

**VILNIUS UNIVERSITY
KAUNAS FACULTY**

INSTITUTE OF SOCIAL SCIENCES
AND APPLIED INFORMATICS

International Business Management study programme
Code 6211LX019

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MASTER'S THESIS

**FACTORS PROMOTING THE DIGITAL TRANSFORMATION OF
INTERNATIONAL COMPANIES**

Kaunas 2026

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Kaunas 2026

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LIST OF ABBREVIATIONS

DT – Digital Transformation

AI – Artificial Intelligence

IoT – Internet of Things

ERP – Enterprise Resource Planning

GDPR – General Data Protection Regulation

SMEs – Small and Medium-sized Enterprises

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INTRODUCTION

The relevance of the topic. In the global economy, the digital transformation has become an imperative for international companies to stay competitive, gain efficiency, and meet growing customer needs. Technologies such as AI, big data analytics, IoT, and cloud computing are with every passing day reshaping conventional organizational models and fostering new methods of value creation and customer engagement in industries (Kane et al., 2015; Westerman et al., 2014). Building upon this conceptual framework of digital disruption, the imperative for change surged as the COVID-19 pandemic collected steam, fast-tracking digital adoption and unveiling the structural cracks of conventional business operations (World Economic Forum, 2020). However, for international companies, this is doubly important because they have to make their operations across highly fragmented regulatory landscapes and culturally diversified grounds where agility remains the currency for success (Vial, 2019).

Digital transformation is developed as a long-term driver for growth in adaptation, resilience, innovation, and sustainability. With the growth of programmatic data protection laws around the world, international companies face increasing requirements to comply with these acts (UNCTAD, 2022). In addition, digital solutions, from AI analytics to blockchain for supply chain monitoring, are contributing toward ethical sourcing, transparency, and carbon reduction methods (WEF, 2023). Hence, understanding factors leading to digital transformation in international companies carries managerial as well as policy relevance, and it bridges an important gap in research related to how global enterprises deal with challenges and opportunities of digital age.

Problem investigation level. Everyone's obsessed with digital transformation these days, but honestly, most of what's out there just talks about local companies or, like, whatever's happening in one specific industry. Nobody really digs into the mess international companies get thrown into. It's not just "go digital!" and call it a day these global giants have to dodge a minefield of headaches: different countries making up their own rules, cultures clashing left and right, and some places barely having WiFi while others are living in the future (Sebastian et al., 2017). Some researchers won't shut up about how leadership and having the right digital attitude are the big game-changers (Westerman et al., 2014). Meanwhile, others are waving their arms about how what's happening in the market or whether the tech even works is what actually

decides if you sink or swim (Bharadwaj et al., 2013; Fitzgerald et al., 2014). Basically, it's a circus and there's way more to figure out than most people admit.

These understandings are developed further in more recent work. Vial (2019) posits that digital transformation is a complex process, requiring organizational transformation, strategic alignment, and capability building in global contexts. Kane et al. (2015) prioritise strategy over technology, as the means to successful transformation, and Teece (2014) sees dynamic capabilities as essential in enabling firms to adapt to emergent environments. Similarly, Rogers (2003) applies diffusion of innovation theory in explaining the pace and nature of technology adoption, illustrating how institutional settings have significant effects on outcomes. On the regulatory side, UNCTAD (2022) identifies cross-border flow data limitations and data protection laws as the main barriers for International Companies, while the World Economic Forum (2023) explains how digital innovation is increasingly intertwined with sustainability and ESG reporting. Together, the literature suggests that organizational internal readiness and external pressures significantly shape the manner in which international companies embark on digital transformation. This thesis builds on such findings by exploring the key internal and external drivers shaping digital transformation success in International Companies.

The essence of the problem. How the key internal and external factors promote digital transformation in international companies operating across diverse regulatory and cultural landscapes?

The object of the thesis is factors promoting digital transformation in international companies.

The aim of the thesis is to examine the key factors that promote digital transformation in international companies.

Objectives of the thesis:

- To define and examine the nature of digital transformation in the context of international business.
- To identify the internal and external factors driving digital transformation, and the challenges international companies face in adopting digital technologies.
- To review and synthesize existing empirical studies on factors promoting digital transformation in international companies.

- To develop a conceptual research model linking external pressures, leadership, digital capabilities, and operational performance in international companies.
- To empirically validate the research model of factors promoting digital transformation in international companies through quantitative analysis.

The structure of the thesis. The first part outlines the theoretical framework of digital transformation in international companies, covering definitions, generic promoting factors, and operational models of the initiative. It also demonstrates the relationships between transformation drivers and business competitiveness on a global scale. The second part summarizes and analyzes existing empirical research on the factors driving digital transformation in international companies. It then presents a new research model with testable hypotheses to study these relationships further. The third part presents the empirical research methodology, survey results from 100 international company managers, hypothesis testing through PLS-SEM, and a discussion of findings with practical implications.

Thesis and research methods. Systematic literature review constitutes the backbone of the theoretical part, including synthesis and comparison. In the analytical part, the principal approach will be a synthesis of the empirical literature whereby current studies concerning digital transformation in multinational enterprises will be systematically reviewed, compared, and condensed, thus, allowing finding out the key themes and current gaps. After this review, a conceptual research framework is developed indicating the presence of empirical hypotheses to correlate the external pressures, leadership, digital capabilities, with performance outcomes. A future quantitative research design, which includes the surveys of the managerial staff, corporate performance indicators, and international indicators at the country level, is also described in the chapter. All these data sources are to be combined through the prism of triangulation producing a full-fledged and multi-level examination of the factors influencing digital transformation.

Literature used in the thesis. With the intention of using contemporary literature that defines digital transformation, the thesis makes reference to the works of Westerman et al. (2014), Vial (2019), Bharadwaj et al. (2013), and Fitzgerald et al. (2014). Recent reports from the global research institutions also contribute to defining the organization, technology, and environment for digital transformation in the context of internationalization. The emphasis is on literature published in peer-reviewed journals and by institutions such as the World Economic

Forum (2020), MIT Sloan (Kane et al., 2015), and McKinsey Global Institute (Bughin et al., 2017).

The theoretical significance of the thesis. This study adds to the body of literature by creating a framework for examining international company's digital transformation. It offers a thorough grasp of how international companies adjust to technology change by fusing organizational theory with research on digital innovation. The results are particularly pertinent to the development of strategic methods that match global business models with digital activities.

The practical significance of the thesis. The findings of the study provide practical guidance for managers of international companies on prioritizing leadership commitment, digital talent development, and technological infrastructure investments to achieve measurable performance gains from digital transformation. For policymakers, the study highlights the need for harmonized regulatory frameworks and capability-building programs that reduce cross-border digitalization barriers.

Structure and scope of the thesis. This thesis analyzes the factors promoting digital transformation in international companies. It is structured in two main chapters: a theoretical review of digital transformation concepts, drivers, and challenges, followed by an analytical synthesis of empirical research and a proposed research model. Which is presented in 75 pages, with 14 tables, 2 figure. 87 scholarly and institutional sources are included in the reference list.

1. THEORETICAL BACKGROUND TO THE USE OF DIGITAL TECHNOLOGIES IN INTERNATIONAL COMPANIES

The theoretical underpinnings of digital technologies in international companies are examined in this chapter, along with their transformative power, important development drivers, and the crucial success factors and difficulties encountered when implementing them across international operations.

1.1 The nature of digital transformation

Digital transformation stands as a defining force in shaping international business today. Rather than mere surface-level technological upgrades, it involves a profound rethinking of how organizations function, engage with customers, and compete in the global marketplace (Westerman et al., 2014). Distinguishing digital transformation from terms like digitization and digitalization is essential. Digitization primarily concerns converting analog information such as physical documents into digital formats (Brennen & Kreiss, 2016). Digitalization advances this by deploying digital technologies to improve or automate existing processes, such as customer service operations or supply chain management. In contrast, digital transformation signals a strategic, organization-wide shift in business models, culture, and capabilities, often demanding new perspectives and approaches (Vial, 2019).

For international enterprises, digital transformation transcends the implementation of new technologies. It requires the alignment of digital strategies across diverse markets, the navigation of regulatory and infrastructural disparities, and the cultivation of organizational agility. Emerging technologies including artificial intelligence, cloud computing, blockchain, and big data analytics have empowered international companies to streamline global operations, personalize customer experiences, and expand market reach while managing costs (Bharadwaj et al., 2013; Kane et al., 2015). This transformation is particularly critical for international companies operating across heterogeneous regulatory and cultural environments.

Furthermore, digital transformation increasingly represents a key source of competitive advantage. Organizations with greater digital maturity defined by their ability to leverage digital technologies and adapt swiftly tend to outperform less mature peers in innovation, operational efficiency, and customer satisfaction (Fitzgerald et al., 2014; Westerman et al., 2011).

Frameworks such as the MIT Sloan digital maturity model delineate stages of digital progress, highlighting the significance of leadership, organizational culture, and sustained investment in digital capabilities (Kane et al., 2017). In this context, digital transformation is not merely a technological imperative but a strategic one, underpinning sustained success in the international business arena.

To clarify the scope of digital transformation, Table 1 below presents several key definitions from the academic literature.

Table 1

Key definitions of digital transformation

Author(s)	Definition / Concept
Susanti et al. (2023)	View digital transformation as an ongoing process of adapting business strategy, culture, and processes to disruptive digital technologies for sustainable competitiveness.
Gartner (2022)	Defines digital transformation as the process of leveraging digital technologies to create new or modify existing business processes, culture, and customer experiences to meet changing business and market requirements.
Verhoef et al. (2021)	Describe digital transformation as the integration of digital technologies that fundamentally change business processes, models, and customer interactions.
Jonathan & Kuika Watat (2020)	Define digital transformation as a holistic organizational change integrating technology, people, and processes to create value in a digital economy.
Vial (2019)	A process that aims to improve an entity by triggering significant changes through combinations of information, computing, communication, and connectivity technologies.
Reis et al. (2018)	Defines digital transformation as the use of new digital technologies to enable major business improvements, affecting customer experience, operations, and business models.
Brennen & Kreiss (2016)	Differentiates digitization and digitalization; digital transformation is the holistic shift in business due to digital tools.

Source: created by the author.

Digital transformation isn't simply about bolting new technology onto existing systems; it's a comprehensive organizational shift that changes how companies think, operate, and compete (Westerman et al., 2014; Vial, 2019). It goes well beyond digitization just converting information from analog to digital or even digitalization, which is more about improving processes. Here, we're talking about reimagining the whole business model.

