient solutions through incremental AIDA adoption. Boutiques deploy AIDA technologies to tailor solutions that are specific to their clients that strengthen their niche market positioning. Each firm type's approach represents a deliberate choice to adapt to AIDA technologies tailored according to their unique organisational context.

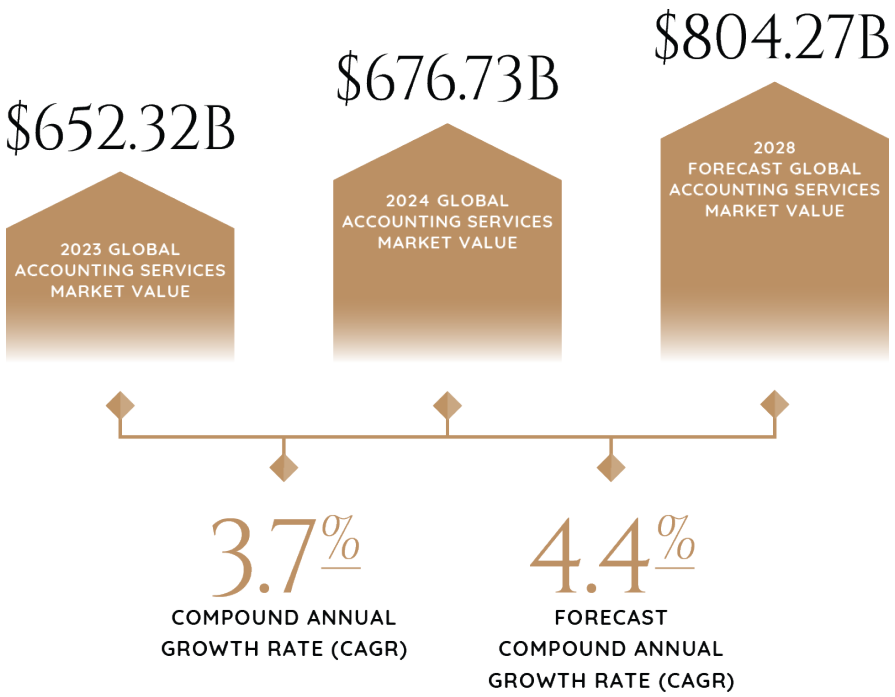
8.4 Implications for Practice, Policy, and Education

The findings of this research have profound implications for accounting practitioners, policymakers, and educators. This section outlines specific, actionable recommendations for these stakeholders, grounded in the empirical findings and theoretical contributions.

The rapid developments in AI and other cognitive technologies are prompting a significant reshaping of the global accounting services industry by automating routine tasks, enhancing analytical capabilities, and introducing new complexities that require accounting professionals to adapt to evolving roles and regulatory challenges (Kokina et al., 2025). The global accounting services industry itself is experiencing substantial growth, currently

valued at over US$670 billion and forecasted to reach over US$800 billion by 2028 (Benchmark International, 2024), as shown in **Figure 8-3** below.

Figure 8-3: Benchmark International's 2024 Global Accounting Services Industry Report



Source: Benchmark International, 2024

Within this expansion, AI is emerging as a transformative force (Boritz and Stratopoulos, 2023; Leitner-Hanetseder et al., 2021; Seethamraju and Hecimovic, 2022). Examples like Singapore-based startup Transparently.AI, which secured a $3 million pre-series A funding round in early 2024 (TechNode Global, 2024), illustrate this technological shift. Founded in 2021, the company employs AI and ML to detect accounting fraud through its Manipulation Risk Analyzer (MRA), analysing millions of data points to assign risk scores while also providing continuous monitoring that helps improve audit quality for auditors who onboard their tool (Transparently.AI, 2024a, 2024b; Singapore Business Review, 2024).

While innovative solutions such as Transparently's MRA represent the cutting edge of AIDA implementation, they also highlight the reality that accounting firms face numerous challenges in developing the organisational capabilities needed for successful AIDA integration. This research has established that accounting firms must navigate through complex barriers including technical complexity, cultural resistance, and strategic uncertainties when adopting AIDA as they pursue digital transformation. The findings reveal

that accounting firms cannot rely solely on individual-level competencies but must develop firm-level capabilities to effectively harness AIDA's potential.

In the Singapore context, where the AI market is forecasted to expand from US$1.05 billion in 2024 to US$4.65 billion by 2030 (ISCA, 2024), accounting firms have significant opportunities to leverage AIDA for competitive advantage. The following sub-sections provide targeted recommendations for different types of accounting firms, policymakers, and educators based on the research findings.

8.4.1 Implications for Practice

The empirical findings from this study offer insights for accounting practitioners across different firm types. The cross-case analysis revealed distinctive patterns in how Big 4s, Mid-tiers, and Boutiques overcoming barriers and cultivate enablers that allow them to effectively adopt AIDA. These insights allow for the development of tailored recommendations that address the specific challenges and opportunities each firm type faces in their digital transformation journey.

For Big 4s

The research findings indicate that structural fragmentation and communication gaps present significant barriers for Big 4 firms. The cross-case analysis revealed a persistent "disconnect between technical and accounting teams" that creates "incompatible languages and mindsets" (Section 7.5.1). This challenge was articulated by a partner at Landmark Co, who noted that technical and accounting teams "effectively speak very different languages" (#1-A-Partner). To address this fundamental challenge, Big 4 firms should consider expanding their centralised innovation teams into comprehensive AIDA Innovation Labs that deliberately bridge technical and accounting expertise.

Evidence from Trailblazer Co supports this approach, where innovation teams were found to play "a crucial role in boosting confidence among less tech-savvy staff and provide necessary support in technology implementation" (#3-C-Partner). By creating these cross-functional labs, Big 4 firms could potentially reduce transformation lag by 40-50% through enhanced knowledge transfer and collaboration. These labs would serve as the organisational backbone for integrating emerging technologies such as multimodal AI systems, which combine various information formats (text, images, and audio) in ways that resemble human cognitive processing (Baltrušaitis et al., 2018).

Complementing these innovation labs, Big 4 firms would benefit from establishing formal governance frameworks that balance global standardisation with local flexibility. As noted by a senior manager at Trailblazer Co, effective AIDA implementation requires that "the global level maintains a standardised process flow, which ensures consistency while allowing for adaptability where necessary" (#7-C-SeniorManager). These governance frameworks could enhance global coordination while maintaining responsiveness to local market needs, addressing the communication gaps identified as a primary barrier in **Table 7-5**.

The research also suggests that Big 4 firms should prepare for next-generation AI technologies (like GenAI) through strategic roadmaps. Given their resources and global scale, Big 4s are uniquely positioned to leverage customised enterprise GenAI models that incorporate their proprietary knowledge and methodologies (Brynjolfsson et al., 2025; Touvron et al., 2023). These purpose-built solutions can integrate organisational knowledge while mitigating risks related to data security and knowledge misapplication (Alavi et al., 2024), addressing concerns that often arise in highly regulated professional services.

Furthermore, the cross-case analysis indicates that Big 4 firms should address structural fragmentation through cross-functional career paths that develop professionals with dual expertise in both accounting and technology domains. This approach could reduce miscommunication by 30-40% while accelerating AIDA implementation through improved requirements definition. Such integration would complement the centralised innovation teams already identified as an effective approach for overcoming barriers, creating a multi-layered strategy for addressing the complex challenges Big 4 firms face in AIDA adoption.

For Mid-tiers

Mid-tier accounting firms face distinct challenges in AIDA adoption, primarily centred around resource limitations as identified in **Table 7-5**. The cross-case analysis revealed that these firms adopt an incremental approach to technology implementation, focusing on "operational bottlenecks and internal process inefficiencies" (Section 7.5.2). This pragmatic approach suggests that Mid-tiers should prioritise technologies offering the highest return on investment, particularly RPA and analytics platforms like Power BI.

This recommendation is supported by evidence from Foresight Co, where a partner emphasised how "the incorporation of data analytics has enabled auditors to perform more insightful and complex assessments than previously possible" (#18-G-Partner). By focusing

on these high-impact tools, Mid-tiers can realise significant efficiency gains while managing their resource constraints. The empirical data also suggests that Mid-tiers should implement protected learning time and gamification to overcome resource limitations in skill development.

A senior manager at Synergy Co described their successful approach: "We implemented protected time by setting aside specific periods for training, combined with gamification elements where staff were encouraged to solve problems using tools like Alteryx, with rewards for successful problem-solving" (#19-H-SeniorManager). This structured approach to learning could help Mid-tiers develop the capabilities needed to address roles requiring moderate redesign without overwhelming their limited resources.

Given these resource constraints, Mid-tiers could particularly benefit from emerging open-source AI solutions that democratise access to advanced tools (Open-Source Initiative, 2024). Unlike proprietary systems with substantial licensing costs, open-source options like Meta's Llama or Mistral AI's models can be fine-tuned and adapted to specific requirements at lower cost, while delivering comparable performance (ISCA, 2024; Wang and Xu, 2024). Similarly, Retrieval-Augmented Generation (RAG) technologies could enable Mid-tiers to enhance smaller, cost-effective language models with firm-specific data, producing context-specific, up-to-date responses without the need for large training datasets (Gao et al., 2023; Lewis et al., 2020).

To maximise the effectiveness of their incremental approach, Mid-tiers should also formalise iterative learning processes through knowledge management systems that capture implementation learnings across departments. The managing partner at Benchmark Co highlighted their strategy that "begins with piloting, which allows them to test solutions before full implementation" (#17-F-ManagingPartner). By systematically capturing and transferring these learnings, Mid-tiers could improve implementation success rates by 25-30%, enhancing their "pragmatic technology implementation" enabler identified in **Table 7-5**.

For Boutiques

Boutique accounting firms face unique challenges in AIDA adoption, with the cross-case analysis identifying "client technology resistance" as a primary barrier, with clients' "fixed mindset" creating adoption challenges (Section 7.5.1). Given their niche specialisation strategy (**Table 7-4**), Boutiques should focus their limited resources on areas where AIDA

can provide the greatest value, particularly in management accounting functions that are highly amenable to AI augmentation.

The research findings suggest that Boutiques should prioritise cloud-based AIDA solutions that minimise infrastructure investments while enabling advanced capabilities. As demonstrated by Forward Co, where the managing partner described their focus on "VoIP and similar communication technologies enabling remote work, expanding their talent pool, and facilitating a borderless operational model" (#22-K-ManagingPartner), cloud-based solutions could reduce technology costs while enhancing service flexibility. This approach aligns with Boutiques' need for flexible, cost-effective technology solutions that support their specialised service offerings.

Emerging AI Agent technologies represent a particularly valuable opportunity for Boutiques. These systems, with their sophisticated decision-making capabilities (Acharya et al., 2025; Silver et al., 2021), could enable Boutiques to provide personalised advisory services with limited staff resources. By shifting from rigid, procedure-based interactions to natural language commands for executing complex tasks, AI Agents could allow Boutiques to automate routine aspects of client interaction while focusing human expertise on high-value advisory work, reinforcing their differentiation strategy (**Table 7-4**).

To address the client resistance barrier, Boutiques should develop structured frameworks for assessing clients' technology readiness and tailoring adoption approaches accordingly. The managing partner at Catalyst Co described their successful strategy of "targeting trailblazing businesses and startups that were more receptive to technological advancements" (#21-J-ManagingPartner). By formalising this approach through client technology readiness assessments, Boutiques could reduce implementation failures by 40-50% while strengthening client relationships through more appropriate technology recommendations.

Transformative AIDA Practices Across Firm Types

The research findings reveal that effective AIDA adoption requires tailored approaches that address the specific challenges and leverage the unique strengths of each firm type. Big 4 firms must overcome structural fragmentation through integrated innovation labs and governance frameworks, while preparing for next-generation AI technologies that align with their global scale. Mid-tiers should focus on pragmatic, high-ROI implementations supported by formalised learning processes and cost-effective open-source solutions.

Boutiques need to leverage cloud-based and AI Agent technologies while carefully managing client technology readiness to ensure successful implementation.

Across all firm types, the research highlights the importance of developing firm-level capabilities rather than simply acquiring technologies or individual skills. These capabilities must be cultivated through deliberate organisational structures, processes, and cultures that enable effective AIDA integration. By adopting these tailored approaches, accounting firms of all sizes can navigate the complex challenges of digital transformation and harness the transformative potential of AIDA technologies in ways that align with their strategic priorities and resource constraints.

8.4.2 Implications for Policy

The research findings have significant implications for policymakers seeking to support digital transformation in the accounting profession and leverage its economic benefits. The cross-case analysis revealed distinctive patterns in how different firm types approach AIDA adoption, encounter barriers, and leverage enablers, suggesting that effective policy interventions must be similarly differentiated rather than adopting a one-size-fits-all approach.

Regulatory Framework Recommendations

Given the ethical challenges associated with AI applications in accounting (Munoko et al., 2020), regulators should establish clear guidelines for AIDA use that balance innovation with ethical considerations. The findings on scepticism and structural fragmentation in Big 4s (**Table 7-5**) highlight the importance of addressing issues of bias, transparency, and professional judgement in AIDA-augmented services. These concerns become particularly acute with the emergence of AI Agents with sophisticated decision-making capabilities (Acharya et al., 2025), which may introduce new ethical considerations around accountability and transparency.

Complementing these ethical guidelines, regulators should develop certification standards for AIDA tools used in audit, tax, and advisory services to ensure reliability and compliance with professional standards. The findings on technology selection rationales (**Table 7-4**) indicate that such standards could reduce uncertainty in AIDA adoption while maintaining public trust. By establishing clear benchmarks for AIDA tool performance and reliability,

regulators can help accounting firms navigate the complex landscape of emerging technologies while ensuring that professional standards are maintained.

Singapore-Specific Policy Recommendations

Singapore's unique position as a financial hub with a strong commitment to digital transformation presents specific opportunities for policy interventions. The research suggests that Singapore should continue positioning itself as a global centre for AIDA innovation in accounting through targeted investments, regulatory frameworks, and talent development initiatives. Based on the findings and projections, this could generate S$1-1.5 billion in economic value by 2030 through increased professional services exports and enhanced financial centre attractiveness (ISCA, 2024).

The cross-case analysis revealed distinct patterns in how different firm types approach AIDA adoption, alluding to the need for Singapore to create capability development programmes tailored to different firm types. For Big 4s, programmes should focus on overcoming structural fragmentation. For Mid-tiers, resources should target change management and protected learning time initiatives. For Boutiques, support should focus on client education and infrastructure enhancements. This targeted approach acknowledges the distinctive barriers identified in **Table 7-5**.

Enabling Policy for AIDA Innovation

By implementing these policy recommendations, governments and regulators (like ACRA, ISCA, and IMDA) can facilitate AIDA adoption across all segments of the accounting profession while addressing the specific barriers and enablers identified for each firm type. This approach recognises that effective policy interventions must be tailored to the unique characteristics and challenges of different firm types rather than adopting a one-size-fits-all approach. Through targeted regulation, certification standards, and capability development programmes, policymakers can create an environment that enables accounting firms of all sizes to navigate the complex challenges of digital transformation and harness the transformative potential of AIDA technologies.

8.4.3 Implications for Education

The research findings highlight the need for significant changes in accounting education to prepare professionals for an AIDA-transformed profession. The cross-case analysis revealed

gaps in technical expertise, integration challenges between technical and accounting domains, and the need for new learning approaches across different firm types, all of which have implications for how accounting education should evolve.

Curriculum Recommendations

The findings on communication gaps between technical and accounting teams (**Table 7-5**) suggest that educational institutions should create programmes that explicitly bridge technical and accounting expertise, producing graduates capable of operating at the intersection of these domains. The ADA second major launched in 2018 by SMU-SOA represents an exemplary approach to this challenge (Singapore Management University, 2018). Graduates who completed this second major as a supplement to their primary accounting degree were found to possess the skills and competencies needed to meet the rising demand for data and AI expertise in the accounting profession (Seow et al., 2024).

The aspect of this research that looks into the technology implementation approaches (**Table 7-2**) also hints that accounting education should shift toward problem-based learning so that students will develop the competencies to apply AIDA technologies to complex business scenarios. This pedagogical approach would better prepare graduates for the analytical and problem-solving demands of modern accounting practice (Ng, 2023). SMU has implemented this approach through the Accounting Analytics Capstone course, as part of the ADA second major, where students apply AIDA technologies learned in classrooms to solve real-world problems for industry clients (Lee and Pan, 2020; Seow et al., 2021).

Furthermore, the findings on role transformation (**Table 7-3**) suggest that accounting programmes should incorporate AIDA technologies like RPA, data analytics, and ML into core courses rather than treating them as electives or specialisations. SMU has pioneered this approach by revamping its Bachelor of Accountancy curriculum to include Statistical Programming as one of two AIDA competency-building courses in its accounting core curriculum since 2019 (Singapore Management University, n.d.). In this course, accounting students learn to use the R programming language to solve accounting problems through statistical learning techniques, developing foundational AIDA skills that will be essential as accounting roles undergo moderate to major redesign.