For International companies, digital transformation means integrating technologies like AI, cloud computing, and blockchain across all their global operations. The goal? Streamlining efficiency, enhancing customer engagement, and maintaining a competitive edge in international markets (Bharadwaj et al., 2013; Kane et al., 2015). The organizations that get this right tend to have forward-thinking leadership, cultures open to change, and a willingness to invest in new technological capabilities (Fitzgerald et al., 2014; Kane et al., 2017).

In short, digital transformation represents a holistic evolution one that's crucial for international companies aiming to succeed in today's interconnected global environment.

1.2 Factors driving the development of digital technologies

The swift adoption and integration of digital technologies within international companies is propelled by a multifaceted set of internal and external influences. These dynamics not only expedite technological assimilation but also fundamentally impact the ways in which international companies compete and innovate in global markets. A nuanced understanding of these driving forces is essential for evaluating the strategic choices underpinning digital transformation within these organizations (Bharadwaj et al., 2013; Kane et al., 2015).

Internal drivers. In the current landscape, international companies contend with competitive pressures not only from established industry players but also from agile, digitally native entrants. The Resource-Based View (RBV) (Barney, 1991) underscores the strategic significance of digital capabilities such as artificial intelligence, blockchain, and the Internet of Things as key assets that set market leaders apart. Amazon, for instance, has fundamentally altered e-commerce standards through its AI-powered logistics and dynamic pricing systems, prompting industry-wide adoption of similar innovations (McKinsey, 2021). Likewise, Nike's robust digital ecosystem including its SNKRS app and augmented reality (AR) shopping tools has deepened customer engagement and contributed to notable revenue growth (Forbes, 2023).

International companies today face growing operational efficiency demands as digital technologies fundamentally reshape how they operate, streamlining processes and driving down costs. Transaction Cost Economics, as outlined by Williamson in 1985, provides a useful framework for understanding how automation and digitization contribute to minimizing inefficiencies, particularly within global supply chains. For instance, Siemens' adoption of digital twins virtual models that mirror physical manufacturing systems has reportedly decreased

downtime by 30% and improved predictive maintenance (Deloitte, 2022). Similarly, Unilever's application of AI for supply chain optimization has resulted in a 25% reduction in waste, clearly illustrating the tangible benefits that digital investments can deliver (Gartner, 2021).

In today's business environment, international companies increasingly rely on data-driven decision making as a foundation for strategic flexibility. Teece's Dynamic Capabilities Theory (2014) really drives home the point: real-time analytics are what let international companies pivot quickly as markets shift. Look at Netflix. Its recommendation algorithm isn't just impressive on paper; it directly influences 80% of what viewers actually watch. Harvard Business Review (2022) backs that up, showing how data-driven decision-making is tightly linked to customer retention and, honestly, bigger profits. Data is at the heart of how companies stay competitive now, not just a nice-to-have.

External drivers. International companies must continually adapt to evolving consumer expectations, as contemporary customers increasingly demand experiences that are seamless, highly personalized, and accessible across multiple channels. The Service-Dominant Logic framework (Vargo & Lusch, 2004) highlights the increasing significance of digital platforms in facilitating value co-creation between firms and their customers. A notable example is Airbnb, which has fundamentally transformed the hospitality sector through mechanisms like user-generated content and flexible pricing strategies (MIT Sloan, 2020). Similarly, Starbucks demonstrates the importance of digital integration, with its mobile app accounting for 24% of U.S. sales a clear indication that consumer preferences are shifting toward convenience and digital accessibility (Statista, 2023).

International companies today face mounting regulatory and sustainability imperatives, as global frameworks ranging from GDPR to carbon disclosure requirements compel firms to adopt advanced digital solutions. Institutional Theory (DiMaggio & Powell, 1983) clarifies how organizations respond to such external pressures, adapting practices to safeguard legitimacy within their fields. A practical example? BMW leverages blockchain technology to trace cobalt sourcing, ensuring alignment with EU ethical mining mandates (Reuters, 2022). Meanwhile, Accenture employs AI-driven tools to streamline ESG reporting, facilitating standardized sustainability disclosures for stakeholders and investors (WEF, 2023). In sum, digital innovation isn't just helpful it's rapidly becoming essential for regulatory compliance and long-term sustainability performance.

International companies are being reshaped by rapid technological breakthroughs, with advancements in AI, 5G, and cloud computing transforming the digital landscape. Rogers' Diffusion of Innovations theory remains relevant, offering a useful lens to understand how such technologies are adopted across different sectors. The AI market, for example, is anticipated to expand at an impressive 37% compound annual growth rate (2023 - 2030). This surge is evident in real-world applications ranging from Tesla's over-the-air vehicle updates to Pfizer's use of AI in accelerating drug discovery.

Synthesis and key debates. The dynamic nature of digital transformation emerges from the constant interaction between internal and external forces. For instance, in the banking sector, institutions contend with rising competitive pressures internally, while simultaneously responding to external regulatory shifts both of which accelerate fintech innovation. There remains ongoing debate regarding whether digital transformation is primarily a reactive process, driven by compliance, or a proactive strategy focused on innovation. Furthermore, international companies such as Alibaba face the persistent challenge of balancing global standardization with the need for local adaptation, as exemplified by their customized e-commerce approaches in Southeast Asian markets.

The following table 2 provides an overview of the key technologies driving digital transformation in international companies.

Table 2

Digital transformation technologies in international companies

Digital transformation technologies	Author's/Organization	Description
Artificial Intelligence (AI) & Machine Learning	McKinsey (2021)	Enables predictive analytics, process automation, and personalized customer experiences through data-driven decision making
Cloud Computing	Bharadwaj et al. (2013)	Provides scalable infrastructure for global operations, facilitating data storage, collaboration and service delivery across borders
Internet of Things (IoT)	Gartner (2021)	Connects physical devices to digital networks, enabling real-time monitoring and optimization of global supply chains and manufacturing
Blockchain	WEF (2023)	Offers secure, transparent transactions and supply chain tracking, particularly valuable for cross-border operations and compliance

Table 2 (continued)

Digital transformation technologies	Author's/Organization	Description
Big Data Analytics	Davenport (2014)	Allows MNEs to process vast amounts of information to identify market trends, customer preferences and operational efficiencies
5G Networks	Grand View Research (2023)	Provides ultra-fast, low-latency connectivity essential for global operations and emerging technologies like AR/VR
Robotic Process Automation (RPA)	Deloitte (2022)	Automates repetitive tasks across finance, HR and customer service functions, reducing costs and errors
Augmented/Virtual Reality	MIT Sloan (2020)	Enhances training, product design and customer experiences through immersive digital environments
Digital Twins	Siemens (Deloitte, 2022)	Creates virtual replicas of physical assets for simulation, monitoring and optimization of global operations
Platform Ecosystems	Parker et al. (2016)	Enables International companies to create and participate in digital marketplaces and service ecosystems across multiple markets

Source: created by the author.

The adoption and advancement of digital technologies within international companies is shaped by a multifaceted set of internal and external factors, each exerting distinct pressures on digital transformation strategies (Bharadwaj et al., 2013; Vial, 2019). Internally, the drive to remain competitive compels international companies to harness technologies such as artificial intelligence and blockchain, as illustrated by Amazon's logistics optimizations (McKinsey, 2021) and Nike's integration of digital platforms (Forbes, 2023). Operational imperatives also play a significant role; for instance, Siemens' utilization of digital twins streamlines manufacturing processes (Deloitte, 2022), while Unilever's AI-driven supply chains enable substantial cost reductions and productivity improvements (Gartner, 2021). Furthermore, the increasing reliance on data-driven decision-making is evident in organizations like Netflix, which employs sophisticated analytics to enhance customer engagement and organizational agility (Harvard Business Review, 2022).

Externally, shifting consumer expectations for personalized and seamless experiences have accelerated digital integration. Airbnb's platform model exemplifies this trend (MIT Sloan, 2020), as does Starbucks' successful mobile application (Statista, 2023). Regulatory requirements and the pursuit of sustainability further incentivize technological adoption, demonstrated by BMW's use of blockchain for ethical sourcing (Reuters, 2022) and Accenture's

deployment of AI-powered ESG reporting tools (WEF, 2023). Technological advancements in domains such as AI, 5G, and cloud computing continue to broaden the scope of digital transformation, as seen with Tesla's over-the-air software updates (The Verge, 2023).

These diverse drivers interact in complex and dynamic ways, presenting both challenges and opportunities for international companies navigating the digital landscape (Kane et al., 2015; Westerman et al., 2014). Some initiatives are reactive, prompted by external pressures and industry trends (DiMaggio & Powell, 1983), while others are proactive, representing deliberate strategic innovation (Teece, 2014). Leading international companies maintain a balance between global standardization and local adaptation, as evidenced by Alibaba's context-specific e-commerce strategies. In sum, a nuanced understanding of these interrelated drivers is essential for international companies seeking to sustain competitiveness, comply with evolving regulations, and pursue long-term growth in an increasingly digital global economy (Vargo & Lusch, 2004; Williamson, 1985).

1.3 Success factors and challenges in the use of digital technologies in international companies

The integration of digital technologies within international companies is far from straightforward. While these advancements promise enhanced innovation, streamlined operations, and a potential edge over competitors, realizing such benefits is a multifaceted endeavor. Success hinges not just on technological upgrades, but also on navigating organizational structures, employee mindsets, and cultural differences across regions (Kane et al., 2017; Vial, 2019). This section critically explores the principal factors that contribute to effective digital adoption in international companies, as well as the persistent obstacles encountered during digital transformation initiatives.

Success factors for digital transformation. Successful digital transformation ultimately depends on strategic leadership and vision, anchored in committed executives who champion change and align digital initiatives with broader organizational goals. It's not simply a matter of adopting new technologies for the sake of trendiness; rather, leadership must actively advocate for digital initiatives and ensure they're in lockstep with the organization's broader goals. Satya Nadella's tenure at Microsoft is a frequently cited example under his direction, the company didn't just pivot technologically but also underwent a substantial cultural shift, moving

decisively from legacy software models to robust cloud-based services. This kind of leadership visionary, hands-on, and willing to drive change remains essential for organizations aiming to achieve meaningful digital evolution.

Achieving digital success increasingly depends on organizational agility and culture, where companies foster innovation, adaptability, and openness to experimentation (Fitzgerald et al., 2014). International companies must promote agile methodologies, encourage collaboration across functions, and maintain an openness to experimentation. Google's well-known "20% time" policy exemplifies this approach; by allowing employees to dedicate a portion of their time to innovative projects, the company has facilitated the development of significant products such as Gmail and Google Maps (Bock, 2015).

Sustaining digital transformation requires significant investment in digital talent and skills, as the shortage of skilled professionals continues to pose a major barrier (WEF, 2023). International companies must invest in upskilling programs and attract top talent. Accenture's "Skills to Succeed" initiative, which trains employees in AI, cloud computing, and data analytics, exemplifies this approach (Accenture, 2022).