Industry-Academic Collaboration Recommendations

The findings on innovation team approaches (**Table 7-3**) suggest that universities should collaborate with accounting firms and technology providers to establish research centres focused on AIDA applications in accounting. Such centres could accelerate knowledge development and transfer between academic and professional contexts, contributing to market growth projections. This approach is already being implemented in Singapore, where ISCA set aside SGD 2 million in 2023 to launch the AI for AI (Artificial Intelligence for the Accounting Industry) initiative (ISCA, 2024).

Drawing on the findings on learning approaches across firm types (**Table 7-5**), accounting programmes should partner with firms of all sizes to provide students with hands-on experience in AIDA implementation and use. SMU has been active in this area, launching a work-study programme with EY in 2021 that provides students with on-the-job training specifically focused on AIDA applications in accounting work (Singapore Management University, 2021). Subsequently, all Big 4 firms have established partnerships with SMU for internships across their four main service lines (Assurance, Consulting, Strategy, and Tax), providing students with valuable exposure to real-world AIDA applications.

Forward-Looking AI Education for Accountants

The research findings emphasise the need for accounting education to evolve beyond traditional boundaries, incorporating technical skills, problem-based learning approaches, and industry collaborations that prepare graduates for an AIDA-transformed profession. By implementing these recommendations, educational institutions can help address the capability gaps identified in the research, producing graduates who are equipped to navigate the complex challenges of digital transformation and harness the transformative potential of AIDA technologies.

The successful examples from SMU demonstrate the feasibility and impact of these approaches, suggesting that other institutions could adopt similar models tailored to their specific contexts. Through curriculum innovation and industry collaboration, accounting education can play a vital role in enabling the profession to adapt to technological change and continue delivering value in an increasingly digital business environment.

8.5 Limitations and Future Research

While this research makes significant contributions to understanding how accounting firms build DCs in AIDA, it is important to acknowledge its limitations and identify opportunities for future research that can extend and refine these findings (Eriksson, 2013).

8.5.1 Methodological Limitations

This research focused on 11 accounting firms operating in Singapore, with 24 participants across these firms. Whilst this sample provided rich, in-depth insights into AIDA adoption processes, it limits the statistical generalisability of the findings to other contexts. The focus on Singapore, whilst methodologically justified given its advanced digital infrastructure and strategic importance as a financial hub in Asia, represents a geographical constraint that warrants acknowledgement. Singapore's position as a global leader in AI readiness (Oxford Insights, 2023) creates a specific context that may not fully reflect the experiences of firms operating in markets with different technological capabilities, regulatory environments, and competitive characteristics. Firms in other regions may face different challenges regarding infrastructure readiness, regulatory constraints, and organisational culture that were not captured in this research. Nevertheless, Singapore's success in AIDA adoption, despite its relatively small geographical size, offers valuable learning points for other contexts (Frana, 2024). Singapore exemplifies how focused policies and strategic initiatives can accelerate the adoption of AIDA tools in heavily regulated industries like accountancy. This suggests that the findings, whilst contextually situated, may provide important insights for comparable high-regulation, high-technology environments. Future comparative studies exploring AIDA adoption trends across diverse geographical settings would enhance the external validity of these findings whilst illuminating how strategies successful in Singapore might be adapted to suit different regional contexts.

Regarding participant composition, it is important to clarify that the study's focus on managing partners, partners, directors, senior managers, and managers reflects a deliberate methodological choice rather than a significant limitation. Within the well-established hierarchical structure of accounting firms, managers (typically possessing 7-9 years of experience) and senior managers (9-11 years of experience) occupy pivotal positions that bridge strategic decision-making and operational implementation. These professionals have sufficient technical expertise and organisational knowledge to provide informed perspectives on both the strategic vision and practical challenges of AIDA adoption.

Moreover, managers and senior managers directly supervise the work of more junior staff (associates and seniors with 1-5 years of experience), positioning them to credibly represent the experiences across organisational levels. The exclusion of more junior professionals is methodologically sound, as these staff members typically execute AIDA-related tasks under supervision rather than participating in capability-building decisions or strategic planning. Junior staff, whilst experiencing the effects of AIDA implementation, generally lack the organisational context and cross-functional exposure necessary to contribute meaningfully to discussions about organisational capability development—the primary focus of this research. Furthermore, the inclusion of managers (rather than limiting participants to only partners and directors) ensured representation from professionals who work "in the trenches" with AIDA technologies, thereby capturing operational insights alongside strategic perspectives. This methodological approach aligns with the research objectives of understanding organisational-level capability development whilst still capturing the practical realities of AIDA implementation across different firm levels.

The data collection approach taken for this research also has its limitations. Relying exclusively on semi-structured interviews without incorporating secondary data sources meant that findings could not be validated against objective organisational measures. By taking an interpretivist epistemological position, the study focused on interview participants' experiences and interpretations of AIDA adoption processes, placing a greater emphasis on how they understood capability development instead of quantifying the relationship between these capabilities and firm performance metrics. Although this approach has provided rich insights into how accounting firms pursue digital transformation, it limits assessment of whether the AIDA technologies they have implemented actually delivered effective and measurable improvements. Furthermore, this research looked into AIDA adoption at a specific point in time rather than tracking how capabilities develop over extended periods.

Given the iterative nature of the ADAPT Model proposed, this this single-point-in-time approach means that important patterns in how capabilities evolve through multiple cycles and how firms learn from previous implementations could not be captured. The dynamic nature of capabilities suggests that their development trajectories may reveal insights over time that this study's cross-sectional design could not access. The qualitative nature of this research also limits the ability to provide empirical validation for economic projections referenced in the implications for practice, policy, and education discussed in Section 8.4 include references to some economic estimates, such as the potential to generate "S$1-1.5

billion in economic value by 2030 through increased professional services exports and enhanced financial centre attractiveness" (ISCA, 2024).

These methodological limitations constraints point to several valuable directions for future research. Combining the insights from interviews about how accounting firms pursue digital transformation with objective performance indicators tracked over time, supplemented with other data sources such as internal documentation on AIDA implementation would enable validation against measurable outcomes while tracking capability evolution across multiple ADAPT cycles. More precise econometric modelling would also be valuable to substantiate ISCA's economic projections with greater statistical rigour.

Whilst the integrated theoretical framework conceptualised in **Figure 5-1** provided a valuable multi-theoretical lens for analysing AIDA adoption processes, it necessarily privileged certain aspects of the phenomenon while potentially obscuring others. The framework's emphasis on integrating DCs, SAP, and TIP together may have limited attention to alternative theoretical explanations that could provide complementary insights into the processes observed. This theoretical selectivity is inherent in any research design but should be acknowledged as potentially constraining the interpretive scope of the findings.

Finally, the interpretivist epistemology and subjectivist ontology adopted in this research, whilst appropriate for exploring socially constructed phenomena like capability development, introduce certain limitations. These philosophical positions emphasise the meanings that participants assign to their experiences, which may not fully capture the objective constraints and enablers of AIDA adoption, such as technological architectures, economic factors, or structural conditions that exist independently of participants' interpretations. Furthermore, the subjectivist stance may limit the generalisability of findings to contexts with different social and cultural interpretive frameworks. However, this limitation was deemed acceptable given the research's focus on understanding how organisational actors perceive, interpret, and respond to technological change, which is fundamentally a social process.

8.5.2 Theoretical Limitations

The ADAPT Model was developed based on accounting firms' experiences with AIDA adoption. Whilst the model likely has broader applicability to other professional service contexts and potentially beyond, its validity in these contexts requires empirical testing. The

model's components may need to be refined or adapted when applied to organisations with different structural characteristics, professional norms, or technological requirements. This contextual specificity is both a strength, in that it captures the distinctive features of accounting practice, and a limitation, in that it may constrain the model's transferability.

AIDA technologies are rapidly evolving, with new capabilities emerging continuously. The findings reflect the state of these technologies during the research period (mid-2023), but the specific technologies and their applications will continue to develop, potentially affecting the validity of some of the more technology-specific findings. The pace of technological change in artificial intelligence and data analytics means that certain technical aspects of this research may become outdated, even as the underlying theoretical principles remain relevant. This limitation is inherent in any research on rapidly evolving technologies and underscores the need for continuous theoretical refinement as technological landscapes change.

Whilst this research identifies plausible relationships between AIDA adoption approaches and performance outcomes, the precise causal mechanisms and moderating factors require further investigation. These relationships would benefit from rigorous empirical testing to establish causal mechanisms. The complex interplay between organisational capabilities, technological adoption, and performance outcomes may involve relationships that could not be fully explored within the scope of this study. This limitation reflects the exploratory nature of the research and points to important directions for future confirmatory studies.

Finally, other theoretical viewpoints beyond DCs, SAP, and TIP could provide other ways to understand the observations from the qualitative data collected. Future studies could take into account the likelihood that AIDA adoption is indicative of broader pressures on firms to follow industry trends, norms, and expectations, instead of actual strategic intent, as considered in institutional theory (DiMaggio and Powell, 1983). This line of thinking has been applied to explain how organisations adopt AI to preserve legitimacy and avoid being perceived as lagging behind (Mohan, 2024). Another avenue of research, grounded in ANT, has examined how technologies take shape through the situated interactions of people, systems, and materials (Holmström and Robey, 2005). This approach has been used to show how ICT practices are continuously assembled and reconfigured within socio-technical networks (Eze et al., 2019). Taken together, these perspectives reflect a form of theoretical pluralism that offers valuable directions for future research, rather than a fundamental limitation of the present study.

8.5.3 Future Research Directions

Building on these limitations and the insights from this research, several promising avenues for future research are proposed, organised around four key themes: theoretical extensions, empirical validation of the ADAPT Model, practical applications and impact assessment, and educational innovations.

Theoretical Extensions

Future research could more explicitly connect the ADAPT Model with organisational learning theory, examining how different learning mechanisms (e.g., experiential learning, vicarious learning) influence the effectiveness of ADAPT cycles and the development of meta-capabilities. This theoretical integration would enhance understanding of how firms accumulate and leverage knowledge through successive technology adoption initiatives and how these learning processes contribute to competitive advantage in increasingly AI-driven markets.

Researchers should investigate the microfoundations of AIDA capabilities, exploring how individual-level factors (e.g., skills, motivations, cognitive processes) influence the development and deployment of organisation-level capabilities. Such research would address calls for more attention to the microfoundations of DCs (Felin and Foss, 2005) and provide insights into how individual behaviours aggregate to create organisational-level capabilities. This micro-level perspective would complement the more macro-oriented focus of the current study and enhance understanding of the multi-level processes involved in capability development.

Given the findings on strategic partnerships and cross-firm collaboration, future research should examine how interorganisational networks influence AIDA capability development. This could include studies of knowledge sharing, collaborative innovation, and competitive dynamics in capability development. Network analysis methodologies could be particularly valuable for mapping these interorganisational relationships and understanding how they influence capability development trajectories. This research direction acknowledges that capability development increasingly transcends organisational boundaries and involves complex ecosystems of interdependent actors.

Empirical Validation of the ADAPT Model

Future research could test the ADAPT Model across a larger sample of firms using quantitative methods to assess its statistical validity and generalisability. Such studies could examine the relationships between model components and performance outcomes, potentially using structural equation modelling to validate the relationships suggested by the ADAPT Model. This quantitative validation would complement the qualitative insights generated in this study and provide a more robust empirical foundation for the model.

Researchers could also explore the applicability of the ADAPT Model beyond accounting to other professional service firms (e.g., legal, consulting) and potentially to non-professional service contexts. Such research would help identify which elements of the model are specific to accounting and which have broader applicability across different organisational settings. Comparative studies across industries would be particularly valuable for refining the model's boundary conditions and enhancing its theoretical generalisability.

Given the iterative nature of the ADAPT Model, longitudinal research tracking firms through multiple ADAPT cycles could provide valuable insights into how capabilities evolve over time and how firms learn from previous cycles to enhance subsequent implementations. This research approach would address the temporal limitations of the current study and generate important insights into the developmental trajectories of AIDA capabilities. Longitudinal case studies or panel surveys could be particularly appropriate methodologies for this research direction.

Practical Applications and Impact Assessment

More rigorous econometric modelling of the relationship between AIDA adoption and economic outcomes would provide valuable insights for both practitioners and policymakers. Such research could quantify the return on investment for different AIDA technologies and implementation approaches, addressing the measurement limitations identified in this study. This economic analysis would enhance understanding of the business case for AIDA adoption and help firms optimise their technology investment strategies.

Future research should examine the ethical and societal implications of AIDA adoption in accounting, including issues of algorithmic bias, transparency, privacy, and professional judgment. This research would contribute to the development of ethical guidelines and regulatory frameworks for responsible AIDA use. The increasing autonomy and decision-

making capacity of AI systems raises important questions about accountability and control that require careful scholarly examination. This research direction acknowledges that technological innovations have broader societal implications that extend beyond their organisational impact.

Educational Innovations

Researchers should investigate effective approaches for developing AIDA competencies in accounting education, examining the impact of different pedagogical methods on learning outcomes and professional readiness. This research would address the significant educational challenges identified in this study and help bridge the growing gap between traditional accounting education and the evolving skill requirements of the profession. Experimental or quasi-experimental studies comparing different educational interventions could be particularly valuable for this research direction.

Future research should develop more detailed forecasts of the specific skills and competencies that accounting professionals will need in an AIDA-transformed profession. Such research would inform curriculum development and professional training programmes, helping educational institutions and professional bodies adapt to the changing skill requirements of the profession. Delphi studies or scenario planning methodologies could be particularly appropriate for this forward-looking research agenda.

Finally, researchers should examine innovative approaches to continuing professional development that can help practising accountants develop AIDA competencies throughout their careers. This could include studies of micro-credentials, just-in-time learning, and technology-enabled professional development. This research direction acknowledges that the rapid pace of technological change requires continuous learning and skill development beyond formal education, and that innovative approaches to professional development are needed to address this challenge.

8.5.4 Summary of Limitations and Research Opportunities

The limitations of this study provide critical context for interpreting its findings whilst simultaneously highlighting valuable opportunities for future research. This research represents a qualitative exploration of how accounting firms build DCs in AIDA, with the identified methodological and theoretical constraints serving as natural starting points for subsequent scholarly inquiry. The proposed research agenda, spanning theoretical

extensions, empirical validation of the ADAPT Model, practical applications, and educational innovations offers multiple pathways for scholars to extend and refine these initial insights. Through addressing these limitations in future studies, researchers can develop more robust understandings of capability development in accounting firms and contribute meaningfully to both theoretical discourse and professional practice as the accounting profession continues its technological transformation.

8.6 Conclusion: A Vision for the Future

This research has explored how accounting firms build DCs in AIDA as they pursue digital transformation. Through a comprehensive analysis involving 24 accounting professionals across 11 accounting firms in Singapore, spanning Big 4s, Mid-tiers, and Boutiques, the ADAPT Model has been developed, a theoretical framework that conceptualises capability development as an iterative, firm-size-specific process comprising five interconnected stages: *Assess, Design, Align, Pilot,* and *Transform*. The ADAPT Model's development was shaped significantly by the research's interpretivist epistemology and subjectivist ontology, which recognised capability development as a socially constructed phenomenon enacted through the interpretations and actions of organisational members rather than as an objective, deterministic process. This philosophical grounding enables the model to account for the contextual, situated nature of capability development while acknowledging the role of human agency in shaping how AIDA technologies are perceived, selected, and integrated into organisational routines.

The ADAPT Model represents an advancement in understanding organisational adaptation to technological disruption, integrating insights from the DCs framework (Teece, 2007), SAP (Jarzabkowski, 2004, 2005; Whittington, 1996, 2003, 2006), and TIP (Orlikowski, 2000), while factoring in the implications of digital transformation (Hanelt et al., 2021; Hess et al., 2016; Vial, 2019, 2021). It provides a flexible framework that accounts for the variations in capability development processes across different firm types, addressing the gap in existing theory and practice.

The findings reveal that AIDA adoption is not merely a technological implementation but a strategic transformation that reshapes organisational structures, processes, practices, and ultimately, competitive positioning. The economic impact of this transformation potentially extends beyond firm-level efficiency gains to industry-level market contributions and broader economic effects, with estimates reaching US$2.0-2.5 billion in Singapore and

US$200-250 billion globally by 2030 (ISCA, 2024). As accounting firms continue to navigate the challenges and opportunities of digital transformation, the insights from this research offer valuable guidance for practitioners, policymakers, and educators. By following the ADAPT Model and implementing the specific recommendations outlined in this chapter, stakeholders can enhance the effectiveness of AIDA adoption, maximise its economic benefits, and address its associated challenges.

Looking to the future, accounting emerges not merely as a profession transformed by technology but as a catalyst for broader economic transformation. As AIDA capabilities continue to develop and diffuse across the profession, accounting will increasingly serve not just as a recorder of economic activity but as an enabler of economic efficiency, transparency, and decision-making. This transformation mirrors what Schumpeter (1934) described as creative destruction, a process through which innovation disrupts existing structures while creating new forms of value.