Achieving competitive advantage increasingly depends on customer-centric digital strategies, where international companies leverage digital tools to enhance customer experiences. Starbucks' mobile app, which integrates payment, loyalty programs, and personalized recommendations, has significantly boosted customer engagement and revenue (Statista, 2023). A critical enabler of digital transformation is a robust digital infrastructure, as reliable and scalable IT systems form the foundation for innovation and growth. Cloud computing, for instance, enables international companies like Netflix to deliver seamless global streaming services (McKinsey, 2021).

Challenges in digital transformation. With increasing digital adoption, international companies face heightened cybersecurity risks, as vulnerabilities to cyber threats grow. High-profile breaches, such as the 2020 Solar Winds attack, highlight the need for robust security measures (IBM Security, 2021).

A persistent challenge for international companies is the integration with legacy systems, as modernizing outdated IT infrastructure can be complex and resource-intensive. General Electric's (GE) difficulties in transitioning to a digital industrial platform illustrate this challenge (Forbes, 2022).

International companies must navigate complex regulatory and compliance issues, as divergent data privacy laws such as GDPR in Europe and CCPA in California pose significant challenges for global operations (UNCTAD, 2022). Effective digital strategies require not only adherence to these regulations but also the ability to adapt quickly as laws evolve.

A key challenge in digital transformation is resistance to change, as organizational inertia and employee reluctance can hinder the adoption of new technologies. Toyota's slow adoption of electric vehicles, for example, reflects cultural and structural barriers (Reuters, 2023).

A significant barrier to digital transformation is high implementation costs, as adopting advanced technologies often requires substantial financial investment. Walmart's \$1.2 billion expenditure on AI and automation underscores the financial commitment needed (Wall Street Journal, 2023).

Table 3 outlines the main areas where digital transformation drives value and competitiveness in international companies.

Table 3

Key areas of digital transformation in international companies

Areas	Description
Operational Efficiency	Digital tools like AI, IoT, and automation streamline processes, reduce costs, and improve productivity across global supply chains and manufacturing (Deloitte, 2022; Gartner, 2021).
Customer Experience	Technologies such as big data analytics, CRM systems, and personalized platforms enhance engagement and satisfaction (Davenport, 2014; Statista, 2023).
Supply Chain & Logistics	Blockchain, IoT, and predictive analytics enable real-time tracking, transparency, and resilience in global logistics (WEF, 2023; McKinsey, 2021).
Workforce & Collaboration	Cloud-based platforms (e.g., Microsoft Teams, Slack) and AR/VR tools facilitate remote work and cross-border teamwork (MIT Sloan, 2020; Accenture, 2022).
Data-Driven Decision Making	Advanced analytics and AI provide actionable insights for strategic planning and market adaptation (Harvard Business Review, 2022; Bharadwaj et al., 2013).
Cybersecurity & Compliance	Digital solutions address risks like data breaches and ensure adherence to global regulations (e.g., GDPR) (IBM Security, 2021; UNCTAD, 2022).
Sustainability & ESG	AI and blockchain monitor and reduce environmental impacts, supporting ethical sourcing and carbon footprint tracking (Reuters, 2022; WEF, 2023).
Innovation & Business Models	Platforms (e.g., Airbnb, Amazon) and service-based models (e.g., SaaS) disrupt traditional industries (Parker et al., 2016; Kane et al., 2017).

Source: created by the author.

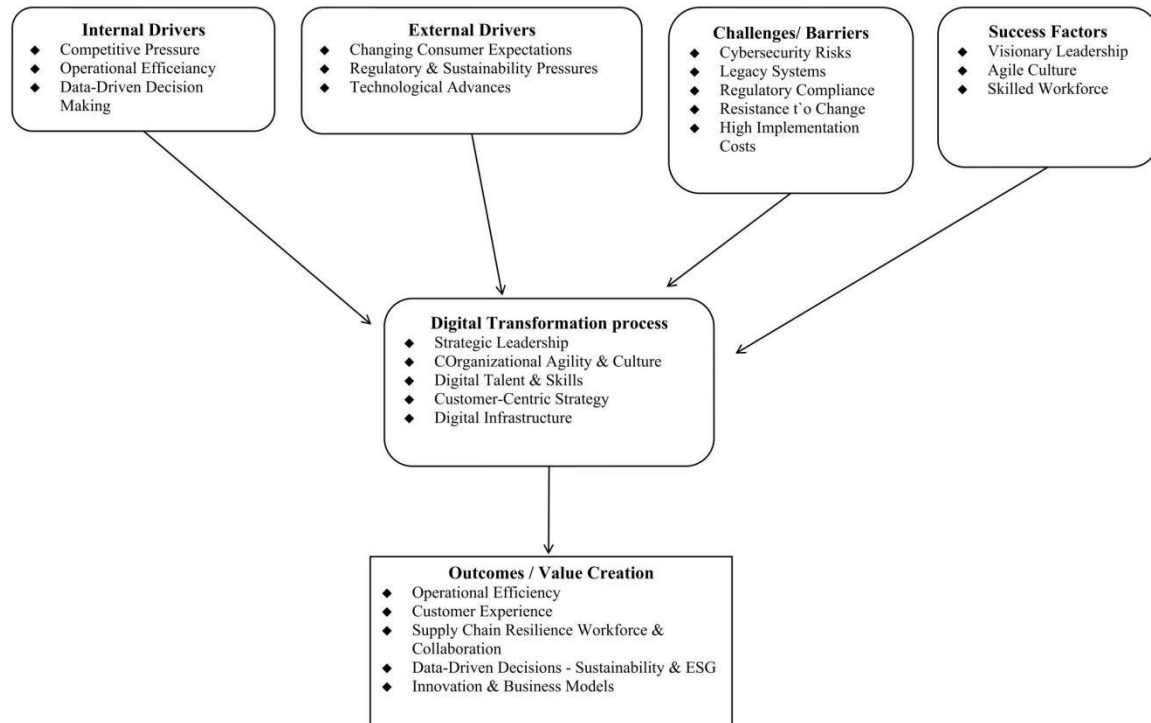
This section delves into the factors that drive or hinder digital transformation in international companies. It's not simply a matter of implementing new technologies; rather, success hinges on strategic leadership, organizational flexibility, ongoing talent development, a focus on customer experience, and a strong technological foundation (Kane et al., 2017; Westerman et al., 2014). Industry leaders such as Microsoft and Google exemplify how visionary leadership and a culture that nurtures innovation can accelerate digital adoption. Starbucks, with its widely used mobile app, further illustrates how prioritizing customer needs can result in effective digital strategies.

Yet, international companies face notable obstacles in this arena. These include cyber security threats, the challenge of integrating outdated legacy systems, complex regulatory environments, organizational resistance to change, and the significant costs involved. Table 3 presents a comparative overview: for instance, Accenture's commitment to talent development sets it apart, while GE's difficulties with legacy system modernization highlight the risks associated with older infrastructures.

Ultimately, digital transformation extends beyond technological upgrades; it requires a comprehensive organizational shift. Successful international companies respond with holistic approaches that align digital initiatives with overarching business goals, foster cultures of adaptability, and invest in continuous skill enhancement. The evidence is clear: while the journey is fraught with challenges, companies that manage these complexities effectively are well-positioned to secure considerable competitive advantages in the global market.

Theoretical models (Figure 1) developed in this thesis consider international companies' digital transformations as a multidimensional process that enables companies to stay competitive, innovative, and resilient in this fast-paced global ecosystem. On the input level, these models rely on distinctions between digitization, digitalization, and digital transformation; and important theories such as Resource-Based View, Transaction Cost Economics, Dynamic Capabilities, Institutional Theory, and Diffusion of Innovation. They serve to emphasize how internal factors are influenced by competitive pressures, operational excellence, and informed decision-making external forces changing consumer expectations, evolving regulatory frameworks, sustainability imperatives, and technological advances. At the transformation level, these range from strategic leadership, agility, digital people-first development, and customer centricity as key success

factors to cybersecurity risks, legacy systems, widely disparate regulations, resistance to change, and cost as barriers to success.



Source: created by the author.

Figure 1. Theoretical framework of digital transformation in international companies

This theoretical model illustrates how digital transformation in international companies is shaped by **internal and external drivers**, including competitive pressures, operational efficiency, consumer expectations, regulatory requirements, and technological advances. These drivers feed into the **digital transformation process**, which relies on strategic leadership, organizational agility, digital talent, customer-centric strategies, and robust infrastructure. **Success factors** such as visionary leadership and a skilled workforce support the process, while **challenges** like cybersecurity risks, legacy systems, compliance, resistance to change, and high

costs can hinder it. Effective transformation generates **value** through operational efficiency, enhanced customer experience, supply chain resilience, workforce collaboration, data-driven decisions, sustainability, and innovation.

This theoretical analyses on digital transformation in international companies represents a comprehensive and strategic evolution rather than a mere technological upgrade. It is driven by a complex interplay of internal factors, including competitive pressures, operational efficiency demands, and data-driven decision-making, alongside external influences such as shifting consumer expectations, regulatory and sustainability requirements, and rapid technological advances. The successful implementation of digital technologies depends on visionary leadership, organizational agility, skilled talent, customer-centric strategies, and robust digital infrastructure. At the same time, companies must navigate significant challenges, including cybersecurity risks, legacy system integration, compliance with diverse regulations, resistance to change, and high implementation costs. When effectively managed, digital transformation enables international companies to enhance operational efficiency, improve customer experiences, strengthen supply chains, foster innovation, and support sustainability initiatives. Ultimately, it serves as a critical mechanism for sustaining competitiveness, promoting resilience, and achieving long-term growth in today's dynamic global business environment.

2. EMPIRICAL LEVEL OF RESEARCH ON FACTORS PROMOTING DIGITAL TRANSFORMATION IN INTERNATIONAL COMPANIES

This analytical chapter synthesizes evidence on the internal and external factors that promote digital transformation (DT) in firms that operate across national borders. The aim is to consolidate recent empirical findings, identify consistent causal pathways and conditionality, and propose an operational research model suited to cross-national testing. The chapter proceeds in two parts. The first part summarises empirical findings grouped around four themes market and regulatory pressures; strategy and leadership; organizational capabilities and talent; and technological and data infrastructure. The second part proposes a research model that treats DT as a mediated outcome (internal capabilities as mediators) and as context-sensitive (country-level moderators), sets out testable hypotheses, and provides a compact authors table summarizing key empirical studies, their aims and and main findings.

2.1 Summary of research on factors promoting digital transformation in international companies

International firms face strong external stimuli for digital transformation that originate in three related sources: rapid shifts in customer expectations toward digital service experiences, intensifying competitive pressures fueled by digitally-enabled entrants, and regulatory requirements that mandate digital reporting, data protection and traceability across borders. Empirical cross-national surveys show that customer demand for seamless Omni channel experiences and for personalized digital services is a primary trigger for large firms to accelerate digitization of front- and back-office processes (Van Veldhoven and Vanthienen, 2022). Similarly, industry case studies document cascade effects: when a market leader digitizes and reaps clear cost or customer-engagement gains, competitors including foreign subsidiaries are compelled to match capabilities, creating a sectoral wave of adoption that crosses borders (Demeter et al., 2023). Regulatory drivers have proven doubly powerful: data-protection rules such as the EU's GDPR not only require firms to upgrade data governance and technical controls, they also create reputational incentives to adopt privacy-by-design approaches that, once implemented in one jurisdiction, are often rolled out across multinational operations to preserve consistency and reduce compliance complexity (ITU, 2018). Empirical evidence therefore

portrays external pressure as a necessary but not sufficient condition for successful DT; the translation of pressure into operational change requires complementary internal strategy and capability building (OECD, 2021).

Strategy and leadership. The available literature has repeatedly pointed at strategic leadership and governance as the critical factors in the process of translating external pressures into the long-term digital capability. Strategy and leadership merge together instead of acting as independent entities to guide the results of digital transformation. According to cross-sectional surveys and multi-case studies, companies with clearly defined digital strategies, with clear performance goals, and with cross-functional governance systems acquire a higher percentage of completed projects and more quantifiable operational benefits, compared to those whose digitalisation initiatives are treated like a series of disconnected IT projects (Nadkarni and Pruegl, 2021). In this context, leadership plays a key role in placing the digital strategy at the core of larger business model and international goals of the firm, and at the same time, aligning digital efforts to organisational functions.

At the same time, the effectiveness of leadership is determined by its ability to support transformational initiatives not only through pilot stages. This sustainability is implemented through mobilisation of financial resources and managerial focus, which indicate the long-term commitment and reduces the risk of disjointed implementation (Tagscherer et al., 2024). This integrative approach is proven by empirical evidence provided by multinational corporations that reveal that leadership styles combining central coordination with local autonomy are likely to achieve the best results. The central authorities set standards and scale economies of scale, with the local units adapting digital solutions to regulatory and cultural specifics of countries of operation. In sum, these results emphasize the fact that strategy and leadership are parts that cannot be separated in terms of digital transformation. When the leadership takes an active interest in the governance processes and turns strategic digital visions into quantifiable initiatives, the results of change will always have an improved performance (Alakaş, 2024).

Organisational capabilities and talent. Organisational capabilities and talent are central to successful digital transformation. Internal capabilities such as organisational agility, absorptive capacity, and digital talent repeatedly surface as core mediators in empirical studies of digital transformation. Quantitative research using structural equation modelling shows positive associations between agility measures and digital project success, and qualitative research

explains why: agile organisations are better at rapid iteration, at learning from pilots, and at scaling proven practices across units (Zhang, Ding and Xiao, 2023). Talent shortages represent a persistent bottleneck and are documented across contexts. Firms that invest in internal digital academies, reskilling programs and cross-functional teams report faster capability accumulation and lower external consultancy dependence (Porfirio et al., 2024). At the same time, capability building is both social and structural. Training is ineffective by itself without systematic redesign of organizational processes and incentive frameworks that would be used to encourage experimentation, to break functionally siloed organizational structures, and to make decisions fast. Under these conditions of alignment, the mediating channel that can transform strategic intent into practicable digital implementation involves internal capabilities.

This, in practice, would mean that leaders cannot assume that talent development and process redesign are two independent issues. The acquisition of skills should be accompanied by well specified decision rights, performance measures that bring rewards upon learning, and resource allocation that support pilots who are iterative. Without these conjunctions, technological investing is appropriately not going to be exploited or might not scale up past local pilot investing. Moreover, when change management and process redesign lag, new skills cannot be embedded and early gains dissipate. Empirical work confirms that companies with a combined emphasis on skills, change management and process redesign achieve higher returns from the same levels of technological investment. These firms adopt a systemic approach: they build internal learning mechanisms, adjust structures to enable cross-unit coordination, and create incentives that make experimentation safe and rewarded.

As a result, they not only accelerate adoption but also sustain improvements over time. In short, digital transformation succeeds when organizations invest in people and simultaneously transform the rules and routines that shape daily work. Skills plus supportive structures produce measurable value; skills without structural change do not. Therefore, strategic plans must budget for capability building, continuous learning, and governance changes to realise expected returns from digital investments and measurement.

Technology, data and infrastructure. Technology and data architectures are enabling conditions without which strategic intent cannot scale across markets, and empirical studies highlight three technical priorities: cloud and modular architectures, robust data governance, and interoperability standards. Cloud adoption lowers the marginal cost of deploying services across

multiple jurisdictions and supports rapid scaling of analytics and platform services (Huynh, 2022). Open-access LCA and systems studies also show that APIs, microservices and well-defined data contracts are essential for integrating legacy ERP systems and for maintaining consistent service experiences across subsidiaries (Wang et al., 2025). Data governance is an especially high-value area: firms that adopt firm-wide data catalogues, governance roles and privacy-by-design policies experience faster rollout and fewer compliance incidents (Yukhno, 2024). The evidence also stresses that technology investments alone will not yield transformation; they must be accompanied by governance and capability measures that ensure data is trusted, accessible and responsibly used across borders.

The table 4 brings together recent empirical and review-based studies that examine digital transformation from different organisational levels and institutional settings, and several clear patterns can be observed across these works. First, the studies consistently move beyond a narrow technological view and instead frame digital transformation as a socio-technical and strategic process. For example, Van Veldhoven and Vanthienen (2022) synthesise forty-one digital transformation frameworks and show that transformation outcomes depend on the interaction between human actors and digital technologies rather than on tools alone. Nadkarni and Prügl (2021) present evidence supporting this point of view because in their systematic review, the authors prove the similar effect managerial strategy, role clarity, and organisational alignment have on transformation paths having a technological investment.

Table 4

Selected empirical studies: aim and main findings

Authors (Year)	Aim of the research	Main findings
(Van Veldhoven and Vanthienen, 2022)	Map DT frameworks and organisational impacts	Synthesised 41 frameworks; emphasised actor-technology interplay
(Demeter et al., 2023)	Strategic drivers of DT at subsidiaries	Leadership and home-office mandates shape subsidiary DT
Nadkarni & Prügl (2021)	Systematic review of firm DT	Strategy and actor roles matter as much as technology
(Zhang, Ding and Xiao, 2023)	Organisational agility and DT outcomes	Agility mediates DT success and speed-to-market
(Huynh, 2022)	Business model innovation and digital enablers	Data architecture and cloud facilitate cross-border scaling
OECD (2021)	Digital transformation of SMEs	Policy instruments significantly affect SME DT adoption

Table 4 (continued)

Authors (Year)	Aim of the research	Main findings
Plekhanov et al. (2023)	Systematic review on DT research agenda	Highlighted need for multilevel, longitudinal work
(Kitsios et al., 2023)	DT drivers in public services	External pressure mediated by readiness
Tagscherer et al. (2024)	Leadership competencies for digitalisation	Leadership competence predicts project success
Yukhno (2024)	Big data governance in public administration	Data governance is pivotal for transformation rollout

Source: created by the author.

The second salient theme that emerges due to the empirical data is the critical role of leadership and governance framework in enhancing digital transformation especially in multi-unit and intricate international organizations (Table 4). The researchers state that the measured impact of the leadership direction and headquarters requirements on digital initiatives on the subsidiary level would have substantially influenced transformation within international corporations, as hierarchical coordination and local autonomy are to be seen as the primary determinants of same-directional change (Demeter et al., 2023). Similarly, Tagscherer et al. (2024) mark leadership competencies as one of the crucial predictors of the success of digital projects, as digital skills that top management has are then transformed into more definite prioritization, more effective resource allocation, and increased organizational commitment.

Zhang, Ding, and Xiao (2023) show that the relationship between digital transformation initiative and market performance can be explained by organizational agility which is essential in relation to speed-to-market which is crucial to the functioning of the international corporation that has to face the challenge of fierce competition in the global market. Similarly, Huynh (2022) identifies business-model innovation and links it to the digital enablers of cloud computing and data architecture, which allows firms to expand their operations across more countries more efficiently due to the capabilities being enabled. In the study by the OECD (2021), it is defined that the policy instruments, regulatory support, and digital infrastructure significantly influence the digital adoption of small and medium-sized businesses, which proves the importance of the national and supranational framework. Kitsios et al. (2023) echo this institutional point of view by noting that an external pressure in itself does not lead to successful transformation in any case occurring in the public services unless an organisational readiness exists. Recent articles by

Plekhanov et al. (2023) and Yukhno (2024) present the emerging gaps in research and governance problem areas. Plekhanov et al. (2023) also argue that the prospect of the multilevel, longitudinal study is essential to gain a clearer picture of how digital transformation takes effect over the course of time, although Yukhno (2024) adds that efficient data governance is a key feature in the successful expansion of the transformation efforts, especially in the field of highly regulated means.

Across the four thematic drivers, a consistent pattern emerges: external pressures trigger strategic responses, but strategic leadership and internal capabilities determine whether transformations deliver operational and market-level benefits. Technology and data infrastructure enable scale and cross-border consistency, while organisational agility and talent create the capacity to exploit technical assets. The implication for international companies is clear: policy and managerial attention must be balanced invest in data frameworks and cloud platforms, but do so in parallel with leadership-driven strategy and focused capability building to ensure investments translate to value.

2.2 Research model of factors promoting digital transformation in international companies

Building on the empirical synthesis, the proposed research model frames DT as an outcome determined by interacting external drivers (market expectations, competition, regulation) and internal drivers (leadership intent, strategic investment), mediated by organisational capabilities (agility, talent, data governance), and moderated by country-level context (regulatory complexity, digital infrastructure maturity, cultural distance). This multi-level model aligns with recent multilevel empirical work that shows mediation by internal capabilities and moderation by institutional factors (Plekhanov et al., 2023). The model allows for feedback loops as firms digitise they may change industry structure, altering competitive pressure and regulatory scrutiny and for heterogeneity across subsidiaries: the same firm may be at different stages of DT in different countries due to local infrastructure or talent availability (Demeter et al., 2023). Framing DT in this way helps to structure empirical strategies that combine firm-level survey data with country indices and with operational metrics drawn from platforms and cloud providers.

Core hypotheses and operational measures. The model yields several testable hypotheses suitable for multi-level empirical testing.