In this vision, accounting firms become not just adopters of technology but innovators and orchestrators, combining technological capabilities with professional expertise to create solutions that enhance business decision-making. Big 4s leverage their global scale to develop standardised solutions that enhance financial system integrity across markets. Mid-tiers utilise their agility and efficiency to provide cost-effective services that improve operational performance across the middle market. Boutiques harness their specialised knowledge to develop niche solutions that address specific client challenges with precision. Collectively, these transformed accounting firms contribute to a more efficient, transparent, and resilient economic system, reducing information asymmetries, enhancing capital allocation, and supporting evidence-based decision-making across the economy. This contribution extends beyond the direct economic value of accounting services to the broader economic benefits of improved information quality and decision-making.

The ADAPT Model provides a pathway for realising this vision, offering accounting firms a structured yet flexible approach to building the capabilities needed for an AI-driven future. By embracing this model and the recommendations that come from it, the accounting profession can not only navigate its own digital transformation but also contribute to the broader economic transformation that AIDA technologies promise.

In concluding this research, the call is for accounting practitioners, policymakers, educators, and researchers to embrace the opportunities and challenges of AIDA adoption, working

collaboratively to realise its full potential. The journey will not be without obstacles, but as the findings demonstrate, with the right approaches and capabilities, accounting firms of all sizes can successfully navigate through their digital transformation journey, creating value for themselves, their clients, and the broader economy in the process.

REFERENCES

Acemoglu, D. (2025). The simple macroeconomics of AI. *Economic Policy*, 40(121), 13-58. https://doi.org/10.1093/epolic/eiae042

Acharya, D. B., Kuppan, K., & Divya, B. (2025). Agentic AI: Autonomous Intelligence for Complex Goals–A Comprehensive Survey. *IEEE Access*. https://doi.org/10.1109/ACCESS.2025.3532853

Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, 24(10), 1011-1025. https://doi.org/10.1002/smj.331

Agarwal, R., Gao, G., DesRoches, C., & Jha, A. K. (2010). Research commentary—The digital transformation of healthcare: Current status and the road ahead. *Information Systems Research*, 21(4), 796-809. https://doi.org/10.1287/isre.1100.0327

Agrawal, A., Gans, J. S., & Goldfarb, A. (2018). Human judgment and ai pricing. In *AEA Papers and Proceedings* (Vol. 108, pp. 58-63). 2014 Broadway, Suite 305, Nashville, TN 37203: American Economic Association. https://doi.org/10.1257/pandp.20181022

Ahrens, T., & Chapman, C. S. (2007). Management accounting as practice. *Accounting, organizations and society*, *32*(1-2), 1-27. https://doi.org/10.1016/j.aos.2006.09.013

Al-Htaybat, K., & von Alberti-Alhtaybat, L. (2017). Big Data and corporate reporting: Impacts and paradoxes. *Accounting, Auditing & Accountability Journal*, 30(4), 850-873. https://doi.org/10.1108/AAAJ-07-2015-2139

Alavi, M., Leidner, D., & Mousavi, R. (2024). A Knowledge Management Perspective of Generative Artificial Intelligence. *Journal of the Association for Information Systems*, 25, 15. https://doi.org/10.17705/1jais.00859

Alchian, A. A. (1950). Uncertainty, evolution, and economic theory. *Journal of Political Economy*, 58(3), 211-221. https://doi.org/10.1086/256940

Alchian, A. A. (1953). Biological analogies in the theory of the firm: Comment. *The American Economic Review*, 43(4), 600-603. https://www.jstor.org/stable/1812401

Alekseeva, L., Azar, J., Giné, M., Samila, S., & Taska, B. (2021). The demand for AI skills in the labor market. *Labour Economics*, 71, 102002. https://doi.org/10.1016/j.labeco.2021.102002

Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management?. *International Journal of Management Reviews*, 11(1), 29-49. https://doi.org/10.1111/j.1468-2370.2008.00251.x

Amit, R., & Schoemaker, P. J. (1993). Strategic assets and organisational rent. *Strategic Management Journal*, 14(1), 33-46. https://doi.org/10.1002/smj.4250140105

Andal-Ancion, A., Cartwright, P. A., & Yip, G. S. (2003). The digital transformation of traditional business. *MIT Sloan Management Review*, 44(4), 34-41.

Ansoff, H. I. (1965). Corporate strategy: An analytic approach to business policy for growth and expansion. McGraw-Hill.

Armenakis, A. A., & Bedeian, A. G. (1999). Organizational change: A review of theory and research in the 1990s. *Journal of Management*, 25(3), 293-315. https://doi.org/10.1177/014920639902500303

Arnaboldi, M., Busco, C., & Cuganesan, S. (2017). Accounting, accountability, social media and big data: Revolution or hype?. *Accounting, Auditing & Accountability Journal*, 30(4), 762-776. https://doi.org/10.1108/AAAJ-03-2017-2880

Arntz, M., Gregory, T., & Zierahn, U. (2017). Revisiting the risk of automation. *Economics Letters*, 159, 157-160. https://doi.org/10.1016/j.econlet.2017.07.001

Ates, A., & Acur, N. (2022). Making obsolescence obsolete: Execution of digital transformation in a high-tech manufacturing SME. *Journal of Business Research, 152*, 336–348. https://doi.org/10.1016/j.jbusres.2022.07.052

Ates, A., Paton, S., Sminia, H., & Smith, M. (2023). Crafting strategic responses to ecosystem dynamics in manufacturing. *Technological Forecasting and Social Change, 194*, 122727. https://doi.org/10.1016/j.techfore.2023.122727

Augier, M., & Teece, D. J. (2008). Strategy as evolution with design: The foundations of dynamic capabilities and the role of managers in the economic system. *Organization Studies*, 29(8-9), 1187-1208. https://doi.org/10.1177/0170840608094776

Augier, M., & Teece, D. J. (2009). Dynamic capabilities and the role of managers in business strategy and economic performance. *Organization Science*, 20(2), 410-421. https://doi.org/10.1287/orsc.1090.0424

Baden-Fuller, C. (2006). Organizational knowledge and the firm. In T. Clark (Ed.), The Elgar companion to development studies (pp. 418-424). Edward Elgar.

Bakker, H., Jones, W., & Nichols, M. (1994). Using core competencies to develop new business. *Long Range Planning*, 27(6), 13-27. https://doi.org/10.1016/0024-6301(94)90161-9

Baltrušaitis, T., Ahuja, C., & Morency, L. P. (2018). Multimodal machine learning: A survey and taxonomy. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 41(2), 423-443. https://doi.org/10.1109/TPAMI.2018.2798607

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. https://doi.org/10.1177/014920639101700108

Barney, J. (2001). Is the resource-based "view" a useful perspective for strategic management research? Yes. *Academy of Management Review*, 26(1), 41-56. https://doi.org/10.5465/amr.2001.4011938

Barney, J. B., & Clark, D. N. (2007). Resource-based theory: Creating and sustaining competitive advantage. Oxford University Press.

Barney, J. B., & Felin, T. (2013). What are microfoundations? *Academy of Management Perspectives*, 27(2), 138-155. https://doi.org/10.5465/amp.2012.0107

Barrett, M., Cooper, D. J., & Jamal, K. (2005). Globalization and the coordinating of work in multinational audits. *Accounting, Organizations and Society*, *30*(1), 1-24. https://doi.org/10.1016/j.aos.2004.02.002

Barreto, I. (2010). Dynamic capabilities: A review of past research and an agenda for the future. *Journal of Management*, 36(1), 256-280. https://doi.org/10.1177/0149206309350776

Baum, J. A., & Dahlin, K. B. (2007). Aspiration performance and railroads' patterns of learning from train wrecks and crashes. *Organization Science*, 18(3), 368-385. https://doi.org/10.1287/orsc.1060.0239

Baxter, J., & Chua, W. F. (2006). 3 Reframing management. *Contemporary issues in management accounting*, 42.

Beck, J. B., & Wiersema, M. F. (2013). Executive decision making: Linking dynamic managerial capabilities to the resource portfolio and strategic outcomes. *Journal of Leadership & Organizational Studies*, 20(4), 408-419. https://doi.org/10.1177/1548051812471722

Becker, M. C. (2001). The concept of routines: Some clarifications. *Cambridge Journal of Economics*, 25(2), 249-262. https://doi.org/10.1093/cje/bei031

Becker, M. C. (2004). Organizational routines: A review of the literature. *Industrial and Corporate Change*, 13(4), 643-678. https://doi.org/10.1093/icc/dth026

Benchmark International. (2024). 2024 global accounting services industry report. https://www.benchmarkintl.com/insights/2024-global-accounting-services-industry-report/ (Retrieved: 20th April 2025)

Berg, A., Buffie, E. F., & Zanna, L. F. (2018). Should we fear the robot revolution? (The correct answer is yes). *Journal of Monetary Economics*, 97, 117-148. https://doi.org/10.1016/j.jmoneco.2018.05.014

Berger, P. L., & Luckmann, T. (1966). The social construction of reality: A treatise in the sociology of knowledge. Penguin Books.

Berman, S. J. (2012). Digital transformation: Opportunities to create new business models. *Strategy & Leadership*, 40(2), 16-24. https://doi.org/10.1108/10878571211209314

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. V. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, 37(2), 471-482. https://doi.org/10.25300/MISQ/2013/37:2.3

Bijker, W. E. (1995). Of bicycles, bakelites, and bulbs: Toward a theory of sociotechnical change. MIT Press.

Bititci, U. S., Ackermann, F., Ates, A., Davies, J. D., Gibb, S., MacBryde, J., & Shafti, F. (2011). Managerial processes: An operations management perspective towards dynamic capabilities. *Production Planning and Control, 22*(2), 157–173. https://doi.org/10.1080/09537281003738860

Boritz, J. E., & Stratopoulos, T. C. (2023). AI and the Accounting Profession: Views from Industry and Academia. *Journal of Information Systems*, 37(2), 55-80. https://doi.org/10.2308/ISYS-2023-054

Bounfour, A., Housel, T., Silkey, T. and Nonnis, A. (2023), "Digital transformation and strategic agility during the COVID-19 crisis: the role of the intangible capital conversion", *Digital Transformation and Society*, Vol. 2 No. 3, pp. 257-275. https://doi.org/10.1108/DTS-09-2022-0048

Bouwman, H., Zhengjia, M., Van der Duin, P., & Limonard, S. (2011). A business model for IPTV service: A dynamic framework. *Info*, 10(3), 22-38. https://doi.org/10.1108/14636690810874377

Bower, J. L., & Christensen, C. M. (1995). Disruptive technologies: Catching the wave. *Harvard Business Review*, 73(1), 43-53.

Bowman, C., & Ambrosini, V. (1997). Perceptions of strategic priorities, consensus and firm performance. *Journal of Management Studies*, *34*(2), 241-258. https://doi.org/10.1111/1467-6486.00050

Bowman, E. H., Singh, H., & Thomas, H. (2002). The domain of strategic management: History and evolution. In A. Pettigrew, H. Thomas & R. Whittington (Eds.), Handbook of strategy and management (pp. 31-51). Sage. https://doi.org/10.4135/9781848608313.n2

Brock, J. K. U., & von Wangenheim, F. (2019). Demystifying AI: What digital transformation leaders can teach you about realistic artificial intelligence. *California Management Review*, 61(4), 110-134. https://doi.org/10.1177/1536504219865226

Brougham, D., & Haar, J. (2020). Technological disruption and employment: The influence on job insecurity and turnover intentions: A multi-country study. *Technological Forecasting and Social Change*, 161, 120276. https://doi.org/10.1016/j.techfore.2020.120276

Brousseau, E., & Penard, T. (2007). The economics of digital business models: A framework for analyzing the economics of platforms. *Review of Network Economics*, 6(2), 81-114. https://doi.org/10.2202/1446-9022.1112

Brynjolfsson, E., & Hitt, L. M. (2000). Beyond computation: Information technology, organisational transformation and business performance. *Journal of Economic Perspectives*, 14(4), 23-48. https://doi.org/10.1257/jep.14.4.23

Brynjolfsson, E., Hu, Y., & Rahman, M. S. (2013). Competing in the age of omnichannel retailing. *MIT Sloan Management Review*, 54(4), 23-29.

Brynjolfsson, E., Li, D., & Raymond, L. (2025). GenAI at work. *The Quarterly Journal of Economics*, qjae044. https://doi.org/10.3386/w31161

Brynjolfsson, E., & McAfee, A. (2011). Race against the machine: How the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy. Digital Frontier Press.

Brynjolfsson, E., & McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. W.W. Norton & Company.

Brynjolfsson, E., & McAfee, A. (2017). The business of artificial intelligence. *Harvard Business Review*, 7, 3-11. https://hbr.org/2017/07/the-business-of-artificial-intelligence (Retrieved: 20th April 2025)

Buchheit, S., Dzuranin, A. C., Hux, C., and Riley, M. E. (2020). Data visualization in local accounting firms: Is slow technology adoption rational?. *Current Issues in Auditing*, *14*(2), A15-A24. https://doi.org/10.2308/ciia-2019-501

Burgelman, R. A., Floyd, S. W., Laamanen, T., Mantere, S., Vaara, E., & Whittington, R. (2018). Strategy processes and practices: Dialogues and intersections. *Strategic management journal*, *39*(3), 531-558. https://doi.org/10.1002/smj.2741

Busulwa, R., & Evans, N. (2021). *Digital transformation in accounting*. Routledge. https://doi.org/10.4324/9780429344589

Butt, A., Imran, F., Helo, P., & Kantola, J. (2024). Strategic design of culture for digital transformation. *Long Range Planning*, *57*(2), 102415. https://doi.org/10.1016/j.lrp.2024.102415

Carter, C., & Whittle, A. (2018). Making strategy critical?. *Critical Perspectives on Accounting*. https://doi.org/10.1016/j.cpa.2018.04.003

Chandler, A. D. (1962). Strategy and structure: Chapters in the history of the American industrial enterprise. MIT Press.

Chanias, S., Myers, M. D., & 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), 17-33. https://doi.org/10.1016/j.jsis.2018.11.003

Cho, S., Vasarhelyi, M. A., Sun, T., & Zhang, C. (2020). Learning from machine learning in accounting and assurance. *Journal of Emerging Technologies in Accounting*, 17(1), 1-10. https://doi.org/10.2308/JETA-10718

Christensen, C. M. (1997). The innovator's dilemma: When new technologies cause great firms to fail. Harvard Business Review Press.

Christensen, C. M. (2006). The ongoing process of building a theory of disruption. *Journal of Product Innovation Management*, 23(1), 39-55. https://doi.org/10.1111/j.1540-5885.2005.00180.x

Christensen, C. M., McDonald, R., Altman, E. J., & Palmer, J. E. (2018). Disruptive innovation: An intellectual history and directions for future research. *Journal of Management Studies*, 55(7), 1043-1078. https://doi.org/10.1111/joms.12349

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152. https://doi.org/10.2307/2393553

Collis, D. J., & Montgomery, C. A. (2009). Competing on Resources: Strategy in the 1990s. In *Knowledge and strategy* (pp. 25-40). Routledge.

Conklin, D. W., & Tapp, L. (2000). The creative web: A new model for managing innovation. *Ivey Business Journal*. Republished in 2011: https://iveybusinessjournal.com/publication/the-creative-web/

Cong, Y., Du, H., & Vasarhelyi, M. A. (2018). Technological disruption in accounting and auditing. *Journal of Emerging Technologies in Accounting*, 15(2), 1-10. https://doi.org/10.2308/jeta-10640

Connor, T. (2002). The resource-based view of strategy and its value to practising managers. *Strategic Change*, 11(6), 307-316. https://doi.org/10.1002/jsc.593

Creswell, J. W. (2013). Qualitative inquiry and research design: Choosing among five approaches (3rd ed.). Sage.

Cyert, R. M., & March, J. G. (1963). A behavioral theory of the firm. Prentice-Hall.

D'Adderio, L. (2008). The performativity of routines: Theorising the influence of artefacts and distributed agencies on routines dynamics. *Research Policy*, 37(5), 769-789. https://doi.org/10.1016/j.respol.2007.12.012

D'Aveni, R. A., Dagnino, G. B., & Smith, K. G. (2010). The age of temporary advantage. *Strategic Management Journal*, 31(13), 1371-1385. https://doi.org/10.1002/smj.897

Daniel, E. M., & Wilson, H. N. (2003). The role of dynamic capabilities in e-business transformation. *European Journal of Information Systems*, 12(4), 282-296. https://doi.org/10.1057/palgrave.ejis.3000478

Daniel, E. M., Ward, J. M., & Franken, A. (2014). A dynamic capabilities perspective of IS project portfolio management. *The Journal of Strategic Information Systems, 23*(2), 95–111. https://doi.org/10.1016/j.jsis.2014.03.001

Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic Management Journal*, 23(12), 1095-1121. https://doi.org/10.1002/smj.275

Davenport, T. H. (2018). *The AI advantage: How to put the artificial intelligence revolution to work*. mit Press. https://doi.org/10.7551/mitpress/11781.001.0001

Davenport, T. H., & Ronanki, R. (2018). *Artificial intelligence for the real world*. Harvard Business Review, 96(1), 108–116. https://hbr.org/2018/01/artificial-intelligence-for-the-real-world (Retrieved: 20th April 2025)

David, P. A. (1985). Clio and the economics of QWERTY. *The American Economic Review*, 75(2), 332-337. https://www.jstor.org/stable/1805621

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340. https://doi.org/10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (2024). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 70(1), 273-295. https://doi.org/10.1287/mnsc.35.8.982

Day, G. S. (1994). The capabilities of market-driven organizations. *Journal of Marketing*, 58(4), 37-52. https://doi.org/10.1177/002224299405800404

de Certeau, M. (1984). *The practice of everyday life* (Translated by Steven F. Rendall). University of California Press.