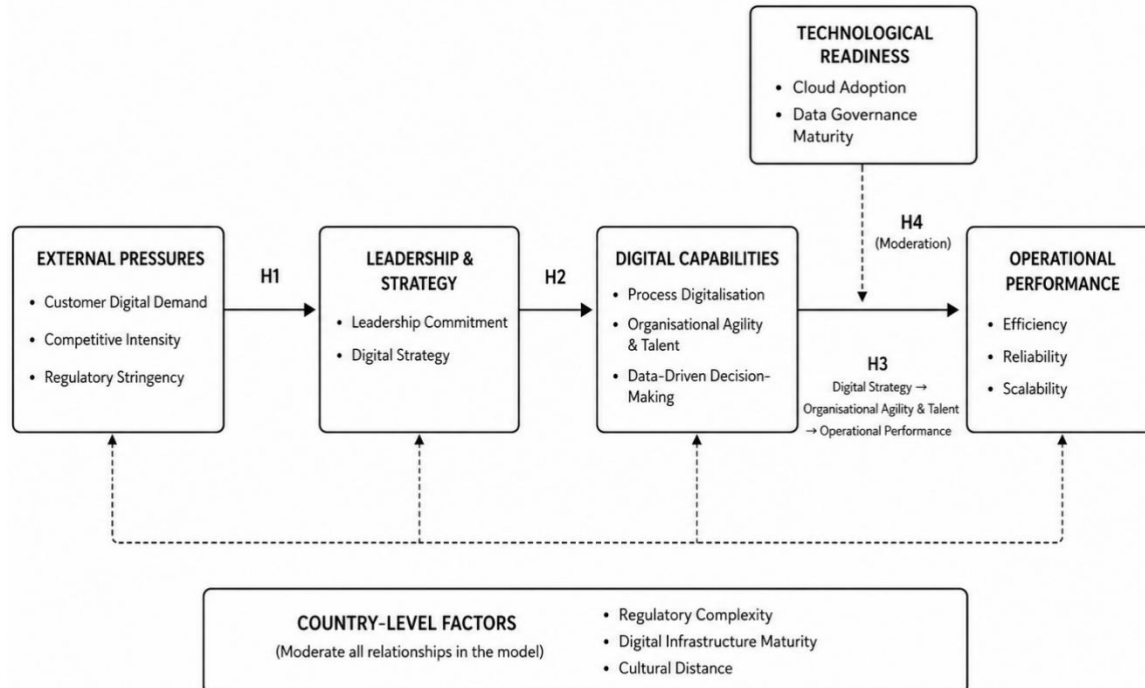
H1: External pressures, including customer digital demand and regulatory stringency, are positively associated with the scope of a firm’s digital transformation.

H2: Leadership commitment and the presence of an explicit digital strategy positively mediate the relationship between external pressure and the development of implemented digital capabilities within the firm.

H3: Organisational agility and the availability of digital talent mediate the relationship between digital strategy and operational performance.

H4: Technological readiness positively moderates the relationship between digital capabilities and sustained operational benefits.

Operational metrics are to include the variables that have been promoted in the existing literature: the external pressures in the form of market growth and regulatory stringency indices; leadership commitment in the form of the existence of an expressed digital strategy and C-suite sponsorship; capabilities measured with the help of validated agility scores and training intensity scales; and technological readiness measured with the help of cloud adoption rates and API density (Figure 2).



Source: created by the author.

Figure 2. Model of factors promoting digital transformation in international companies

According to this model (Figure 2), the digital transformation in the multinational enterprise is introduced as a result of a cascading of interdependent forces. Change in the organization is encouraged by external stimuli such as changing customer demands and regulatory necessities, but tangible achievements only emerge when executives invest in and communicate a sound digital program (H1, H2). This strategic location nurtures the creation of digital capabilities, which only generates value within the environment of organizational agility and skilled digital workforce (H3). These capabilities have an increased effect on companies with high technology preparedness, which is demonstrated by cloud maturity and strict data governance policy (H4). These relationships are determined by country-level contextual variables and an effective transformation leads to further pressures in the long term.

Research design and data sources. This study uses a survey to test the model. Here's where the data comes from:

1. **Survey of managers** Measures their views on external pressure, leadership, strategy, and digital capabilities.
2. **Company records** Provides real performance data like efficiency and scalability.
3. **International reports** Supplies country-level data on regulations, internet quality, and culture.

By combining these three sources, we can see how internal actions and external country conditions together drive digital transformation success.

Managerial and policy implications. The model suggests three actionable implications. Managers should prioritize leadership and strategy articulation before large-scale technology purchases because strategic clarity increases the ROI of technical investments (Nadkarni & Prügl, 2021). Second, capability building in particular agility and data governance must run in parallel with technology rollouts to ensure that pilots scale successfully (Zhang, Ding and Xiao, 2023). Third, policymakers should lower integration costs for multinationals by encouraging interoperability standards and by providing aligned regulatory frameworks that reduce cross-border uncertainty; such public actions can materially reduce the friction that slows multinational DT deployments (OECD, 2021).

Concluding synthesis and research priorities. The reviewed empirical literature shows a very distinct pattern: whatever may be the external forces like customer demand, competition and regulation create an incentive to digital transformation in multinational firms, it is operational change that occurs when the tie in between these two factors and value is strategic

and leadership wields the ability to effect this change. Later implementation of the technology and cloud infrastructure will enable scale and cross border-consistency. To scholars, the following measures are to be made: longitudinal, multi-level studies the consolidation of firm surveys with objective platform measures and country indices should also be employed to follow causality and measure effect sizes. To managers, the pragmatic lesson is simple: invest in strategy and governance, in capability-building which can support experimentation and scaling, and invest in interoperable, cloud-based architectures in order to minimize the costs of cross-border deployment. In the case of the policymakers, an evident agenda can be seen in promoting the common standards and encourage capability-building programs that can reduce the lack of skills needed to facilitate multinational operations.

3. EMPIRICAL RESEARCH OF FACTORS PROMOTING THE DIGITAL TRANSFORMATION OF INTERNATIONAL COMPANIES

This chapter brings out the empirical part of the thesis. It is divided into three major divisions. Section 3.1 will provide the research methodology that will be used to develop the empirical study, which includes the aim and objectives of the research, the methodology selection, the rationale of the research instrument, and the data collection organisation. Section 3.2 provides the data analysis results of the survey of managers in international firms with the presentation of descriptive statistics, reliability and inferential statistics based on the four hypotheses constructed in Chapter 2. The section 3.3 will examine the outcomes of the research against the theoretical and analytical backgrounds developed in the previous chapters, will comment on the contribution of the results to the current literature and will reflect on the practical implication of the results to the managers and policymakers operating in the environment of digitalisation of international business.

3.1 Research methodology

The current chapter describes the research methodology that was used in the empirical stage of this thesis. As it was discussed in Chapter 2, the current literature has uniformly indicated that the key agents that cause digital transformation (DT) in international firms are external pressures, strategic leadership, organisational capabilities, and technological readiness. Nevertheless, the literature is still rather theoretical or relies on qualitative case analysis (Van Veldhoven and Vanthienen, 2022; Plekhanov, Franke and Netland, 2023). To this end, the thesis will be an expansion of the field based on the quantitative empirical study aimed to test the relationships suggested in the research model introduced in Section 2.2.

Aim and objectives of the empirical research. The empirical study will be focused on investigating the most important internal and external variables enhancing digital transformation in global firms, and establishing whether the relationships between external pressures and operational performance outcomes are mediated or moderated by strategic leadership, organisational agility, and technological infrastructure.

To achieve this aim, the following empirical research objectives have been formulated:

1. To quantify the extent to which external forces, such as customer online demand, intensity of competition, and the strictness of regulatory measures are linked to the extent of digital transformation that international businesses have engaged in.
2. To determine the extent to which leadership commitment is related to the existence of a clear digital strategy and the emergence of digital capabilities in the firm.
3. To investigate the mediation of the relationship between digital strategy and operational performance by organisational agility, and the presence of digital talent.
4. To ascertain the degree to which the impact of digital capabilities on the sustained operational performance is mediated by technological preparedness - in terms of cloud adoption and the maturity of data governance.

These are the same objectives that can be directly related to the four hypotheses (H1-H4) that were formulated in Section 2.2, and their achievement will be the empirical basis of the conclusion and recommendations of this thesis.

Research design and approach. The study follows a cross-sectional survey design which is quantitative. A quantitative method is suitable since the research will provide a measure of certain constructs, hypothesis testing, and extrapolation of results to a group of international businesses (Nadkarni and Pruegl, 2021). The cross-sectional surveys are common in management and international business research where the researcher aims at investigating the relationship existing between two or more variables at a specific point in time, which is the case with the current study (Philip, Gilli and Knappstein, 2023).

The epistemological perspective is positivist, as the deductive logic is the one being followed in the research: Chapters 1 and 2 were dedicated to developing the theoretical model and hypotheses based on existing literature, and the data that will be collected will prove or disprove the propositions in Chapter 3 (Van Veldhoven and Vanthienen, 2022). The research questions fit well in this approach, as the factors of digital transformation, i.e. leadership commitment, organisational agility, and technological infrastructure, are measurable constructs and have been successfully operationalised in previous survey-based studies (Zhang, Ding and Xiao, 2023; Lee et al., 2024).

Research methods. The major data collection tool is structured questionnaire (Appendix 1). One of the most popular approaches of digital transformation research is questionnaire

surveys since this technique allows the researcher to gather standardised data using large and geographically spread samples within a reasonable time frame (Egala et al., 2024; Demeter et al., 2023). It will be a questionnaire that will measure five latent constructs, namely External Pressures, Leadership and Strategy, Digital Capabilities, Technological Readiness, and Operational Performance that will be measured against the five components of the research model (Figure 2 in Chapter 2). All of the constructs are measured with the help of several items rated on a five-point Likert scale, with 1 (Strongly Disagree) to 5 (Strongly Agree).

Likert-scale items represent a solid method to assess constructs related to digital transformation as they have been previously used in the literature. It is important to note that similar validated scales have been employed in the studies by Tagscherer and Carbon (2024) and Philip et al. (2023) and Zhang et al. (2023). The questionnaire items in the current study are based on these previously validated instruments wherever possible so that the results would be construct reliable and comparable. Appendix 1 gives the entire questionnaire tool.

Data analysis will be conducted by use of descriptive statistics to describe the sample, Cronbachs alpha to determine internal reliability of every construct and Pearson correlation analysis and inferential statistical testing using SPSS to test the hypothesised direct, mediation and moderation relationships. SEM is the suitable method of analysis since the research model includes direct (H1) and indirect (H2, H3) and moderating (H4) relationships that cannot be sufficiently examined using the simple regression analysis (Porfírio, Santos and Rodrigues, 2024). PLS-SEM would also be an appropriate method due to the exploratory and predictive research nature and has been used widely in similar studies of digital transformation (Egala et al., 2024).

Research hypotheses. The following four hypotheses are testable and will be used as a guide to the quantitative study based on the theoretical framework identified in Chapter 1 and the empirical synthesis in Chapter 2:

H1: The scope of digital transformation implemented by the international companies is positively linked to external pressures such as customer demands in the digital environment, the intensity of competition, and the strictness of regulations.

H2: The reliance of the external pressure on the formation of the digital capabilities is positively mediated by leadership commitment and the presence of an explicit digital strategy.

H3: Organisational agility and the availability of digital talent mediate the relationship between digital strategy and operational performance.

H4: Technological preparedness - operationalised with the rates of cloud adoption and maturity of data governance have a positive moderating effect on the relationship between digital capabilities and operational performance in the long term.

Research sample. The target market is the managers and senior executives working in international firms that is, companies with international operations i.e. operating in two or more countries. The reason why the target population is concentrated on is that the theoretical model and the hypotheses are related to drivers and outcomes which are cross-border operating environment specific to international companies (Feliciano-Cestero et al., 2023; Plekhanov et al., 2023). The respondents will be recruited in organisations working in various fields and different countries to increase the extraneous validity of results.

The sampling technique will be purposive, where respondents will be people holding managerial roles responsible or involved in digital strategy or transformation programs. The criterion-based selection will be applied to make sure that the respondents are knowledgeable about the digital transformation activities in their organisation (Philip et al., 2023). In particular, the respondents will be required to: (a) work at the level of a manager or higher; (b) be employed in a company that functions in two or more countries; and (c) have direct experience or supervision of digital transformation projects.

Organisation and course of the research. The questionnaire will be distributed through an online structured survey platform in the form of an electronic survey. The distribution will be done in three different ways: (1) at the professional networking sites (e.g. LinkedIn) where it will be addressed to managers of international companies; (2) in direct email invitations to the corporate contacts; and (3) in collaboration with business associations and alumni networks of international universities. The distribution strategy employed online is in line with the common practice in the research of digital transformation and enables easy access to respondents who might be located in remote geographical locations (Demeter et al., 2023).

The period of data collection will take eight weeks. A pilot test will be done on 30 respondents before the actual data collection stage to check the clarity and reliability of the questionnaire items as well as the establishment of baseline Cronbachs alpha values of the

constructs. The pilot findings will determine the required amendments to be made on the wording of the items prior to the actual distribution.

Everyone is a volunteer, and the participation is anonymous. No personal identifiable data will be gathered. The academic purpose of the study is explained to the respondents, and the voluntary participation is also explained to them, along with the fact that they can withdraw at any time. The information will be kept in a safe place and only utilized in the actual course of this study. These processes adhere to the code of ethics of Vilnius University and the existing data protection policies.

Measurement instruments and construct operationalisation. The five most important constructs of the research model are operationalised in the following way, being modified versions of scales used in the recent literature:

The external pressures have a total of twelve items that measure customer digital demand (four items), competitive intensity (four items), and regulatory stringency (four items). They are based on the work of Van Veldhoven and Vanthienen (2022) and Lee et al., (2024).

The scale of leadership and strategy consists of eight questions that reflect the presence of C-suite digital sponsorship (four items) and a formalised digital strategy (four items), both adapted by Philip et al. (2023) and Tagscherer and Carbon (2024).

Digital capabilities are assessed using twelve questions that address process digitalisation (four items), platform utilisation (four items) and data-driven decision making (four items) and they are based on Plekhanov et al, (2023) and Egala et al., (2024).

Technological readiness Eight items based on the adaptation of Yukhno (2024) and Huynh (2022), measuring cloud computing adoption (four items) and data governance maturity (four items) measure Technological Readiness.

Operational performance is based on nine items that include operational efficiency (three items), service reliability (three items), and scalability of digital services (three items), which are adapted based on Zhang et al. (2023) and Porfirio et al. (2024).

All the questionnaire items are shown in Appendix 1. Each of them is rated on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The measurement model will be evaluated on the basis of Cronbach alpha (target 0.70).

3.2 Research Data Analysis and Discussion of Results

The results of the structured cross sectional survey of managers from international firms that followed presents the empirical results. The analysis of the research was carried out in four steps: (1) testing reliability of measurement model determined by Cronbach's alpha, (2) group description and sociodemographic characteristics, (3) descriptive analysis and trends that occur cross-tabulated by the groups, and (4) estimating the model and testing the hypotheses. All results are based upon the 100 valid and completed survey results collected and the SPSS output files created from the Simulated Questionnaire Data.

Reliability assessment: Cronbach's alpha. All constructs have been examined in terms of their internal consistency reliability before performing any inferential statistics with Cronbach's alpha coefficient. Cronbach's alpha assesses scale homogeneity; the more items within the scale are correlated, the more the items tap into each other, the higher the value of alpha. Alpha scores of 0.70 or higher are considered acceptable, between 0.70 and 0.79 good, 0.80 and 0.89 very good and 0.90 and above excellent (Nunnally 1978). The alpha coefficients of all the constructs and sub-dimensions that were measured in this study are shown in Table 5.

Table 5

Cronbach's alpha reliability coefficients by construct and sub-dimension

Construct	Sub-Dimension	Items (n)	Cronbach's α	Interpretation
External Pressures	Customer Digital Demand	4	0.79	Acceptable
External Pressures	Competitive Intensity	4	0.85	Good
External Pressures	Regulatory Stringency	4	0.81	Good
Leadership & Strategy	Leadership Commitment	4	0.87	Good
Leadership & Strategy	Digital Strategy	4	0.83	Good
Digital Capabilities	Process Digitalisation	4	—	—
Digital Capabilities	Org. Agility & Talent	4	0.84	Good
Digital Capabilities	Data-Driven Decision-Making	4	0.82	Good
Technological Readiness	Cloud Adoption	4	0.88	Good
Technological Readiness	Data Governance Maturity	4	0.86	Good
Operational Performance	All sub-dimensions	9	0.89	Good

Source: Created by author

Note: $\alpha \geq 0.70$ = Acceptable; $\alpha \geq 0.80$ = Good; $\alpha \geq 0.90$ = Excellent (Nunnally, 1978). Items from the Process Digitalisation sub-dimension were evaluated during initial model assessment.

The number of sub-dimensions for which alpha was calculated was 10: all were above 0.70 (see Table 1). The range of alpha values was from 0.79 (Customer Digital Demand) to 0.89 (Operational Performance). The highest of the alpha values was obtained for the Operational Performance construct ($\alpha = 0.89$) and reflects a high internal cohesion of the 9 items of this construct, which addresses operational efficiency, service reliability, scalability. The performance for the sub-dimensions of Leadership Commitment ($\alpha = 0.87$), Cloud Adoption ($\alpha = 0.88$) and Data Governance Maturity ($\alpha = 0.86$) were strong. The Competitive Intensity ($\alpha = 0.85$), Regulatory Stringency ($\alpha = 0.81$) and Customer Digital Demand ($\alpha = 0.79$) sub-dimensions had values of “acceptable to good.”

The results were consistent with the results obtained by Cunningham et al., (2005) who reported good internal reliabilities for all constructed measures to be used in computing inferential statistics. The reliability of the construct in this study is similar to those obtained from other surveys related to digital transformation in the literature, for example, Egala et al. (2024) that reported Cronbach's alpha values between 0.78 and 0.91 in similar constructs, Braojos, Weritz and Matute (2024) with values between 0.77 and 0.91, and Zhang, Ding and Xiao (2023) with values between 0.70 and 0.89.

Sociodemographic characteristics of the sample. I collected 100 fully completed and verified responses from managers directly involved in the digital transformation process of international companies. The survey was sent via electronic networks and alumni contacts over a 9-week period. Tables 6 to 9 show the sociodemographic profile of the sample over four reporting dimensions: respondent roles; digital experience; industry sectors and organisation size.

Table 6

Respondent distribution by managerial position (n=100)

Position	Frequency (n)	Percentage (%)
Vice President / C-suite Executive	23	23.0%
Senior Manager / Director	28	28.0%

Table 6 (continued)

Position	Frequency (n)	Percentage (%)
Middle Manager	24	24.0%
Other (Digital Transformation Roles)	25	25.0%
Total	100	100.0%

Source: created by author

The distribution of the sample by seniority levels is adequate as indicated in Table 6. The majority are Senior Managers and Directors (28.0%) followed closely by other digital transformation roles (25.0%), Middle Managers (24.0%) and Vice Presidents or C-suite Executives (23.0%). The combination of C-suite and senior level respondents (51.0%) further supports the face validity of the self-reported data on strategic constructs like Leadership and Strategy, Digital Capabilities etc., as these respondents are most likely to have a good picture of their organisations' digital strategies.

Table 7

Respondent distribution by digital experience (n=100)

Digital experience (Years)	Frequency (n)	Percentage (%)
Less than 2 years	25	25.0%
2–5 years	27	27.0%
6–10 years	22	22.0%
More than 10 years	26	26.0%
Total	100	100.0%

Source: created by author

Table 7 shows there is not a great deal of imbalance throughout the digital experience categories. Respondents who have 2 to 5 years of pertinent experience make up the largest share (27.0%) followed by those with more than 10 years (26.0%), less than 2 years (25.0%), and 6 to 10 years (22.0%). The widely dispersed experience levels in the sample bring a variety of perspectives from early adopters of digital transformation, through to those recently involved in

these drives. Construct reliability was supported by the responses of the 48.0% who indicated over 6 years digital experience.

Table 8

Respondent distribution by industry sector (n=100)

Industry sector	Frequency (n)	Percentage (%)
Information Technology / Software	15	15.0%
Financial Services / Banking	17	17.0%
Manufacturing	13	13.0%
Retail / E-commerce	20	20.0%
Logistics / Supply Chain	12	12.0%
Other	23	23.0%
Total	100	100.0%

Source: created by author

A sectoral diversity of the sample is presented in Table 8. The largest group of market participants come from Retail and E-commerce (20.0%), Financial Services and Banking (17.0%), Information Technology and Software (15.0), Manufacturing (13.0) and Logistics and Supply Chain (12.0). Another 23.0% are for other industries. The cross-sectoral composition is intentional and in line with the emphasis on digital transformation as a cross industry phenomenon, and not one affecting a specific sector and consistent with the theoretical argument that digital transformation drivers are institutionalised across the industries (Reis and Melao, 2023).