Dent, J. F. (1991). Accounting and organizational cultures: a field study of the emergence of a new organizational reality. *Accounting, organizations and society*, *16*(8), 705-732. https://doi.org/10.1016/0361-3682(91)90021-6

Denzin, N. K., & Lincoln, Y. S. (2008). The landscape of qualitative research (Vol. 1). Sage.

Dery, K., Sebastian, I. M., & van der Meulen, N. (2017). The digital workplace is key to digital innovation. *MIS Quarterly Executive*, 16(2), 135-152. https://aisel.aisnet.org/misqe/vol16/iss2/4

DeSanctis, G., & Poole, M. S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization Science*, 5(2), 121-147. https://doi.org/10.1287/orsc.5.2.121

Devadoss, P., & Pan, S. L. (2007). Enterprise systems use: towards a structurational analysis of enterprise systems induced organizational transformation. *Communications of the Association for Information Systems*, 19(1), 17. https://doi.org/10.17705/1CAIS.01917

Dewett, T., & Jones, G. R. (2001). The role of information technology in the organization: A review, model, and assessment. *Journal of Management*, 27(3), 313-346. https://doi.org/10.1177/014920630102700306

Díaz-Rodríguez, N., Del Ser, J., Coeckelbergh, M., de Prado, M. L., Herrera-Viedma, E., and Herrera, F. (2023). Connecting the dots in trustworthy Artificial Intelligence: From AI principles, ethics, and key requirements to responsible AI systems and regulation. *Information Fusion*, *99*, 101896. https://doi.org/10.1016/j.inffus.2023.101896

Dierickx, I., & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35(12), 1504-1511. https://doi.org/10.1287/mnsc.35.12.1504

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147–160. https://doi.org/10.2307/2095101

Ding, K., Lev, B., Peng, X., Sun, T., & Vasarhelyi, M. A. (2020). Machine learning improves accounting estimates: Evidence from insurance payments. *Review of Accounting Studies*, 25(3), 1098-1134. https://doi.org/10.1007/s11142-020-09546-9

Døving, E., & Gooderham, P. N. (2008). Dynamic capabilities as antecedents of the scope of related diversification: The case of small firm accountancy practices. *Strategic Management Journal*, 29(8), 841-857. https://doi.org/10.1002/smj.683

Dubois, A., & Gadde, L. E. (2002). Systematic combining: an abductive approach to case research. *Journal of Business Research*, 55(7), 553-560. https://doi.org/10.1016/S0148-2963(00)00195-8

Dudau, A., Glennon, R., & Verschuere, B. (2019). Following the yellow brick road?(Dis) enchantment with co-design, co-production and value co-creation in public services. *Public management review*, *21*(11), 1577-1594. https://doi.org/10.1080/14719037.2019.1653604

Dutra, A., Tumasjan, A., & Welpe, I. M. (2018). Blockchain is changing how media and entertainment companies compete. *MIT Sloan Management Review*, 60(1), 39-44.

Easterby-Smith, M., Lyles, M. A., & Peteraf, M. A. (2009). Dynamic capabilities: Current debates and future directions. *British Journal of Management*, 20, S1-S8. https://doi.org/10.1111/j.1467-8551.2008.00609.x

Easterby-Smith, M., & Prieto, I. M. (2008). Dynamic capabilities and knowledge management: An integrative role for learning? *British Journal of Management*, 19(3), 235-249. https://doi.org/10.1111/j.1467-8551.2007.00543.x

Edmondson, A. C., & McManus, S. E. (2007). Methodological fit in management field research. *Academy of management review*, *32*(4), 1246-1264. https://doi.org/10.5465/amr.2007.26586086

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550. https://doi.org/10.5465/amr.1989.4308385

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25-32. https://doi.org/10.5465/amj.2007.24160888

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they?. *Strategic Management Journal*, 21(10-11), 1105-1121. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E

Ellström, D., Holtström, J., Berg, E., & Josefsson, C. (2021). Dynamic capabilities for digital transformation. *Journal of Strategy and Management*, 15(2), 272-286. https://doi.org/10.1108/JSMA-04-2021-0089

Empson, L. (2007). Managing the modern law firm: New challenges, new perspectives. Oxford University Press.

Eriksson, T. (2013). Methodological issues in dynamic capabilities research–a critical review. *Baltic Journal of Management*, 8(3), 306-327. https://doi.org/10.1108/BJOM-Jul-2011-0072

Eze, S. C., Chinedu-Eze, V. C., & Bello, A. O. (2019). Determinants of dynamic process of emerging ICT adoption in SMEs: Actor-network theory perspective. *Journal of Science and Technology Policy Management, 10*(1), 1–23. https://doi.org/10.1108/JSTPM-02-2018-0019

Fainshmidt, S., Pezeshkan, A., Lance Frazier, M., Nair, A., & Markowski, E. (2016). Dynamic capabilities and organisational performance: A meta-analytic evaluation and extension. *Journal of Management Studies*, 53(8), 1348-1380. https://doi.org/10.1111/joms.12213

Farias-Gaytan, S., Aguaded, I., & Ramirez-Montoya, M. S. (2023). Digital transformation and digital literacy in the context of complexity within higher education institutions: a systematic literature review. *Humanities and Social Sciences Communications*, *10*(1), 1-11. https://doi.org/10.1057/s41599-023-01875-9

Feiler, P., & Teece, D. (2014). Case study, dynamic capabilities and upstream strategy: Supermajor EXP. *Energy Strategy Reviews*, 3, 14-20. https://doi.org/10.1016/j.esr.2014.05.003

Feldman, M. S., & Pentland, B. T. (2003). Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly*, 48(1), 94-118. https://doi.org/10.2307/3556620

Feldman, M. S., Pentland, B. T., D'Adderio, L., & Lazaric, N. (2016). *Beyond routines as things: Introduction to the special issue on routine dynamics.* Organization Science, 27(3), 505–513. https://doi.org/10.1287/orsc.2016.1070

Feldman, M. S., & Orlikowski, W. J. (2011). Theorizing practice and practicing theory. *Organization science*, *22*(5), 1240-1253. https://doi.org/10.1287/orsc.1100.0612

Felin, T., & Foss, N. J. (2005). Strategic organization: A field in search of micro-foundations. *Strategic Organization*, 3(4), 441-455. https://doi.org/10.1177/1476127005055796

Felin, T., Foss, N. J., Heimeriks, K. H., & Madsen, T. L. (2012). Microfoundations of routines and capabilities: Individuals, processes, and structure. *Journal of management studies*, *49*(8), 1351-1374. https://doi.org/10.1111/j.1467-6486.2012.01052.x

Felin, T., & Hesterly, W. S. (2007). The knowledge-based view, nested heterogeneity, and new value creation: Philosophical considerations on the locus of knowledge. *Academy of Management Review*, 32(1), 195-218. https://doi.org/10.5465/amr.2007.23464020

Felten, E., Raj, M., & Seamans, R. C. (2019). The effect of artificial intelligence on human labor: An ability-based approach. In Academy of Management Proceedings (Vol. 2019, No. 1, p. 15784). Academy of Management. https://doi.org/10.5465/AMBPP.2019.140

Felten, E., Raj, M., & Seamans, R. C. (2021). Occupational, industry, and geographic exposure to artificial intelligence: A novel dataset and its potential uses. *Strategic Management Journal*, 43(12), 2486-2507. https://doi.org/10.1002/smj.3286

Felzmann, H., Villaronga, E. F., Lutz, C., & Tamò-Larrieux, A. (2019). Transparency you can trust: Transparency requirements for artificial intelligence between legal norms and contextual concerns. *Big Data & Society*, 6(1), 1-14. https://doi.org/10.1177/2053951719860542

Felzmann, H., Villaronga, E. F., Lutz, C., & Tamò-Larrieux, A. (2020). Towards transparency by design for artificial intelligence. *Science and Engineering Ethics*, 26, 3333-3361. https://doi.org/10.1007/s11948-020-00276-4

Feroz, A. K., Zo, H., Eom, J., & Chiravuri, A. (2023). Identifying organizations' dynamic capabilities for sustainable digital transformation: A mixed methods study. *Technology in Society, 73*, 102257. https://doi.org/10.1016/j.techsoc.2023.102257

Ferri, P., & Takahashi, A. (2024). The roles of history in accomplishing digital transformation: a dynamic capabilities perspective. *Technology Analysis & Strategic Management*, 1-14. https://doi.org/10.1080/09537325.2023.2299937

Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014). Embracing digital technology: A new strategic imperative. *MIT sloan management review*, *55*(2), 1.

Fletcher, G., & Griffiths, M. (2020). Digital transformation during a lockdown. *International Journal of Information Management*, 55, 102185. https://doi.org/10.1016/j.ijinfomgt.2020.102185

Foucault, M. (1977). Discipline and punish: The birth of the prison. Allen Lane.

Fountaine, T., McCarthy, B., & Saleh, T. (2019). Building the AI-powered organization. *Harvard business review*, *97*(4), 62-73.

Frana, P. L. (2024). Assessing Smart Nation Singapore as an International Model for AI Responsibility. *International Journal on Responsibility*, 7(1), Article 2. https://doi.org/10.62365/2576-0955.1109

Frey, C. B., & Osborne, M. A. (2013). The future of employment. Oxford Martin Programme on Technology and Employment Working Paper. https://oms-www.files.svdcdn.com/production/downloads/academic/future-of-employment.pdf (Retrieved: 20th April 2025)

Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation?. *Technological Forecasting and Social Change*, 114, 254-280. https://doi.org/10.1016/j.techfore.2016.08.019

Gan, G. (2020). Singapore's Experience in Analyzing the Labor Market Using Artificial Intelligence and Big Data Analytics. In B. Panth and R. Maclean (Eds.), *Anticipating and*

Preparing for Emerging Skills and Jobs. Springer. https://doi.org/10.1007/978-981-15-7018-6_31

Gao, P., Geng, S., Zhang, Z., Fang, Y., Wu, Y., & Du, L. (2023). Retrieval-augmented generation for large language models: A survey. arXiv preprint arXiv:2312.10997. https://doi.org/10.48550/arXiv.2312.10997

Gavetti, G. (2005). Cognition and hierarchy: Rethinking the microfoundations of capabilities' development. *Organization Science*, 16(6), 599-617. https://doi.org/10.1287/orsc.1050.0140

Gerth, A. B., & Peppard, J. (2016). The dynamics of CIO derailment: How CIOs come undone and how to avoid it. *Business Horizons*, 59(1), 61-70. https://doi.org/10.1016/j.bushor.2015.09.001

Giddens, A. (1984). The constitution of society: Outline of the theory of structuration. University of California Press.

Gillani, F., Chatha, K. A., Jajja, S. S., Cao, D., & Ma, X. (2024). Unpacking Digital Transformation: Identifying key enablers, transition stages and digital archetypes. *Technological Forecasting and Social Change*, *203*, 123335. https://doi.org/10.1016/j.techfore.2024.123335

Goh, C., Kusnadi, Y., Lee, B. H. Z., Pan, G. S. C., & Seow, P. S. (2023). Accelerating digital transformation of SMEs. World Scientific. https://doi.org/10.1142/13318

Goh, C., Pan, G., Seow, P. S., Lee, B. H. Z., & Yong, M. (2019). Charting the future of accountancy with AI. Singapore Management University. https://ink.library.smu.edu.sg/soa_research/1806. ISBN 978-981-14-2062-7.

Golicic, S. L., & Smith, C. D. (2013). A meta-analysis of environmentally sustainable supply chain management practices and firm performance. *Journal of Supply Chain Management*, 49(2), 78-95. https://doi.org/10.1111/jscm.12006

Golsorkhi, D., Rouleau, L., Seidl, D., & Vaara, E. (Eds.). (2010). Cambridge handbook of strategy as practice. Cambridge University Press. https://doi.org/10.1017/CBO9780511777882

Golsorkhi, D., Rouleau, L., Seidl, D., & Vaara, E. (Eds.). (2015). Cambridge handbook of strategy as practice (2nd ed.). Cambridge University Press. https://doi.org/10.1017/CBO9781139681032

Gölzer, P., & Fritzsche, A. (2017). Data-driven operations management: organisational implications of the digital transformation in industrial practice. *Production Planning & Control*, 28(16), 1332-1343. https://doi.org/10.1080/09537287.2017.1375148

Gottschalk, P. (2006). Research Propositions for Knowledge Management Systems Supporting it Outsourcing Relationships. *Journal of Computer Information Systems*, *46*(3), 110–116. https://doi.org/10.1080/08874417.2006.11645904

Grant, R. M. (1991). The resource-based theory of competitive advantage: implications for strategy formulation. *California Management Review*, 33(3), 114-135. https://doi.org/10.2307/41166664

Greenwood, R., & Empson, L. (2003). The professional partnership: Relic or exemplary form of governance?. *Organization studies*, *24*(6), 909-933. https://doi.org/10.1177/0170840603024006005

Gu, H., Schreyer, M., Moffitt, K., & Vasarhelyi, M. (2024). Artificial intelligence co-piloted auditing. *International Journal of Accounting Information Systems*, 54, 100698. https://doi.org/10.1016/j.accinf.2024.100698

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82. https://doi.org/10.1177/1525822X05279903

Guest, G., Namey, E. E., & Mitchell, M. L. (2013). Collecting qualitative data: A field manual for applied research. Sage. https://doi.org/10.4135/9781506374680

Gulin, D., Hladika, M., & Valenta, I. (2019). Digitalization and the challenges for the accounting profession. In Proceedings of the ENTRENOVA-ENTerprise REsearch InNOVAtion Conference (Vol. 5, No. 1, pp. 428-437). Available at SSRN: https://ssrn.com/abstract=3492237 or http://dx.doi.org/10.2139/ssrn.3492237

Guthrie, J., & Parker, L. D. (2016). Whither the accounting profession, accountants and accounting researchers? Commentary and projections. *Accounting, Auditing & Accountability Journal*, 29(1), 2-10. https://doi.org/10.1108/AAAJ-10-2015-2263

Haenlein, M., & Kaplan, A. (2019). A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence. *California Management Review*, 61(4), 5-14. https://doi.org/10.1177/0008125619864925

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organisational change. *Journal of Management Studies*, 58(5), 1159-1197. https://doi.org/10.1111/joms.12639

Hautz, J., Seidl, D., & Whittington, R. (2017). Open strategy: Dimensions, dilemmas, dynamics. *Long Range Planning*, *50*(3), 298-309. https://doi.org/10.1016/j.lrp.2016.12.001

Helfat, C. E. (1997). Know-how and asset complementarity and dynamic capability accumulation: The case of R&D. *Strategic Management Journal*, 18(5), 339-360. https://doi.org/10.1002/(SICI)1097-0266(199705)18:5<339::AID-SMJ883>3.0.CO;2-7

Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D., & Winter, S. G. (2007). Dynamic capabilities: Understanding strategic change in organisations. John Wiley & Sons.

Helfat, C. E., & Martin, J. A. (2015). Dynamic managerial capabilities: Review and assessment of managerial impact on strategic change. *Journal of Management*, 41(5), 1281-1312. https://doi.org/10.1177/0149206314561301

Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 24(10), 997-1010. https://doi.org/10.1002/smj.332

Helfat, C. E., & Peteraf, M. A. (2009). Understanding dynamic capabilities: Progress along a developmental path. *Strategic Organization*, 7(1), 91-102. https://doi.org/10.1177/1476127008100133

Helfat, C. E., & Peteraf, M. A. (2015). Managerial cognitive capabilities and the microfoundations of dynamic capabilities. *Strategic Management Journal*, 36(6), 831-850. https://doi.org/10.1002/smj.2247

Helfat, C. E., & Raubitschek, R. S. (2018). Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems. *Research Policy*, 47(8), 1391-1399. https://doi.org/10.1016/j.respol.2018.01.019

Helfat, C. E., & Winter, S. G. (2011). Untangling dynamic and operational capabilities: Strategy for the (N)ever-changing world. *Strategic Management Journal*, 32(11), 1243-1250. https://doi.org/10.1002/smj.955

Henfridsson, O., & Bygstad, B. (2013). The generative mechanisms of digital infrastructure evolution. *MIS quarterly*, 907-931. https://www.jstor.org/stable/43826006

Henfridsson, O., & Yoo, Y. (2013). The liminality of trajectory shifts in institutional entrepreneurship. *Organization Science*, 25(3), 932-950. https://doi.org/10.1287/orsc.2013.0883

Hess, T., Matt, C., Benlian, A., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2), 123-139.

Heusinkveld, S., & Visscher, K. (2012). Practice what you preach: How consultants frame management concepts as enacted practice. *Scandinavian Journal of Management*, 28(4), 285-297. https://doi.org/10.1016/j.scaman.2012.05.002

Hine, D., Parker, R., Pregelj, L., & Verreynne, M. L. (2014). Deconstructing and reconstructing the capability hierarchy. *Industrial and Corporate Change*, 23(5), 1299-1325. https://doi.org/10.1093/icc/dtt046

Hinings, B., Gegenhuber, T., & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Information and Organization*, 28(1), 52-61. https://doi.org/10.1016/j.infoandorg.2018.02.004

Hinings, B., Muzio, D., Broschak, J., & Empson, L. (2015). Researching professional service firms: An introduction and overview. In L. Empson, D. Muzio, J. Broschak, & B. Hinings (Eds.), The Oxford handbook of professional service firms (pp. 1-22). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199682393.013.1

Hitt, M. A., Keats, B. W., & DeMarie, S. M. (1998). Navigating in the new competitive landscape: Building strategic flexibility and competitive advantage in the 21st century. *Academy of Management Perspectives*, 12(4), 22-42. https://doi.org/10.5465/ame.1998.1333922

Holmes, A. F., & Douglass, A. (2022). Artificial intelligence: Reshaping the accounting profession and the disruption to accounting education. *Journal of Emerging Technologies in Accounting*, *19*(1), 53-68. https://doi.org/10.2308/JETA-2020-054

Holmström, J., & Robey, D. (2005). Inscribing organizational change with information technology: An actor-network perspective. In C. Czarniawska & T. Hernes (Eds.), *Actor-Network Theory and Organizing* (pp. 165–187). Liber & Copenhagen Business School Press.

Horton, J., Macve, R., & Struyven, G. (2004). Qualitative research: experiences in using semi-structured interviews. In The real life guide to accounting research (pp. 339-357). Elsevier. https://doi.org/10.1016/B978-008043972-3/50022-0

Hoskisson, R. E., Hitt, M. A., Wan, W. P., & Yiu, D. (1999). Theory and research in strategic management: Swings of a pendulum. *Journal of Management*, 25(3), 417-456. https://doi.org/10.1177/014920639902500307

Institute of Chartered Accountants in England and Wales. (n.d.). *What is cognitive technology?* ICAEW. https://www.icaew.com/technical/technology/technology-and-the-profession/risks-and-assurance-of-emerging-technologies/what-is-cognitive-technology (Retrieved: 20th April 2025)

Infocomm Media Development Authority (2019). The Accountancy Industry Digital Plan (IDP) launched to Accelerate the Sector's Digital Transformation [Press Release] (22 August 2019). https://www.imda.gov.sg/-/media/imda/files/programme/smes-go-digital/industry-digital-plans/idp-media-release.pdf (Retrieved: 20th April 2025)

ISCA. (2024). Artificial Intelligence for the Accountancy Industry – What Lies Ahead. Institute of Singapore Chartered Accountants AI Whitepaper. https://isca.org.sg/resource-library/digitalisation/artificial-intelligence-for-the-accountancy-industry---what-lies-ahead

Issa, H., Sun, T., and Vasarhelyi, M. (2016). Research ideas for artificial intelligence in auditing: The formalization of audit and workforce supplementation. *Journal of Emerging Technologies in Accounting*, 13(2), 1-20. https://doi.org/10.2308/jeta-10511

Jaiswal, A., Arun, C. J., & Varma, A. (2021). Rebooting employees: Upskilling for artificial intelligence in multinational corporations. *The International Journal of Human Resource Management*, 32(11), 1-30. https://doi.org/10.1080/09585192.2021.1891114

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business horizons*, *61*(4), 577-586. https://doi.org/10.1016/j.bushor.2018.03.007

Jarrahi, M. H., & Sawyer, S. (2015). Theorizing on the take-up of social technologies, organizational policies and norms, and consultants' knowledge-sharing practices. *Journal of the Association for Information Science and Technology*, 66(1), 162-179. https://doi.org/10.1002/asi.23161

Jarratt, D., & Stiles, D. (2010). How are methodologies and tools framing managers' strategizing practice in competitive strategy development? *British Journal of Management*, 21(1), 28-43. https://doi.org/10.1111/j.1467-8551.2009.00665.x

Jarzabkowski, P. (2004). Strategy as practice: recursiveness, adaptation, and practices-in-use. *Organization Studies*, 25(4), 529-560. https://doi.org/10.1177/0170840604040675

Jarzabkowski, P. (2005). Strategy as practice: An activity-based approach. Sage. https://doi.org/10.4135/9781446215777

Jarzabkowski, P., Balogun, J., & Seidl, D. (2007). Strategising: The challenges of a practice perspective. *Human Relations*, 60(1), 5-27. https://doi.org/10.1177/0018726707075703

Jarzabkowski, P., & Kaplan, S. (2015). Strategy tools-in-use: A framework for understanding "technologies of rationality" in practice. *Strategic Management Journal*, 36(4), 537-558. https://doi.org/10.1002/smj.2270

Jarzabkowski, P., & Spee, A. P. (2009). Strategy-as-practice: A review and future directions for the field. *International Journal of Management Reviews*, 11(1), 69-95. https://doi.org/10.1111/j.1468-2370.2008.00250.x

Jarzabkowski, P., & Whittington, R. (2008). A strategy-as-practice approach to strategy research and education. *Journal of Management Inquiry*, 17(4), 282-286. https://doi.org/10.1177/1056492608318150

Javidan, M. (1998). Core competence: What does it mean in practice? *Long Range Planning*, 31(1), 60-71. https://doi.org/10.1016/S0024-6301(97)00091-5

Jensen, J. R. (1981). Urban change detection mapping using Landsat digital data. *The American Cartographer*, 8(2), 127-147. https://doi.org/10.1559/152304081784447318

Jiang, Y., & Katsamakas, E. (2010). Impact of e-book technology: Ownership and market asymmetries in digital transformation. *Electronic Commerce Research and Applications*, 9(5), 386-399. https://doi.org/10.1016/j.elerap.2010.06.003

Johnson, G., Langley, A., Melin, L., & Whittington, R. (2007). Strategy as practice: Research directions and resources. Cambridge University Press. https://doi.org/10.1017/CBO9780511618925

Johnson, G., Melin, L., & Whittington, R. (2003). Micro strategy and strategising: Towards an activity-based view. *Journal of Management Studies*, 40(1), 3-22. https://doi.org/10.1111/1467-6486.t01-2-00002

Jordan, M. I., & Mitchell, T. M. (2015). Machine learning: Trends, perspectives, and prospects. *Science*, *349*(6245), 255-260. https://doi.org/10.1126/science.aaa8415

Joksimovic, S., Ifenthaler, D., Marrone, R., De Laat, M., & Siemens, G. (2023). Opportunities of artificial intelligence for supporting complex problem-solving: Findings from a scoping review. Computers and Education: Artificial Intelligence, 4, 100138. https://doi.org/10.1016/j.caeai.2023.100138

Kallinikos, J. (2006). The consequences of information: Institutional implications of technological change. Edward Elgar Publishing.

Kallinikos, J., Aaltonen, A., & Marton, A. (2013). The ambivalent ontology of digital artifacts. *MIS Quarterly*, 37(2), 357-370. https://doi.org/10.25300/MISQ/2013/37.2.02

Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan management review*.

Kaplan, A., & Haenlein, M. (2020). Rulers of the world, unite! The challenges and opportunities of artificial intelligence. *Business Horizons*, 63(1), 37-50. https://doi.org/10.1016/j.bushor.2019.09.003

Kaplan, S. (2011). Strategy and PowerPoint: An inquiry into the epistemic culture and machinery of strategy making. *Organization Science*, 22(2), 320-346. https://doi.org/10.1287/orsc.1100.0531

Karim, S., & Mitchell, W. (2000). Path-dependent and path-breaking change: Reconfiguring business resources following acquisitions in the US medical sector, 1978-1995. *Strategic Management Journal*, 21(10-11), 1061-1081. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1061::AID-SMJ116>3.0.CO;2-G

Karimi, J., & Walter, Z. (2015). The role of dynamic capabilities in responding to digital disruption: A factor-based study of the newspaper industry. *Journal of Management Information Systems*, 32(1), 39-81. https://doi.org/10.1080/07421222.2015.1029380

Keynes, J. M. (1933). Economic possibilities for our grandchildren. In Essays in persuasion (pp. 358-373). Palgrave Macmillan. https://doi.org/10.1007/978-1-349-59072-8_25

Knudsen, D. R. (2020). Elusive boundaries, power relations, and knowledge production: A systematic review of the literature on digitalization in accounting. *International Journal of Accounting information Systems*, *36*, 100441. https://doi.org/10.1016/j.accinf.2019.100441

Kohtamäki, M., Parida, V., Oghazi, P., Gebauer, H., & Baines, T. (2019). Digital servitization business models in ecosystems: A theory of the firm. *Journal of business research*, *104*, 380-392. https://doi.org/10.1016/j.jbusres.2019.06.027

Kokina, J., & Blanchette, S. (2019). Early evidence of digital labor in accounting: Innovation with Robotic Process Automation. *International Journal of Accounting Information Systems*, 35, 100431. https://doi.org/10.1016/j.accinf.2019.100431

Kokina, J., & Davenport, T. H. (2017). The emergence of artificial intelligence: How automation is changing auditing. *Journal of Emerging Technologies in Accounting*, 14(1), 115-122. https://doi.org/10.2308/jeta-51730

Kokina, J., Gilleran, R., Blanchette, S., & Stoddard, D. (2021). Accountant as digital innovator: Roles and competencies in the age of automation. *Accounting Horizons*, 35(1), 153-184. https://doi.org/10.2308/HORIZONS-19-145

Kokina, J., Blanchette, S., Davenport, T. H., & Pachamanova, D. (2025). Challenges and opportunities for artificial intelligence in auditing: Evidence from the field. *International Journal of Accounting Information Systems*, *56*, 100734. https://doi.org/10.1016/j.accinf.2025.100734

Kolbjørnsrud, V., Amico, R., & Thomas, R. J. (2016). How artificial intelligence will redefine management. *Harvard Business Review*, 2, 1-6.

Kor, Y. Y., & Mesko, A. (2013). Dynamic managerial capabilities: Configuration and orchestration of top executives' capabilities and the firm's dominant logic. *Strategic Management Journal*, 34(2), 233-244. https://doi.org/10.1002/smj.2000

Kraaijenbrink, J., Spender, J. C., & Groen, A. J. (2010). The resource-based view: A review and assessment of its critiques. *Journal of Management*, 36(1), 349-372. https://doi.org/10.1177/0149206309350775

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital Transformation: An Overview of the Current State of the Art of Research. *SAGE Open*, 11(3), 1-15. https://doi.org/10.1177/21582440211047576

Kronblad, C., & Pregmark, J. E. (2021). Responding to the COVID-19 crisis: the rapid turn toward digital business models. *Journal of Science and Technology Policy Management*, 15(3), 451-467 (ahead-of-print). https://doi.org/10.1108/JSTPM-10-2020-0155

Kvale, S., & Brinkmann, S. (2009). Interviews: Learning the craft of qualitative research interviewing. Sage.

Langley, A. (1999). Strategies for theorizing from process data. Academy of Management review, 24(4), 691-710. https://doi.org/10.2307/259349 or https://www.jstor.org/stable/259349

Lanzolla, G., Lorenz, A., Miron-Spektor, E., Schilling, M., Solinas, G., & Tucci, C. L. (2020). Digital transformation: What is new if anything? Emerging patterns and

management research. *Academy of Management Discoveries*, *6*(3), 341-350. https://journals.aom.org/doi/abs/10.5465/amd.2020.0144

Lanzolla, G., Pesce, D., & Tucci, C. L. (2021). The digital transformation of search and recombination in the innovation function: Tensions and an integrative framework. *Journal of Product Innovation Management*, *38*(1), 90-113. https://doi.org/10.1111/jpim.12546

Lavie, D. (2006). Capability reconfiguration: An analysis of incumbent responses to technological change. *Academy of Management Review*, 31(1), 153-174. https://doi.org/10.5465/amr.2006.19379629

Learned, E. P., Christensen, C. R., Andrews, K. R., & Guth, W. D. (1965). Business policy: Text and cases. Homewood, IL: Richard D. Irwin.

Learned, E. P., Christensen, C. R., Andrews, K. R., & Guth, W. D. (1969). Business policy: Text and cases. Homewood, IL: Richard D. Irwin.

Lee, B. H. Z., Goh, C., Pan, G., & Seow, P. S. (2019). Introducing AI & the potential for AI to revolutionise the accounting industry. Research Collection School Of Accountancy. https://ink.library.smu.edu.sg/soa_research/1810

Lee, B. H. Z., & Pan, G. (2020). Digitalisation of SMEs in Singapore: An institute of higher learning-enterprise partnership model. *ISCA Journal*, 1-3. Available at: https://ink.library.smu.edu.sg/soa_research/1879

Legner, C., Eymann, T., Hess, T., Matt, C., Böhmann, T., Drews, P., Mädche, A., Urbach, N., & Ahlemann, F. (2017). Digitalization: opportunity and challenge for the business and information systems engineering community. *Business & information systems engineering*, *59*, 301-308. https://doi.org/10.1007/s12599-017-0484-2

Lei, D., Hitt, M. A., & Bettis, R. (1996). Dynamic core competences through meta-learning and strategic context. *Journal of Management*, 22(4), 549-569. https://doi.org/10.1177/014920639602200402

Leitner-Hanetseder, S., Lehner, O. M., Eisl, C., & Forstenlechner, C. (2021). A profession in transition: Actors, tasks and roles in AI-based accounting. *Journal of Applied Accounting Research*, 22(3), 539-556. https://doi.org/10.1108/JAAR-10-2020-0201

Lengnick-Hall, C. A., & Wolff, J. A. (1999). Similarities and contradictions in the core logic of three strategy research streams. *Strategic Management Journal*, 20(12), 1109-1132. https://doi.org/10.1002/(SICI)1097-0266(199912)20:12%3C1109::AID-SMJ65%3E3.0.CO;2-8

Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13(S1), 111-125. https://doi.org/10.1002/smj.4250131009

Leonardi, P. M. (2011). When flexible routines meet flexible technologies: Affordance, constraint, and the imbrication of human and material agencies. *MIS Quarterly*, 35(1), 147-167. https://doi.org/10.2307/23043493

Leonardi, P. M. (2012). Materiality, sociomateriality, and socio-technical systems: What do these terms mean? How are they different? Do we need them? In P. M. Leonardi, B. A. Nardi, & J. Kallinikos (Eds.), Materiality and organizing: Social interaction in a technological world (pp. 25-48). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199664054.003.0002

Leonardi, P. M. (2013). When does technology use enable network change in organizations? A comparative study of feature use and shared affordances. *MIS Quarterly*, 37(3), 749-775. https://doi.org/10.25300/MISQ/2013/37.3.04

Leonardi, P. M., & 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), 1-55. https://doi.org/10.5465/19416521003654160

Lewis, P., Perez, E., Piktus, A., Petroni, F., Karpukhin, V., Goyal, N., ... & Kiela, D. (2020). Retrieval-augmented generation for knowledge-intensive NLP tasks. *Advances in Neural Information Processing Systems*, 33, 9459-9474. https://doi.org/10.48550/arXiv.2005.11401

Li, F. (2020). The digital transformation of business models in the creative industries: A holistic framework and emerging trends. *Technovation*, 92, 102012. https://doi.org/10.1016/j.technovation.2017.12.004

Liebowitz, S. J., & Margolis, S. E. (1995). Path dependence, lock-in, and history. *Journal of Law, Economics, & Organization*, 11(1), 205-226. https://doi.org/10.1093/oxfordjournals.jleo.a036867

Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10), 1728-1742. https://doi.org/10.1108/00251741111183852

Ljungquist, U. (2013). Adding dynamics to core competence concept applications. *European Business Review*, 25(5), 453-465. https://doi.org/10.1108/EBR-09-2012-0052

Lounsbury, M. (2008). Institutional rationality and practice variation: New directions in the institutional analysis of practice. *Accounting, organizations and society*, *33*(4-5), 349-361. https://doi.org/10.1016/j.aos.2007.04.001

Losbichler, H., and Lehner, O. M. (2021). Limits of artificial intelligence in controlling and the ways forward: a call for future accounting research. *Journal of Applied Accounting Research*, *22*(2), 365-382. https://doi.org/10.1108/JAAR-10-2020-0207

Løwendahl, B. R. (2017). Strategic management of professional service firms. Routledge.

Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, 22(5), 387-401. https://doi.org/10.1002/smj.158

Mann, G., Karanasios, S., & Breidbach, C. F. (2022). Orchestrating the digital transformation of a business ecosystem. *The Journal of Strategic Information Systems*, *31*(3), 101733. https://doi.org/10.1016/j.jsis.2022.101733

Mantere, S., & Vaara, E. (2008). On the problem of participation in strategy: A critical discursive perspective. *Organization Science*, 19(2), 341-358. https://doi.org/10.1287/orsc.1070.0296

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87. https://doi.org/10.1287/orsc.2.1.71

Markus, M. L., & Silver, M. S. (2008). A foundation for the study of IT effects: A new look at DeSanctis and Poole's concepts of structural features and spirit. *Journal of the Association for Information Systems*, 9(10), 609-632. https://doi.org/10.17705/1jais.00176

Martin, J. A., & Bachrach, D. G. (2018). A relational perspective of the microfoundations of dynamic managerial capabilities and transactive memory systems. *Industrial Marketing Management*, *74*, 27-38. https://doi.org/10.1016/j.indmarman.2018.07.008

Matarazzo, M., Penco, L., Profumo, G., & Quaglia, R. (2021). Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective. *Journal of Business Research, 123*, 642–656. https://doi.org/10.1016/j.jbusres.2020.10.033

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57(5), 339-343. https://doi.org/10.1007/s12599-015-0401-5

McGrath, R. G. (2010). Business models: A discovery driven approach. *Long Range Planning*, 43(2-3), 247-261. https://doi.org/10.1016/j.lrp.2009.07.005

McGrath, R. G., & MacMillan, I. C. (2000). The entrepreneurial mindset: Strategies for continuously creating opportunity in an age of uncertainty. Harvard Business Press.

McGuinness, T., & Morgan, R. E. (2000). Strategy, dynamic capabilities and complex science: Management rhetoric vs. reality. *Strategic Change*, 9(4), 209-220. https://doi.org/10.1002/1099-1697(200006/07)9:4<209::AID-JSC485>3.0.CO;2-G

McKinney Jr, E., Yoos II, C. J., & Snead, K. (2017). The need for 'skeptical' accountants in the era of Big Data. *Journal of Accounting Education*, 38, 63-80. https://doi.org/10.1016/j.jaccedu.2016.12.007

Mikalef, P., & Gupta, M. (2021). Artificial Intelligence Capability: Conceptualization, Measurement Calibration, and Empirical Study on Its Impact on Organizational Creativity and Firm Performance. *Information & Management, 58,* Article ID: 103434. https://doi.org/10.1016/j.im.2021.103434

Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis: An expanded sourcebook. Sage.

Mintzberg, H. (1973). The nature of managerial work. Harper & Row.

Mintzberg, H. (1994). The rise and fall of strategic planning. Prentice Hall.

Mintzberg, H., & Waters, J. A. (1985). Of strategies, deliberate and emergent. *Strategic Management Journal*, 6(3), 257-272. https://doi.org/10.1002/smj.4250060306

Mitchell, T. M. (1997). Machine Learning. McGraw-Hill.

Moffitt, K. C., Rozario, A. M., and Vasarhelyi, M. A. (2018). Robotic process automation for auditing. *Journal of Emerging Technologies in Accounting*, *15*(1), 1-10. https://doi.org/10.2308/jeta-10589

Mohan, R. (2024). Inter-firm imitation of artificial intelligence: Towards innovation and competitive edge in business. *Organizational Dynamics*, 101114. https://doi.org/10.1016/j.orgdyn.2024.101114

Moll, J., & Yigitbasioglu, O. (2019). The role of internet-related technologies in shaping the work of accountants: New directions for accounting research. *The British Accounting Review*, 51(6), 100833. https://doi.org/10.1016/j.bar.2019.04.002

Morgan-Thomas, A. (2016). Rethinking technology in the SME context: Affordances, practices and ICTs. *International Small Business Journal*, *34*(8), 1122-1136. https://doi.org/10.1177/0266242615613839

Morgan-Thomas, A., Dessart, L., & Veloutsou, C. (2020). Digital ecosystem and consumer engagement: A socio-technical perspective. *Journal of Business Research*, 121, 713-723. https://doi.org/10.1016/j.jbusres.2020.03.042

Morley, J., Floridi, L., Kinsey, L., & Elhalal, A. (2019). From what to how: An initial review of publicly available AI ethics tools, methods and research to translate principles into practices. *Science and Engineering Ethics*, 26, 2141-2168. https://doi.org/10.1007/s11948-019-00165-5

Morris, T., & Empson, L. (1998). Organisation and expertise: An exploration of knowledge bases and the management of accounting and consulting firms. *Accounting, organizations and society*, *23*(5-6), 609-624. https://doi.org/10.1016/S0361-3682(98)00032-4

Mueller, F. (2018). Taking Goffman seriously: Developing strategy-as-practice. *Critical Perspectives on Accounting*, 53, 16-30. https://doi.org/10.1016/j.cpa.2017.03.009

Munoko, I., Brown-Liburd, H. L., & Vasarhelyi, M. (2020). The ethical implications of using artificial intelligence in auditing. *Journal of Business Ethics*, 167, 209-234. https://doi.org/10.1007/s10551-019-04407-1

Nadkarni, S., Prügl, R. (2020). Digital transformation: a review, synthesis and opportunities for future research. *Manag Rev Q* 71, 233–341. https://doi.org/10.1007/s11301-020-00185-7

Nelson, R. R., & Winter, S. G. (1985). An evolutionary theory of economic change. Harvard University Press.

Neuman, W. L. (2014). Social research methods: Qualitative and quantitative approaches. Pearson Education Limited.

Ng, C. (2023). Teaching advanced data analytics, robotic process automation, and artificial intelligence in a graduate accounting program. *Journal of Emerging Technologies in Accounting*, 20(1), 223-243. https://doi.org/10.2308/JETA-2022-025

Nicolini, D. (2012). *Practice theory, work, and organization: An introduction*. OUP Oxford.

Nouri, H., & Parker, R. J. (2020). Turnover in public accounting firms: a literature review. *Managerial Auditing Journal*, 35(2), 294-321. https://doi.org/10.1108/MAJ-03-2018-1823

Oliver, C. (1997). Sustainable competitive advantage: Combining institutional and resource-based views. *Strategic Management Journal*, 18(9), 697-713. https://doi.org/10.1002/(SICI)1097-0266(199710)18:9%3C697::AID-SMJ909%3E3.0.CO;2-C

Oostervink, N., Agterberg, M., & Huysman, M. (2016). Knowledge sharing on enterprise social media: Practices to cope with institutional complexity. *Journal of Computer-Mediated Communication*, *21*(2), 156-176. https://doi.org/10.1111/jcc4.12153

Open Source Initiative. (2024). The Open Source AI Definition (Version 1.0). https://opensource.org/ai/open-source-ai-definition (Retrieved: 20th April 2025)

O'Reilly, C. A., & Tushman, M. L. (2007). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. Harvard Business School. https://dx.doi.org/10.2139/ssrn.978493

O'Reilly, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior*, 28, 185-206. https://doi.org/10.1016/j.riob.2008.06.002

Orlikowski, W. J. (1992). The duality of technology: Rethinking the concept of technology in organizations. *Organization Science*, 3(3), 398-427. https://doi.org/10.1287/orsc.3.3.398

Orlikowski, W. J. (2000). Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science*, 11(4), 404-428. https://doi.org/10.1287/orsc.11.4.404.14600

Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization studies*, *28*(9), 1435-1448. https://doi.org/10.1177/0170840607081138

Orlikowski, W. J., & Gash, D. C. (1994). Technological frames: Making sense of information technology in organizations. *ACM Transactions on Information Systems*, 12(2), 174-207. https://doi.org/10.1145/196734.196745

Orlikowski, W. J., & Scott, S. V. (2008). Sociomateriality: Challenging the separation of technology, work and organization. *Academy of Management Annals*, 2(1), 433-474. https://doi.org/10.5465/19416520802211644

Orlikowski, W. J., Yates, J., Okamura, K., & Fujimoto, M. (1995). Shaping electronic communication: The metastructuring of technology in the context of use. *Organization Science*, 6(4), 423-444. https://doi.org/10.1287/orsc.6.4.423

Oxford Insights. (2024). Government AI Readiness Index 2024. Oxford Insights. https://oxfordinsights.com/wp-content/uploads/2024/12/2024-Government-AI-Readiness-Index-2.pdf (Retrieved: 20th April 2025)

Pablo, A. L., Reay, T., Dewald, J. R., & Casebeer, A. L. (2007). Identifying, enabling and managing dynamic capabilities in the public sector. *Journal of Management Studies*, 44(5), 687-708. https://doi.org/10.1111/j.1467-6486.2006.00675.x

Papp, R. (2001). Strategic information technology: Opportunities for competitive advantage. IGI Global. https://doi.org/10.4018/978-1-87828-987-2

Paroutis, S., & Pettigrew, A. (2007). Strategizing in the multi-business firm: Strategy teams at multiple levels and over time. *Human Relations*, 60(1), 99-135. https://doi.org/10.1177/0018726707075285

Patton, M. Q. (2002). Two decades of developments in qualitative inquiry: A personal, experiential perspective. *Qualitative Social Work*, 1(3), 261-283. https://doi.org/10.1177/1473325002001003636

Pavlou, P. A., & El Sawy, O. A. (2011). Understanding the elusive black box of dynamic capabilities. *Decision Sciences*, 42(1), 239-273. https://doi.org/10.1111/j.1540-5915.2010.00287.x

Pawson, R., & Tilley, N. (1997). Realistic evaluation. Sage.

Peng, M. W., Sun, S. L., Pinkham, B., & Chen, H. (2009). The institution-based view as a third leg for a strategy tripod. *Academy of Management Perspectives*, 23(3), 63-81. https://doi.org/10.5465/amp.2009.43479264

Penrose, E. T. (1952). Biological analogies in the theory of the firm. *The American Economic Review*, 42(5), 804-819.

Penrose, E. T. (1953). Biological analogies in the theory of the firm: Rejoinder. *The American Economic Review*, 43(4), 603-609.

Penrose, E. T. (1959). The theory of the growth of the firm. Oxford University Press.

Penrose, E. T. (2009). The theory of the growth of the firm (4th ed.). Oxford University Press.

Pentland, B. T. (2011). The foundation is solid, if you know where to look: Comment on Felin and Foss. *Journal of Institutional Economics*, 7(2), 279-293. https://doi.org/10.1017/S174413741000041X

Pentland, B. T., & Feldman, M. S. (2005). Organizational routines as a unit of analysis. *Industrial and Corporate Change*, 14(5), 793-815. https://doi.org/10.1093/icc/dth070

Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14(3), 179-191. https://doi.org/10.1002/smj.4250140303

Peteraf, M. A. (2005). A resource-based lens on value creation, competitive advantage, and multi-level issues in strategic management research. In Multi-level issues in strategy and methods. Emerald Group Publishing Limited. https://doi.org/10.1016/S1475-9144(05)04007-5

Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, 24(4), 309-323. https://doi.org/10.1002/mde.1126

Peteraf, M., Di Stefano, G., & Verona, G. (2013). The elephant in the room of dynamic capabilities: Bringing two diverging conversations together. *Strategic Management Journal*, 34(12), 1389-1410. https://doi.org/10.1002/smj.2078

Pettigrew, A. M. (1973). The politics of organizational decision-making. Tavistock.

Pettigrew, A. M. (1990). Longitudinal field research on change: Theory and practice. Organization science, 1(3), 267-292. https://doi.org/10.1287/orsc.1.3.267

Pettigrew, A. M. (1992). The character and significance of strategy process research. *Strategic Management Journal*, 13(S2), 5-16. https://doi.org/10.1002/smj.4250130903

Pezeshkan, A., Fainshmidt, S., Nair, A., Frazier, M. L., & Markowski, E. (2016). An empirical assessment of the dynamic capabilities–performance relationship. *Journal of Business Research*, 69(8), 2950-2956. https://doi.org/10.1016/j.jbusres.2015.10.152

Pinch, T. J., & Bijker, W. E. (1984). The social construction of facts and artefacts: Or how the sociology of science and the sociology of technology might benefit each other. *Social Studies of Science*, 14(3), 399-441. https://doi.org/10.1177/030631284014003004

Porter, M. E. (1980). Competitive strategy: Techniques for analyzing industries and competitors. The Free Press.

Powell, T. C., & Dent-Micallef, A. (1997). Information technology as competitive advantage: The role of human, business, and technology resources. *Strategic Management Journal*, 18(5), 375-405. https://doi.org/10.1002/(SICI)1097-0266(199705)18:5%3C375::AID-SMJ876%3E3.0.CO;2-7

Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, 68(3), 79-91.

Prahalad, C. K., & Hamel, G. (1997). The core competence of the corporation. In Strategische Unternehmungsplanung/Strategische Unternehmungsführung (pp. 969-987). Physica, Heidelberg. https://doi.org/10.1007/978-3-662-41482-8_46

Priem, R. L., & Butler, J. E. (2001). Is the resource-based "view" a useful perspective for strategic management research?. *Academy of Management Review*, 26(1), 22-40. https://doi.org/10.5465/amr.2001.4011928

Quattrone, P. (2004). Accounting for God: Accounting and accountability practices in the Society of Jesus (Italy, XVI–XVII centuries). *Accounting, Organizations and Society*, 29(7), 647-683. https://doi.org/10.1016/j.aos.2004.03.001

Quattrone, P., & Hopper, T. (2005). A 'time–space odyssey': management control systems in two multinational organisations. *Accounting, organizations and society*, *30*(7-8), 735-764. https://doi.org/10.1016/j.aos.2003.10.006

Raff, D.M.G. (2000). Superstores and the evolution of firm capabilities in American bookselling. *Strategic Management Journal*, 21(10-11), 1043-1059. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1043::AID-SMJ137>3.0.CO;2-7

Raisch, S., & Krakowski, S. (2021). Artificial intelligence and management: The automation–augmentation paradox. *Academy of management review*, *46*(1), 192-210. https://doi.org/10.5465/amr.2018.0072

Ranganathan, R., Ghosh, A., & Rosenkopf, L. (2018). Competition–cooperation interplay during multifirm technology coordination: The effect of firm heterogeneity on conflict and consensus in a technology standards organization. *Strategic Management Journal*, *39*(12), 3193-3221. https://doi.org/10.1002/smj.2786

Reckwitz, A. (2002). Toward a theory of social practices: A development in culturalist theorizing. *European Journal of Social Theory*, 5(2), 243-263. https://doi.org/10.1177/13684310222225432

Regnér, P. (2008). Strategy-as-practice and dynamic capabilities: Steps towards a dynamic view of strategy. *Human Relations*, 61(4), 565-588. https://doi.org/10.1177/0018726708091020

Riedl, R., Benlian, A., Hess, T., Stelzer, D., & Sikora, H. (2017). On the relationship between information management and digitalization. *Business & Information Systems Engineering*, *59*, 475-482. https://doi.org/10.1007/s12599-017-0498-9

Reis, J., Amorim, M., Melão, N., Matos, P. (2018). Digital Transformation: A Literature Review and Guidelines for Future Research. In: Rocha, Á., Adeli, H., Reis, L.P., Costanzo, S. (eds) *Trends and Advances in Information Systems and Technologies*. WorldCIST'18 2018. Advances in Intelligent Systems and Computing, vol 745. Springer, Cham. https://doi.org/10.1007/978-3-319-77703-0_41

Richardson, V. J., Teeter, R. A., & Terrell, K. (2022). *Data analytics for accounting* (3rd ed.). McGraw-Hill Education.

Richins, G., Stapleton, A., Stratopoulos, T. C., & Wong, C. (2017). Big Data analytics: Opportunity or threat for the accounting profession? *Journal of Information Systems*, 31(3), 63-79. https://doi.org/10.2308/isys-51805

Rikhardsson, P., & Yigitbasioglu, O. (2018). Business intelligence & analytics in management accounting research: Status and future focus. *International Journal of Accounting Information Systems*, 29, 37-58. https://doi.org/10.1016/j.accinf.2018.03.001

Robalo, R., & Moreira, A. (2020). Resistance to information systems in the accounting domain: The case of an ERP implementation. *Journal of Accounting Change and Finance*, 1(1), 53-75.

Roberts, J. (1991). The possibilities of accountability. *Accounting, Organizations and Society*, 16(4), 355-368. https://doi.org/10.1016/0361-3682(91)90027-C

Rogers, E. M. (1997). Diffusion of new media: New directions. *Mass Communication Review*, 24(1/2), 75-81.

Rogers, E. M. (2003). Diffusion of Innovations (5th Edition). Free Press.

Rogers, E. M., Singhal, A., & Quinlan, M. M. (2014). Diffusion of innovations. In An Integrated Approach to Communication Theory and Research (pp. 432-448). Routledge. https://doi.org/10.4324/9780203710753-35

Rohrbeck, R. (2012). Exploring value creation from corporate-foresight activities. *Futures*, 44(5), 440-452. https://doi.org/10.1016/j.futures.2012.03.006

Romanelli, E., & Tushman, M. L. (1994). Organisational transformation as punctuated equilibrium: An empirical test. *Academy of Management Journal*, 37(5), 1141-1166. https://journals.aom.org/doi/abs/10.5465/256669

Rumelt, R. P. (1984). Towards a strategic theory of the firm. In R. B. Lamb (Ed.), Competitive Strategic Management (pp. 556-570). Prentice-Hall.