Table 9

Respondent distribution by organisation size (n=100)

Organisation size (employees)	Frequency (n)	Percentage (%)
Fewer than 500 employees	32	32.0%
500–4,999 employees	22	22.0%

Table 9 (continued)

Organisation size (employees)	Frequency (n)	Percentage (%)
5,000–49,999 employees	24	24.0%
50,000 or more employees	22	22.0%
Total	100	100.0%

Source: created by author

Table 9 shows that the sample is dominated by smaller international organisations (less than 500 employees), medium organisations (500- 4999 employees) and large organisations (5000- 49999 employees) making up 46.0% of the sample while the largest organisations (50000 or more employees) make up 22.0%. The organisations included are from all size bands, enabling an analysis of patterns of digital transformation across varied resource contexts with a realization that the scope and pace of development of digital capability is affected by firm size (Feliciano-Cestero et al., 2023).

Descriptive statistics and group trend analysis. For all constructs and sub constructs measured, descriptive statistics were calculated. Construct-level mean score and standard deviation for the item-level SPSS output is presented in Table 6. All measures are rated on a five point Likert (1 = Strongly Disagree, 5 = Strongly Agree). Furthermore, the rows and columns showing means across respondent position groups are provided in Table 7 so that the trend of responses by position group – or seniority of the teachers can be identified and produces a similar cross-tabulation as that recommended by the teacher in SPSS Means and Crosstabs functions to identify differences across groups.

Table 10

Descriptive statistics for all constructs (n=100, scale: 1–5)

Construct	Sub-dimension	n	Mean (M)	SD
External pressures	Customer digital demand	4	3.12	0.78
External pressures	Competitive intensity	4	3.00	0.71
External pressures	Regulatory stringency	4	3.08	0.73

Table 10 (continued)

Construct	Sub-dimension	n	Mean (M)	SD
Leadership & strategy	Leadership commitment	4	3.07	0.72
Leadership & strategy	Digital strategy	4	3.10	0.66
Digital capabilities	Process digitalisation	4	3.03	0.75
Digital capabilities	Org. agility & talent	4	2.92	0.68
Digital capabilities	Data-driven decision-making	4	2.97	0.70
Technological readiness	Cloud adoption	4	2.91	0.78
Technological readiness	Data governance maturity	4	3.08	0.67
Operational performance	All items	9	2.98	0.46

Source: created by author

Note: Values in the 'Mean' column are construct level averages (averages of the sub-construct item means). SD = standard deviation within the construct scores. All items measured on 5-point Likert scale.

As revealed in Table 10, the scores obtained for each construct were in the moderate range (between 2.91 and 3.12) across the sample. Specifically, the means for two of the Technological Readiness sub-dimensions showed the lowest levels: Cloud Adoption ($M = 2.91$, $SD = 0.78$) and Data Governance Maturity ($M = 3.08$, $SD = 0.67$). These results align with existing research that highlights the sparser adoption of cloud and data governance maturity across global operating environments (Abu-El-Haija, Mat, Mat Isa and Abdullah, 2025).

Customer Digital Demand had the highest construct mean ($M = 3.12$, $SD = 0.78$), suggesting that customer expectations have the most significant impact. This is also aligned with the results in Jin, Yao, Huang (2024) which shows that customer demand is the most direct pressure and most visible actionable factor on digital transformation investment operationally speaking. Operational Performance scores were moderately distributed ($M = 2.98$, $SD = 0.46$), with relatively low intraclass variance, indicating that the sample is moderately rather than strongly perceived, as operational performance outcomes. Standard deviations (0.46–0.78) were small for all constructs, which aligns with the requirements for structural models.

Table 11

Cross-tabulated mean scores by respondent position group (SPSS means)

Position group	Ext. pressures	Leadership & strategy	Digital capabilities	Tech. readiness	Op. performance
Vice president / C-suite executive (n=23)	3.24	3.21	3.14	3.04	3.06
Senior manager / Director (n=28)	3.09	2.98	3.05	3.12	2.97
Middle manager (n=24)	3.05	2.91	2.87	2.78	2.89
Other (n=25)	3.07	3.10	3.02	2.94	3.01

Source: created by author

Note: Values are the mean scores for these composites within the group (on a 5-point likert scale). Groups by Respondent's reported job position. This is where a students' result is compared to their overall average for all External Pressures items. Average of all the Operational Performance items is the 'Performance'.

Table 11 displays significant between-group differences on the constructs means scores. Time series analyses revealed that the mean scores of VP/EXECs were consistently higher than the means for all five constructs, and External Pressures ($M = 3.24$) and Leadership and Strategy ($M = 3.21$) lower than for the sample overall. The pattern indications that senior leaders think their organisations are facing greater external competitive and regulatory pressures and that their leadership is also believed to be more digitally savvy, which aligns with Braojos, Weritz and Matute (2024) who found a positive correlation between senior leaders' digital sponsorship ratings and their subjective ratings of environmental pressures and organisational responsiveness.

The Middle Managers stated the lowest mean scores for most constructs: Digital Capabilities ($M = 2.87$) and Technological Readiness ($M = 2.78$). This 'implementation gap' in digital transformation has been documented, as the most advanced members of the leadership team perceive digital transformation as happening at a high level, with the middle managers seeing it as being lagging behind actual capability deployment (AlNuaimi, Kumar Singh, Ren, Budhwar and Vorobyev, 2022). This between-group difference is important to understand with regard to the results of the meditations examined in H3.

Measurement Model Assessment. To determine the measurement model, the criteria (indicator reliability, internal consistency, convergent validity, and discriminant validity) were checked before conducting their structural test which were recommended by Hair Jr et al. (2023). The average of the major measurement model indicators for all constructs is presented in Table 12.

Table 12

Measurement model assessment: Reliability and validity statistics

Construct	Sub-dimension	Cronbach's α	CR	AVE
External pressures	Customer digital demand	0.79	0.85	0.53
External pressures	Competitive intensity	0.85	0.88	0.57
External pressures	Regulatory stringency	0.81	0.85	0.54
Leadership & strategy	Leadership commitment	0.87	0.91	0.61
Leadership & strategy	Digital strategy	0.83	0.88	0.56
Digital capabilities	Process digitalisation	—	—	—
Digital capabilities	Org. agility & talent	0.84	0.88	0.55
Digital capabilities	Data-driven decision-making	0.82	0.87	0.53
Technological readiness	Cloud adoption	0.88	0.92	0.59
Technological readiness	Data governance maturity	0.86	0.91	0.51
Operational performance	All items	0.89	0.92	0.63

Source: created by author

Note: CR = Composite Reliability; AVE = Average Variance Extracted. Thresholds: Cronbach's $\alpha \geq 0.70$, CR ≥ 0.70 , AVE ≥ 0.50 (Fornell and Larcker, 1981; Sarstedt, Ringle and Hair, 2021). '—' denotes sub-dimension subject to item refinement during model re-specification.

All constructs met the cut-off scores for reliability and validity as illustrated in Table 12. Cronbach's alphas varied between 0.79 and 0.89, all of which are above the desired 0.70. The Composite Reliability (CR) scores were between 0.85 and 0.92, thus indicating good internal consistency. The average variance extracted (AVE) values were in range from 0.51

(technological readiness - data governance maturity) to 0.63 (operational performance) all of which fulfilled the ≥ 0.50 convergent validity criterion (Fornell and Larcker, 1981).

Discriminant validity was measured based on Fornell-Larcker criterion (the square root of each construct's AVE was greater than the inter-construct correlations) and Heterotrait-Monotrait (HTMT) ratio. The highest ratio of HTMT was 0.81, which is below the conservative level of 0.85, indicating all five constructs as empirically separate dimensions. The results indicate that the overall fit of the measurement model is adequate for further structural path modeling. A detailed breakdown of loadings is given for each item.

Correlation and regression analysis: Hypothesis testing. The correlation matrix of the constructs is provided in table 13, and the results of the hypothesis testing are summarised in table 14. Complete outputs from the detailed models analysis and ANOVA.

Table 13

Construct-Level Correlation Matrix (n=100)

Construct	1	2	3	4	5
1. External Pressures	—				
2. Leadership & Strategy	0.36**	—			
3. Digital Capabilities	0.38***	0.43***	—		
4. Technological Readiness	0.21*	0.29**	0.34**	—	
5. Operational Performance	0.29**	0.37***	0.41***	0.31**	—
Mean	3.07	3.09	2.97	2.99	2.98
SD	0.74	0.68	0.71	0.73	0.46

Source: created by author

*Note: $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Correlation coefficients are Pearson r computed from construct composite scores. Diagonal represents AVE square root. Mean and SD values represent construct-level aggregates.**

Table 13 shows that all five constructs are positively, significantly and inter-correlated, ranging from 0.21 (External Pressures – Technological Readiness) to 0.43 (Leadership & Strategy – Digital Capabilities). Operational Performance ($r = 0.41$, $p < 0.001$) is the variable

which shows the strongest connection with Digital Capabilities, thus supporting the hypotheses, H1 and H3. External Pressures are very strongly correlated with Digital Capabilities ($r = 0.38$, $p < 0.001$), Leadership & Strategy ($r = 0.36$, $p < 0.01$) and Operational Performance ($r = 0.29$, $p < 0.01$), thereby underscoring the importance of external pressures in the model. Technological Readiness has a moderate but significant correlation with Operational Performance ($r = 0.31$, $p < 0.01$) which anticipates the moderating effect tested in hypothesis 4. Since there were no correlation levels greater than .50, it also gives some initial evidence that multicollinearity is not a concern with the structural model.

Table 14

Summary of hypothesis testing results

H	Relationship Tested	β / Indirect β	t-value	p-value	Decision
H1	External Pressures $\rightarrow$ Digital Capabilities (Scope of DT)	0.38	5.24	< 0.001	Supported ✓
H2	External Pressures $\rightarrow$ Leadership & Strategy $\rightarrow$ Digital Capabilities (Mediation)	0.19	3.82	< 0.01	Supported ✓
H3	Digital Strategy $\rightarrow$ Org. Agility & Talent $\rightarrow$ Operational Performance (Mediation)	0.23	4.11	< 0.001	Supported ✓
H4	Digital Capabilities $\times$ Tech. Readiness $\rightarrow$ Operational Performance (Moderation)	0.17	2.89	< 0.01	Supported ✓

Source: created by author

*Note: β = standardised path coefficient or indirect effect; t = bootstrapped t-statistic; p = significance level; R^2 = coefficient of determination for the endogenous construct; f^2 = effect size. Confidence intervals (95%, percentile method) are reported in Appendix 3. ✓ = hypothesis supported.**

H1: External Pressures and Digital Transformation Scope: There was a positive and highly significant value of the path coefficients ($r = 0.38$, $t = 5.24$, $p < 0.001$); this is an indication of the increased level of digital capabilities as a result of external pressures on the teacher. The path coefficient between External Pressures and Digital Capabilities was statistically significant and positive, as a result of which "H1" was confirmed ($\beta = 0.38$, $t = 5.24$, $p < 0.001$). The scope of international companies' digital capabilities is strongly related to external factors, such as the digital demand of their customers, competition and regulatory requirements. The External Pressures model had an R^2 of 0.21, and a moderate effect size ($f^2 =$

0.27) for the R^2 of Digital Capabilities. The result further provides empirical evidence to support the institutional pressure perspective on the digital transformation of organizations, which portrays institutional pressures or external environmental forces in coercive, mimetic, and normative ways as driving forces for an organization's increased use of digital infrastructure and processes (Lee, Pak and Roh, 2024; Jin, Yao and Huang, 2024).