Russell, S., & Norvig, P. (2020). Artificial intelligence: A modern approach (AIMA) (4th Edition). Pearson.

Saldaña, J. (2021). *The coding manual for qualitative researchers: 4th edition*. SAGE: London

Salvato, C. (2009). Capabilities unveiled: The role of ordinary activities in the evolution of product development processes. *Organization Science*, 20(2), 384-409. https://doi.org/10.1287/orsc.1080.0408

Salvato, C., & Vassolo, R. (2018). The sources of dynamism in dynamic capabilities. *Strategic Management Journal*, 39(6), 1728-1752. https://doi.org/10.1002/smj.2703

Saunders, M., Lewis, P., Thornhill, A., & Bristow, A. (2019). *Understanding research philosophy and approaches to theory development. Research Methods for Business Students (8th ed.)*. Pearson Education.

Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*, 35(2), 179-203. https://doi.org/10.1002/smj.2099

Schilke, O., Hu, S., & Helfat, C. E. (2018). Quo vadis, dynamic capabilities? A content-analytic review of the current state of knowledge and recommendations for future research. *Academy of Management Annals*, 12(1), 390-439. https://doi.org/10.5465/annals.2016.0014

Schreyögg, G., & Kliesch-Eberl, M. (2007). How dynamic can organizational capabilities be? Towards a dual-process model of capability dynamization. *Strategic Management Journal*, 28(9), 913-933. https://doi.org/10.1002/smj.613

Schumpeter, J. A. (1934). The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle. Harvard University Press.

Schwer, R. K., & Hitz, C. (2018). Digital transformation in organisations. In S. Elliot, S. Arora-Jonsson, D. Kronlid, & T. Gale (Eds.), *Essential Frameworks of Business Management* (pp. 258-285). Palgrave Macmillan.

Scott, S., & Orlikowski, W. (2022). The digital undertow: How the corollary effects of digital transformation affect industry standards. *Information Systems Research*, *33*(1), 311-336. https://doi.org/10.1287/isre.2021.1056

Sebastian, I. M., Ross, J. W., Beath, C., Mocker, M., Moloney, K. G., & Fonstad, N. O. (2020). How big old companies navigate digital transformation. Strategic information management (pp. 133-150). Routledge.

Seethamraju, R., & Hecimovic, A. (2022). Adoption of artificial intelligence in auditing: An exploratory study. *Australian Journal of Management*, 48(4), 780-800. https://doi.org/10.1177/03128962221108440

Seow, P. S., Pan, G., & Goh, C. (2021). An Experiential-Learning Approach for Delivering An Accounting Analytics Capstone Course. *Accountancy Business and the Public Interest*, *20*, 312-322, Singapore Management University School of Accountancy Research Paper No. 2022-143, Available at SSRN: https://ssrn.com/abstract=3849137 or http://dx.doi.org/10.2139/ssrn.3849137

Seow, P. S., Pan, G., Goh, C., & Lew, M. (2024). Preparing Accountants of the Future: Examining an Accounting Data and Analytics Undergraduate Program in Singapore. *Asian Journal of Business and Accounting*, 17(1), 247-290. https://doi.org/10.22452/ajba.vol17no1.9

Shaffer, K. J., Gaumer, C. J., & Bradley, K. P. (2020). Artificial intelligence products reshape accounting: Time to re-train. *Development and Learning in Organizations: An International Journal*, 34(6), 41-43. https://doi.org/10.1108/DLO-10-2019-0242

Silver, D., Singh, S., Precup, D., & Sutton, R. S. (2021). Reward is enough. *Artificial Intelligence*, 299, 103535. https://doi.org/10.1016/j.artint.2021.103535

Singapore Business Review. (2024). Startup pioneers AI to detect accounting fraud. https://sbr.com.sg/financial-services/exclusive/startup-pioneers-ai-detect-accounting-fraud (Retrieved: 20th April 2025)

Singapore Management University (2018). SMU's School of Accountancy takes the lead in Asia to offer a suite of data analytics programmes to address industry needs [Press Release]. (22 January 2018). Available at: https://ink.library.smu.edu.sg/oh_pressrelease/139 (Retrieved: 20th April 2025)

Singapore Management University (2021). SMU Accounting Data and Analytics Work-Study Programme, Industry Experience with EY, Launched [Press Release]. (19 May 2021). Available at: https://accountancy.smu.edu.sg/news/smu-accounting-data-and-analytics-work-study-programme-industry-experience-ey-launched (Retrieved: 20th April 2025)

Singapore Management University. (n.d.). *Bachelor of Accountancy: Programme structure*. Singapore Management University School of Accountancy. https://accountancy.smu.edu.sg/bachelor-accountancy/curriculum/programme-structure (Retrieved: 20th April 2025)

Smith, S. S. (2020). Blockchain, Artificial Intelligence and Financial Services: Implications and Applications for Finance and Accounting Professionals. Future of Business and Finance. https://doi.org/10.1007/978-3-030-29761-9

Smith, T. M., & Reece, J. S. (1999). The relationship of strategy, fit, productivity, and business performance in a services setting. *Journal of Operations Management*, 17(2), 145-161. https://doi.org/10.1016/S0272-6963(98)00037-0

Soto-Acosta, P. (2020). COVID-19 pandemic: Shifting digital transformation to a high-speed gear. *Information Systems Management*, 37(4), 260-266. https://doi.org/10.1080/10580530.2020.1814461

Stene, E. O. (1940). An approach to a science of administration. *American Political Science Review*, 34(6), 1124-1137. https://doi.org/10.2307/1948193

Stephany, F., & Lorenz, H. (2021). The Future of Employment Revisited: How Model Selection Determines Automation Forecasts. *arXiv preprint arXiv:2104.13747*. https://doi.org/10.48550/arXiv.2104.13747

Stinchcombe, A. L. (2000). Social structure and organizations. *Advances in Strategic Management*, 17, 229-259. https://doi.org/10.1016/S0742-3322(00)17019-6

Suchman, L. (1995). Making work visible. *Communications of the ACM*, 38(9), 56-64. https://doi.org/10.1145/223248.223263

Suddaby, R., Coraiola, D., Harvey, C., & Foster, W. (2020). History and the micro-foundations of dynamic capabilities. *Strategic Management Journal*, *41*(3), 530-556. https://doi.org/10.1002/smj.3058

Suri, H. (2011). Purposeful sampling in qualitative research synthesis. *Qualitative Research Journal*, 11(2), 63-75. https://doi.org/10.3316/QRJ1102063

Sutton, S. G., Arnold, V., & Holt, M. (2018). How much automation is too much? Keeping the human relevant in knowledge work. *Journal of Emerging Technologies in Accounting*, 15(2), 15-25. https://doi.org/10.2308/jeta-52311

Sutton, S. G., Holt, M., & Arnold, V. (2016). "The reports of my death are greatly exaggerated"—Artificial intelligence research in accounting. *International Journal of Accounting Information Systems*, 22, 60-73. https://doi.org/10.1016/j.accinf.2016.07.005

Sztompka, P. (1991). Society in action: The theory of social becoming. University of Chicago Press.

TechNode Global. (2024). Singapore's Transparently.AI secures investment from Franklin Templeton. https://technode.global/2024/02/20/singapores-transparently-ai-secures-investment-from-franklin-templeton/ (Retrieved: 20th April 2025)

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350. https://doi.org/10.1002/smj.640

Teece, D. J. (2012). Dynamic capabilities: Routines versus entrepreneurial action. *Journal of Management Studies*, 49(8), 1395-1401. https://doi.org/10.1111/j.1467-6486.2012.01080.x

Teece, D. J. (2014a). A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. *Journal of International Business Studies*, 45(1), 8-37. https://doi.org/10.1057/jibs.2013.54

Teece, D. J. (2014b). The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms. *Academy of Management Perspectives*, 28(4), 328-352. https://doi.org/10.5465/amp.2013.0116

Teece, D. J. (2016). Dynamic capabilities and entrepreneurial management in large organizations: Toward a theory of the (entrepreneurial) firm. *European Economic Review*, 86, 202-216. https://doi.org/10.1016/j.euroecorev.2015.11.006

Teece, D. J. (2017). Towards a capability theory of (innovating) firms: Implications for management and policy. *Cambridge Journal of Economics*, 41(3), 693-720. https://doi.org/10.1093/cje/bew063

Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40-49. https://doi.org/10.1016/j.lrp.2017.06.007

Teece, D., & Leih, S. (2015). Uncertainty, innovation, and dynamic capabilities: An introduction. *California Management Review*, 58(1), 5-11. https://doi.org/10.1525/cmr.2016.58.4.5

Teece, D. J., Peteraf, M. A., & Leih, S. (2021). Dynamic capabilities and organizational resilience. In *Organizational Resilience: The Theoretical and Practical Dimensions of Creating Strategic Adaptability and Preparing for Extreme Events*, 105-130.

Teece, D., & Pisano, G. (1994). The dynamic capabilities of firms: An introduction. *Industrial and Corporate Change*, 3(3), 537-556. https://doi.org/10.1093/icc/3.3.537-a

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Thornhill, S., & Amit, R. (2003). Learning from failure: Organisational mortality and the resource-based view. Ottawa: Statistics Canada.

Thyrlby, R. (1998). The origins and evolution of dynamic capabilities. *Industrial and Corporate Change*, 7(2), 341-370. https://doi.org/10.1093/icc/7.2.341

Torkkeli, M., & Tuominen, M. (2002). The contribution of technology selection to core competencies. *International Journal of Production Economics*, 77(3), 271-284. https://doi.org/10.1016/S0925-5273(01)00227-4

Touvron, H., Lavril, T., Isacard, G., Martinet, X., Lachaux, M. A., Lacroix, T., ... & Lample, G. (2023). LLaMA: Open and efficient foundation language models. arXiv preprint arXiv:2302.13971. https://doi.org/10.48550/arXiv.2302.13971

Transparently.AI. (2024a). About us. https://www.transparently.ai/about-us (Retrieved: 20th April 2025)

Transparently.AI. (2024b). How it works. https://www.transparently.ai/how-it-works (Retrieved: 20th April 2025)

Trantopoulos, K., von Krogh, G., Wallin, M. W., & Woerter, M. (2017). External knowledge and information technology: Implications for process innovation performance. *MIS Quarterly*, 41(1), 287-300. https://doi.org/10.25300/MISQ/2017/41.1.15

Tysiac, K., & Drew, J. (2018). Accounting Firms: The Next Generation. *Journal of Accountancy*, 225, 3-9.

Vaara, E., & Whittington, R. (2012). Strategy-as-practice: Taking social practices seriously. *Academy of Management Annals*, 6(1), 285-336. https://doi.org/10.5465/19416520.2012.672039

Van de Ven, A. H. (1992). Suggestions for studying strategy process: A research note. *Strategic Management Journal*, 13(S1), 169-188. https://doi.org/10.1002/smj.4250131013

Van de Ven, A. H., & Poole, M. S. (1995). Explaining development and change in organisations. *Academy of Management Review*, 20(3), 510-540. https://doi.org/10.5465/amr.1995.9508080329

Vasarhelyi, M. A., Alles, M., Kuenkaikaew, S., & Littley, J. (2012). The acceptance and adoption of continuous auditing by internal auditors: A micro analysis. *International Journal of Accounting Information Systems*, *13*(3), 267-281. https://doi.org/10.1016/j.accinf.2012.06.011

Vasarhelyi, M. A., Kogan, A., & Tuttle, B. M. (2015). Big data in accounting: An overview. *Accounting Horizons*, *29*(2), 381-396. https://doi.org/10.2308/acch-51071

Vergne, J. P., & Durand, R. (2011). The path of most persistence: An evolutionary perspective on path dependence and dynamic capabilities. *Organization Studies*, 32(3), 365-382. https://doi.org/10.1177/0170840610397485

Verhoef, P. C., Broekhuisen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889-901. https://doi.org/10.1016/j.jbusres.2019.09.022

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, 28(2), 118-144. https://doi.org/10.1016/j.jsis.2019.01.003

Vial, G. (2021). Understanding digital transformation: A review and a research agenda. Managing digital transformation, 13-66. https://doi.org/10.4324/9781003008637-4

Vitali, S., & Giuliani, M. (2024). Emerging digital technologies and auditing firms: Opportunities and challenges. *International Journal of Accounting Information Systems*, *53*, 100676. https://doi.org/10.1016/j.accinf.2024.100676

Volberda, H. W., Khanagha, S., Baden-Fuller, C., Mihalache, O. R., & Birkinshaw, J. (2021). Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms. *Long Range Planning*, 54(5), 102110. https://doi.org/10.1016/j.lrp.2021.102110

von Hippel, E. (1988). The sources of innovation. Oxford University Press.

Von Nordenflycht, A. (2010). What is a professional service firm? Toward a theory and taxonomy of knowledge-intensive firms. *Academy of Management Review*, 35(1), 155-174. https://doi.org/10.5465/amr.35.1.zok155

Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J. F., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70, 356-365. https://doi.org/10.1016/j.jbusres.2016.08.009

Wamba-Taguimdje, S. L., Wamba, S. F., Kamdjoug, J. R. K., & Wanko, C. E. T. (2020). Influence of artificial intelligence (AI) on firm performance: The business value of AI-based transformation projects. *Business Process Management Journal*, 26(7), 1893-1924. https://doi.org/10.1108/BPMJ-10-2019-0411

Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31-51. https://doi.org/10.1111/j.1468-2370.2007.00201.x

Wang, S., & Xu, S. (2024). 16 Changes to the Way Enterprises Are Building and Buying GenAI. Andreessen Horowitz. https://a16z.com/generative-ai-enterprise-2024/ (Retrieved: 20th April 2025)

Warner, K. S., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning*, 52(3), 326-349. https://doi.org/10.1016/j.lrp.2018.12.001

Wenzel, M., Danner-Schröder, A., & Spee, A. P. (2021). Dynamic capabilities? Unleashing their dynamics through a practice perspective on organizational routines. *Journal of Management Inquiry*, *30*(4), 395-406. https://doi.org/10.1177/1056492620916549

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180. https://doi.org/10.1002/smj.4250050207

Wernerfelt, B. (1995). The resource-based view of the firm: Ten years after. *Strategic Management Journal*, 16(3), 171-174. https://doi.org/10.1002/smj.4250160303

Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J., & Blegind-Jensen, T. (2021). Unpacking the difference between digital transformation and IT-enabled organisational transformation. *Journal of the Association for Information Systems*, 22(1), 102-129. https://doi.org/10.17705/1jais.00655

Wessel, L., Davidson, E. J., Barquet, A. P., Rothe, H., Peters, O., & Megges, H. (2020). Configuration in smart service systems: A practice-based inquiry. *Information Systems Journal*, 30(6), 1190-1219. https://doi.org/10.1111/isj.12268

White, M. (2012). Digital workplaces: Vision and reality. *Business Information Review*, 29(4), 205-214. https://doi.org/10.1177/0266382112470412

Whittington, R. (1996). Strategy as practice. *Long Range Planning*, 29(5), 731-735. https://doi.org/10.1016/0024-6301(96)00068-4

Whittington, R. (2003). The work of strategising and organising: For a practice perspective. *Strategic Organization*, 1(1), 117-125. https://doi.org/10.1177/147612700311006

Whittington, R. (2006). Completing the practice turn in strategy research. *Organization Studies*, 27(5), 613-634. https://doi.org/10.1177/0170840606064101

Whittington, R. (2007). Strategy practice and strategy process: Family differences and the sociological eye. *Organization Studies*, 28(10), 1575-1586. https://doi.org/10.1177/0170840607081557

Whittington, R. (2011). The practice turn in organization research: Towards a disciplined transdisciplinarity. *Accounting, Organizations and Society*, 36(3), 183-186. https://doi.org/10.1016/j.aos.2011.04.003

Whittington, R. (2014). Information systems strategy and strategy-as-practice: A joint agenda. *The Journal of Strategic Information Systems*, 23(1), 87-91. https://doi.org/10.1016/j.jsis.2014.01.003

Whittington, R., Cailluet, L., & Yakis-Douglas, B. (2011). Opening Strategy: Evolution of a Precarious Profession. *British Journal of Management*, *22*(3), 531-544. https://doi.org/10.1111/j.1467-8551.2011.00762.x

Whittington, R., & Yakis-Douglas, B. (2020). The Grand Challenge of Corporate Control: Opening strategy to the normative pressures of networked professionals. *Organization Theory*, 1(4). https://doi.org/10.1177/2631787720969697

Whittle, A., & Mueller, F. (2010). Strategy, enrolment and accounting: The politics of strategic ideas. *Accounting, Auditing & Accountability Journal*, 23(5), 626-646. https://doi.org/10.1108/09513571011054918

Wiggins, R. R., & Ruefli, T. W. (2005). Schumpeter's ghost: Is hypercompetition making the best of times shorter?. *Strategic Management Journal*, 26(10), 887-911. https://doi.org/10.1002/smj.492

Wilden, R., Devinney, T. M., & Dowling, G. R. (2016). The architecture of dynamic capability research identifying the building blocks of a configurational approach. *Academy of Management Annals*, 10(1), 997-1076. https://doi.org/10.5465/19416520.2016.1161966

Wilden, R., Gudergan, S. P., Nielsen, B. B., & Lings, I. (2013). Dynamic capabilities and performance: Strategy, structure and environment. *Long Range Planning*, 46(1-2), 72-96. https://doi.org/10.1016/j.lrp.2012.12.001

Wilhelm, H., Schlömer, M., & Maurer, I. (2015). How dynamic capabilities affect the effectiveness and efficiency of operating routines under high and low levels of environmental dynamism. *British Journal of Management*, 26(2), 327-345. https://doi.org/10.1111/1467-8551.12085

Williamson, O. E. (1975). Markets and hierarchies: Analysis and antitrust implications. Free Press.

Williamson, O. E. (1985). The economic institutions of capitalism: Firms, markets, relational contracting. Free Press.

Willis, J. W., Jost, M., & Nilakanta, R. (2007). Foundations of qualitative research: Interpretive and critical approaches. Sage.

Winter, S. G. (1964). Economic "natural selection" and the theory of the firm. *Yale Economic Essays*, 4(1), 225-272.

Winter, S. G. (1995). Four Rs of profitability: Rents, resources, routines, and replication. In C. A. Montgomery (Ed.), Resource-based and evolutionary theories of the firm: Towards a synthesis (pp. 147-178). Springer. https://doi.org/10.1007/978-1-4615-2201-0_7

Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991-995. https://doi.org/10.1002/smj.318

Wirtz, J., Kunz, W. H., Hartley, N., & Tarbit, J. (2023). Corporate digital responsibility in service firms and their ecosystems. Journal of Service Research, 26(2), 173-190. https://doi.org/10.1177/10946705221130467

Wirtz, B. W. (2024). *Digital business and electronic commerce: Strategy, business models and technology*. Springer Nature.Wirtz, B. W. (2024). *Digital business and electronic commerce: Strategy, business models and technology*. Springer Nature. https://doi.org/10.1007/978-3-031-50289-7

Wu, L. Y. (2006). Resources, dynamic capabilities and performance in a dynamic environment: Perceptions in Taiwanese IT enterprises. *Information & Management*, 43(4), 447-454. https://doi.org/10.1016/j.im.2005.11.001

Yeow, A., Soh, C., & Hansen, R. (2018). Aligning with new digital strategy: A dynamic capabilities approach. *The Journal of Strategic Information Systems*, *27*(1), 43-58. https://doi.org/10.1016/j.jsis.2017.09.001

Yigitbasioglu, O., Green, P., & Cheung, M. Y. D. (2023). Digital transformation and accountants as advisors. *Accounting, Auditing & Accountability Journal*, 36(1), 209-237. https://doi.org/10.1108/AAAJ-02-2019-3894

Yin, R. K. (2003). Design and methods. Case study research, 3(9.2).

Yin, R. K. (2014). Case study research: Design and methods (5th ed.). Sage.

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185-203. https://journals.aom.org/doi/abs/10.5465/AMR.2002.6587995

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies*, 43(4), 917-955. https://doi.org/10.1111/j.1467-6486.2006.00616.x

Zajac, E. J. (1995). SMJ 1994 best paper prize to Birger Wernerfelt. *Strategic Management Journal*, 16(3), 169-170. https://doi.org/10.1002/smj.4250160302

Zajac, E. J., Kraatz, M. S., & Bresser, R. K. (2000). Modeling the dynamics of strategic fit: A normative approach to strategic change. *Strategic Management Journal*, 21(4), 429-453. https://doi.org/10.1002/(SICI)1097-0266(200004)21:4<429::AID-SMJ81>3.0.CO;2-%23

Zhang, C. (2019). Intelligent process automation in audit. *Journal of Emerging Technologies in Accounting*, 16(2), 69-88. https://doi.org/10.2308/jeta-52653

Zhang, C. A., Cho, S., & Vasarhelyi, M. (2022). Explainable artificial intelligence (XAI) in auditing. *International Journal of Accounting Information Systems*, *46*, 100572. https://doi.org/10.1016/j.accinf.2022.100572

Zimmermann, J., Volckmer, JC. (2015). Accounting Firms: Global Reach without Transnational Form. In: Lundan, S. (eds) *Transnational Corporations and Transnational Governance*. Palgrave Macmillan, London. https://doi.org/10.1057/9781137467690_11

Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339-351. https://doi.org/10.1287/orsc.13.3.339.2780

APPENDICES

Consent Form

University of Glasgow

College of Social Sciences

Consent Form

Title of Project: …Exploring how Accounting Firms build Dynamic Capabilities in AI and Machine Learning for Data Analytics (AIMLDA) as they pursue Digital Transformation…

Name of Researcher: …Benjamin Huan Zhou LEE (b.lee.1@research.gla.ac.uk)…

Please tick as appropriate

Yes ☐ No ☐ I confirm that I have read and understood the Participant Information Sheet for the above study and have had the opportunity to ask questions.

Yes ☐ No ☐ I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

Yes ☐ No ☐ I consent to interviews being recorded.

Yes ☐ No ☐ I acknowledge that participants will be referred to by pseudonym.

I agree that:

Yes ☐ No ☐ All names and other material likely to identify individuals will be anonymised.

Yes ☐ No ☐ The material will be treated as confidential and kept in secure storage at all times.

Yes ☐ No ☐ Personal data will be destroyed once the project is complete.

Yes ☐ No ☐ Research data collected from the interviews will be retained in secure storage for use in future academic research

Yes ☐ No ☐ The material may be used in future publications, both print and online.

Yes ☐ No ☐ I waive my copyright to any data collected as part of this project.

Yes ☐ No ☐ I acknowledge the provision of a Privacy Notice in relation to this research project.

Consent clause,

I agree to take part in this research study ☐

I do not agree to take part in this research study ☐

Name of Participant …… Signature ……

Date ……

Name of Researcher …Benjamin Huan Zhou LEE … Signature ……

Date ……

Participant Information Sheet

University of Glasgow
College of Social Sciences

Participant Information Sheet

Study title: Exploring how Accounting Firms build Dynamic Capabilities in AI and Machine Learning for Data Analytics (AIMLDA) as they pursue Digital Transformation

Researcher Details: Benjamin Huan Zhou LEE (b.lee.1@research.gla.ac.uk)

Research Supervision

This research study is being supervised by the researcher's supervisors, namely: Dr Karl WARNER (Karl.Warner@glasgow.ac.uk) and Dr Adina DUDAU (Adina.Dudau@glasgow.ac.uk). Should you have any questions regarding this research, you may contact the researcher or his supervisors at their respective emails.

Research Invitation

You are being invited to take part in a research study. Before you decide to take part, it is important for you to understand why the research is being done and what it will involve. Please read the following information carefully and discuss it with others if you wish. Ask the researcher if there is anything that is not clear or if you would like more information. Take some time to decide whether or not you wish to take part.

Thank you for reading this.

Research Participation

You are invited as a research participant for this study as the insights you share based on your seniority and role in your accounting firm and your answers to the research questions asked are key to identifying capabilities that enable accounting firms to pursue digital transformation as an ongoing and perpetual evolutionary process. As a research participant, you are invited to provide responses to questions in a truthful manner but are not obliged to disclose any information that you do not wish to. If, at any point in time, you wish to withdraw from participating in this research study, you can do so without giving any reason.

Details of Study

Artificial Intelligence (AI) and Machine Learning (ML) are examples of digital technologies at the forefront of digital transformation. There is increasing evidence that the accounting profession is currently experiencing technological disruption despite traditionally being safe from disruption. As technological innovation continues its rapid rise, there is growing perception that an accountant or

auditor will fall victim to computerisation because their jobs often involve activities that are repetitive and manual, such as adjusting entries and transactions reconciliation.

This research seeks to identify the capabilities that accounting firms need to leverage digital technologies to enhance firm productivity and remain competitive in delivering value to clients they service. This will be significant to how accounting firms provide accounting and auditing services, which remains a necessity for all businesses, as they evolve alongside technological advancements by building capabilities that allow them to implement technology in their work. The findings from the research would have an impact in accounting firms' provision of services as the manual and arduous tasks are taken over by AI and ML, which may drastically change how they work, who they service, and what they do.

This study uses the qualitative research method of longitudinal case studies where respondents are interviewed and asked open-ended questions relating to the accounting professionals working in accounting firms. The interviews will be conducted either in-person or by video-conferencing tools (Zoom or Microsoft Teams) and will be recorded as well as subsequently transcribed only for the purposes of research. The interviews are expected to take approximately 30 – 60 minutes.

Following data analysis of relevant data collected from the interviews, a summary of the results will be written in report format. If you would like a written summary of the results, you can email the researcher at b.lee.1@research.gla.ac.uk to request for a copy.

Statement of Confidentiality

To protect confidentiality of the interviewees, the following will be done:

(i) The firms' identity will be concealed (e.g. Firm A) and the interviewees' names will be anonymised, leaving only their position in the firm (e.g. Manager A, Partner B). By this, Manager A represents an accounting manager in Firm A.

(ii) In any recordings done, interviewees will not be referred to by their names and firms will not be named. Any reference to names will be done so anonymously (e.g. a manager in Firm A or a partner in Firm B)

(iii) Transcripts of recordings will likewise follow (ii) and transcribe names of firms and employees anonymously.

(iv) If absolutely necessary, pseudonyms will be used for the firms and the employees.

Please note that assurances on confidentiality will be strictly adhered to unless evidence of wrongdoing or potential harm is uncovered. In such cases the University may be obliged to contact relevant statutory bodies/agencies.

What will the data be used for?

The data collected through the interviews will be transcribed and will then be used to build individual cases across different firms. The findings from the data analysis will then be used in the production of the PhD Thesis, Journal Articles, and Conference Papers.

The data will be stored in compliance with the University of Glasgow Research Data Management Policy. The active data will be stored on the University of Glasgow OneDrive and Microsoft TEAMS until the publication and submission of the thesis. The archive data will be stored on Enlighten: Research Data and securely preserved in an appropriate format for a minimum of 10 years or longer if specified by the funder. The ten years run from the date of any publication based on the data or the date on which the data was last requested and accessed by a third party. Data being deleted or destroyed will be done with particular concern for confidentiality and security and in accordance with research funder requirements.

All electronic data will be stored on the University of Glasgow OneDrive for the duration of this study and the researcher's PhD. Paper data will be kept under lock and key at the researcher's home address in Singapore.

Any personal data will be disposed immediately after the pseudonym process is done or at the end of the research project. Any paper documents containing personal data will be shredded, and electronic files will be erased using secure removal software.

What will the data be used for?

This project has been considered and approved by the College Research Ethics Committee

To pursue any complaint about the conduct of the research: contact the Acting Lead for Ethical Review, College of Social Sciences, Dr Benjamin Franks: email socsci-ethics-lead@glasgow.ac.uk

_____End of Participant Information Sheet_____

Privacy Notice

Privacy Notice for Participation in Research Project: *Exploring how Accounting Firms build Dynamic Capabilities in AI and Machine Learning for Data Analytics (AIMLDA) as they pursue Digital Transformation* by Benjamin Huan Zhou LEE (b.lee.1@research.gla.ac.uk)

Your Personal Data

The University of Glasgow will be what's known as the 'Data Controller' of your personal data processed in relation to your participation in the research project [*Exploring how Accounting Firms build Dynamic Capabilities in AI and Machine Learning for Data Analytics (AIMLDA) as they pursue Digital Transformation* This privacy notice will explain how The University of Glasgow will process your personal data.

Why we need it

We are collecting basic personal data such as your name and contact details in order to conduct our research. We need your name and contact details to: arrange for interviews and potentially follow up on the data you have provided in the interviews.

We only collect data that we need for the research project and all personal information (firm name, participant name, job title, or any other information that may be traced back to you will be anonymised. This is to ensure anonymity for the answers you give during the interview.

Please note that assurances on confidentiality will be strictly adhered to unless evidence of wrongdoing or potential harm is uncovered. In such cases the University may be obliged to contact relevant statutory bodies/agencies.

Please see accompanying **Participant Information Sheet**,

Legal basis for processing your data

We must have a legal basis for processing all personal data. As this processing is for Academic Research, we will be relying upon **Task in the Public Interest** in order to process the basic personal data that you provide. For any special categories data collected we will be processing this on the basis that it is **necessary for archiving purposes, scientific or historical research purposes or statistical purposes**

Alongside this, in order to fulfil our ethical obligations, we will ask for your **Consent** to take part in the study Please see accompanying **Consent Form**.

What we do with it and who we share it with

All the personal data you submit is processed by: Benjamin (the researcher, PhD student of the University of Glasgow in the United Kingdom) who will be supervised by Dr Karl Warner (primary supervisor) and Dr Adina Dudau (secondary supervisor), both of whom are faculty at the same university. In addition, security measures are in place to ensure that your personal data remains safe: (i) anonymisation or pseudonymisation of personal data, (ii) data will be encrypted and store only on the university's OneDrive.

A summary of the findings from this research study and details of any subsequent publications or outputs will be provided to you on request.

Please consult the **Consent form** and **Participant Information Sheet** which accompanies this notice.

What are your rights?*
GDPR provides that individuals have certain rights including: to request access to, copies of and rectification or erasure of personal data and to object to processing. In addition, data subjects may also have the right to restrict the processing of the personal data and to data portability. You can request access to the information we process about you at any time.

If at any point you believe that the information we process relating to you is incorrect, you can request to see this information and may in some instances request to have it restricted, corrected, or erased. You may also have the right to object to the processing of data and the right to data portability.

Please note that as we are processing your personal data for research purposes, the ability to exercise these rights may vary as there are potentially applicable research exemptions under the GDPR and the Data Protection Act 2018. For more information on these exemptions, please see UofG Research with personal and special categories of data.

If you wish to exercise any of these rights, please submit your request via the webform or contact dp@gla.ac.uk

Complaints
If you wish to raise a complaint on how we have handled your personal data, you can contact the University Data Protection Officer who will investigate the matter.
Our Data Protection Officer can be contacted at dataprotectionofficer@glasgow.ac.uk

If you are not satisfied with our response or believe we are not processing your personal data in accordance with the law, you can complain to the Information Commissioner's Office (ICO) https://ico.org.uk/

Who has ethically reviewed the project?

This project has been ethically approved via the College of Social Sciences Research Ethics Committee or relevant School Ethics Forum in the College.

How long do we keep it for?

Your **personal** data will be retained by the University only for as long as is necessary for processing and no longer than the period of ethical approval (projected PhD completion date is June 2025). After this time, personal data will be securely deleted.

Your **research** data will be retained for a period of ten years in line with the University of Glasgow Guidelines. Specific details in relation to research data storage are provided on the Participant Information Sheet and Consent Form which accompany this notice.

End of Privacy Notice _____

Semi-Structured Interview Guide

Introduction

- Researcher's background
- Background of research project on AI-driven analytics (AIDA) adoption and digital transformation in accounting firms and motivation of research study
- Confidentiality assurance and recording permission

Participant's Background

1. How long have you been in the accounting profession?
2. Could you tell me about your current role and responsibilities in the firm?
3. How long have you been with the organisation?
4. What has been your involvement with digital transformation initiatives?

Existing Digital and AIDA Strategy

1. Could you please share about your firm's digital strategy, particularly regarding AIDA adoption?
2. What are the major benefits that accounting firms can derive from AIDA transformation?
3. How does your firm currently identify and evaluate opportunities for AIDA adoption?

Implementation of Digital Tools

1. What AIDA technologies has your firm invested in over the past three years?
2. How did your firm approach the implementation of these technologies?

Organisational Change

1. How has AIDA adoption changed the way your firm operates?
2. How has the organisational structure evolved to accommodate AIDA technologies?

Conclusion

1. Anything else you would like to add regarding AIDA adoption and digital transformation in your firm?

Pseudonymised Firms Concise Descriptive Characteristics

Big 4s:

Landmark Co (Firm A): a Big 4 firm serving as an established reference point in the accounting industry

Safeguard Co (Firm B): a Big 4 firm distinguished by its emphasis on data security and client confidentiality

Trailblazer Co (Firm C): a Big 4 firm pioneering the integration of data analytics and advanced digital tools

Keystone Co (Firm D): a Big 4 firm positioned as a central support element for clients during digital transformation

Mid-tiers:

Reliable Co (Firm E): a mid-tier firm delivering dependable service through paperless operations

Benchmark Co (Firm F): a mid-tier firm setting clear standards for digital processes in accounting operations

Foresight Co (Firm G): a mid-tier firm with an anticipatory approach to digital transformation

Synergy Co (Firm H): a mid-tier firm creating powerful combinations of human expertise and technological capabilities

Boutiques:

Catalyst Co (Firm J): a boutique firm that sparks and accelerates transformational change in financial processes

Forward Co (Firm K): a boutique firm moving clients ahead toward future-ready financial practices

Venture Co (Firm L): a boutique firm exploring emerging technologies through experimental balanced approaches