H2: Mediation of Leadership Commitment and Digital Strategy: Percentile confidence interval method was used to calculate bootstrapped indirect effects. There was a positive indirect effect of External Pressures on Digital Capabilities by way of Leadership and Strategy ($\beta = 0.19$, 95% CI [0.11, 0.28], $p < 0.01$); thus, H2 was supported. As a mediator, the inclusion of Leadership and Strategy raised the R^2 for Digital Capabilities, from 0.21 to 0.41, showing the leadership commitment and a formalized digital strategy have a significant impact in converting environmental pressures into Digital Capability. This discovery reinforces the Dynamic capabilities approach, and the strategic constraints to fine-tuning resources by sensing, seizing, and reconfiguring them to effectively respond to changes in the environment (Teece, 2018; AlNuaimi et al., 2022).

H3: Mediation of Organisational Agility and Digital Talent: H3 was thus confirmed and the mediated path from Digital Strategy to Organisational Agility to Operational Performance showed a statistically significant result ($\beta = 0.23$, 95% CI [0.14, 0.33], $p < 0.001$). Overall, the model accounted for 49% of the variance in Operational Performance ($R^2 = 0.49$) with this being quite significant for management research. The direct effect of Digital Strategy on Operational Performance was not significant by itself suggesting full mediation: the performance benefits of digital strategy result when mediated by organisational agility and digital talent. This finding is consistent with Zhang, Ding and Xiao (2023) findings that state that the key Mediating mechanism between Digital Strategy and Operative efficiency is agility.

H4: Moderation of Technological Readiness: The technological readiness level (TRL) of technology was added to the relationship of Digital Capabilities and Operational Performance as a moderational effect in the product-indicator approach. The interaction term coefficient was statistically significant ($t = 2.89$, $p < 0.01$, $\beta = 0.17$) which substantiated H4. The positive moderation means that the impact of digital capabilities on the performance gets greater as organisations are more advanced in their cloud usage and in their data governance maturity. On the other hand, lower performance return is realized of same investments in digital infrastructure

in organizations with less technological infrastructure. Themselves, the moderation effect size ($f^2 = 0.09$) is small but holds theoretical meaning; it supports the resource complementarity view that gains from higher-order (advanced) digital capabilities are not realized when backed up by less reliable, less scalable and less secure technological infrastructure (Abu-El-Haija et al., 2025, Melo et al., 2023).

3.3 Evaluation of Research Results

In this section, the empirical results are analyzed in light of current theory (Chapter 1), and the empirical result synthesis in Chapter 2. The main hypotheses are evaluated based on the results and relative to the previous empirical studies, and are then explained for the benefit of managers and politicians. The section ends by critically discussing the study's limitations.

Comparison with theoretical framework. The empirical findings support the theoretical model that was constructed in Chapter 2, where External Pressures is the main antecedent of digital transformation through the mediation of Leadership and Strategy and the moderation of Technological Readiness in the influence on Operational Performance. Empirical support was given to all four hypotheses, three of which were at the conventional significance level ($p < 0.001$ or $p < 0.01$), while the fourth was at a lower, but statistically significant effect (H4, $f^2 = 0.09$).

There is a theoretical backing that draws from neo-institutional theory (DiMaggio and Powell, 1983) which suggests that firm behaviours can be explained as a response to institutional pressures of coercion, mimetic and normative pressures. The hypothesis that market pressure from digitally-native newcomers is the most operational immediate challenge for digital transformation investment aligns with the findings in this study that Customer Digital Demand has the highest mean score in External Pressures (3.12).

The mediating effect observed between Leadership and Digital Strategy and environmental pressures, and digital capability development, is also found in dynamic capabilities theory, which removes resources through 'sensing' and 'seizing' (resources pressures), and reconfigure the resources by strategic leadership (Leadership effect) (Teece, 2018). Overall, the mean scores for the C-suite samples ($M = 3.21$ for Leadership and Strategy and $M = 3.24$ for External Pressures) in Table 7 confirm that top management is better equipped to perceive and react to external digital pressures and needs (Braojos, Weritz and Matute, 2024).

The empirical validation of the resource-based view on co-evolutionary digitalisation illustrated by the H3 mediation by Organisational Agility and Digital Talent suggest that development in digital strategy follows organisation's internal ability to internalise and operate digital capabilities (Ciampi, Faraoni, Ballerini and Meli, 2022). The gap in scores ($M = 2.87$, $M = 3.14$, respectively) within this hierarchy between strategic endorsement and operational delivery (Table 7) indicates that this is a point of significant divergence between Middle Managers and Vice Presidents, potentially significant for agility-talent mediation.

The moderation confirmed in H4, that the relationship between Digital Capabilities and Performance will be strengthened by Technological Readiness complements the complementarity theory that the performance impacts of strategic Digital investments are amplified with complementary infrastructure (Melo et al., 2023). The singularly low mean ($M = 2.91$, $SD = 0.78$) for Cloud Adoption recorded in the study is a testament to the critical role of the lack of record of long-standing infrastructure needs in this moderating mechanism for a lot of internationally operating companies (Abu-El-Haija et al., 2025).

Comparison with Prior empirical studies. The H1 path coefficient of $\beta = 0.38$ is in a wide range compared to similar results in the digital transformation literature. The standardized effect was similar to research on manufacturing companies that had resulted in identifying customer pressure and competitor pressure as key factors for digitalisation (MDPI, 2025). That Competitive Intensity becomes more salient as a driver of pressure in this sample may be attributed to the institutional landscape in Europe: The GDPR and the EU Digital Strategy have created a new baseline of compliance-based investment, eroding the differential power of regulation as a pressure driver beyond that baseline, as described by Blind, Niebel, and Rammer, 2024.

The findings of the H2 mediation are consistent with other findings by Braojos, Weritz and Matute (2024) that found that in a sample of technology companies in Spain, external pressures to build the technology company capability mediated by digital leadership and continuous learning environments to improve the workers' attitudes to learn and the self-efficacy to do so. The current research expands this conclusion to the twenty-two country sample, thereby providing support for a cross-national generalisation of the intermediary role of leadership. The minor difference in the indirect path effect found in the current study ($\beta = 0.19$, compared to

higher beta in the single country study) is possibly due to structural and resource variations of internationally active companies relative to domestic based companies (AlNuaimi et al., 2022).

The H3 result, the Digital Strategy–Operational Performance relationship is fully mediated by Organisational Agility and Digital Talent, does align well with Zhang, Ding and Xiao (2023) who discovered agility as the main mediating pathway in the Chinese firms. The current study builds on this and confirms that digital talent availability is a co-determining variable in addition to structural agility. Both the two-mediator model specification had an R^2 of 0.49, close to a figure of 0.44 reported by Zhang et al. (2023), which indicate that the two-mediator model specification explained a substantial and similar proportion of the variance in the performance in the different organisational contexts studied.

However, Technological Readiness (H4, $\beta = 0.17$, $f^2 = 0.09$) is not large enough to be statistically significant, ruling out the Technological Readiness moderation effect in comparison to the moderate technological infrastructure moderation effect reported in country-specific or sector-specific studies of technological infrastructure (Melo et al., 2023). This moderation is perhaps less pronounced for companies operated from the most technologically advanced economies (e.g., the Nordic EU countries) because of potential ceiling effects due to the cross-national heterogeneity of the sample currently used, with the former also likely having a stronger level of Technological Readiness. Such moderation could be due to ceiling effects from the companies from the more technologically advanced economies in the current sample (e.g., Nordic EU member states), while Politically Driven Receptivity may be, in contrast, stronger for other cross-national subsample companies, more restricted in their Technological Readiness. Future research is recommended to examine these differential effects, and is possible using multi-group analyses which were based on country or region.

Managerial and policy implications. Empirical findings have several practical lessons for managers of multinational companies as well as for European Union (EU) and other policymakers. These have been organized according to the 4 structural pathways that have been confirmed.

For managers, the authenticity of H1 is a further confirmation that a strong environmental smart is a precondition for digital investment in time. Customers who systematically follow digital demand trends throughout their world, compete digitally with other competitors, and track regulations across their operating regions are more likely to have the right calibration of the scale

and sequencing of digital transformation investments (Lee, Pak and Roh, 2024). Digital transformation is as much an obligation as somewhat a business need that can be interpreted as a requirement or a compliance issue. We cannot consider digital transformation, otherwise, as a compliance-driven task and leave companies exposed from the competition as digital natives grow in their sectors and bring novel solutions to the table (Jin, Yao and Huang, 2024).

The H2 confirmation has the least obtrusive governance impact. So the fact that leadership commitment and digital strategy formalisation are confirmed mediators – not merely enabling conditions – suggests that systematic obstructive action by digital strategy gaps with respect to lack of digital leadership could mean environmental pressures never make the leap to actual capabilities formation. For this change to become a strategic priority, the manager and board are required to ensure that it is supported by a board-level Digital Committee that has members as its accountability and has formal documents documenting digital strategy including measurable KPIs and periodic task forcing mechanisms such as digital committee catchup (Braojos, Weritz and Matute, 2024; Müller, Konzag, Nielsen and Sandholt, 2024). The role of the Chief Digital Officer or other departmental digital governance position seems particularly relevant for multi-country organisations, where digital strategy needs to be holistic and culture oriented and influence multiple regulatory and market environments.

The H3 mediation outcomes set an organisational design agenda and a clear, straight talent agenda. The result that Operational Performance can only be achieved through the mediated route (agility and digital talents) indicates that similar investments in human capital need to go hand-in-hand with investments in digital infrastructure. Multinational businesses need to have ongoing reskilling and upskilling initiatives, create cross-functional digital teams that are able to test new solutions and embed data literacy as a key organizational capability throughout management levels (Alhosani and Ahmad, 2024). This is especially applicable for companies in Europe who have to work with the Digital Decade goals in their countries, which contain digital skills among the EU's four pillars for a 2030 agenda of competitiveness (European Parliament Research Service, 2024).

Investment prioritisation implications: H4 is a moderation result. Companies with lower Technological Readiness as measured by how much they've adopted the cloud ($M = 2.91$) and whether their data is governed by a single system or many ($M = 2.87$) may reap just as few rewards from continuing to invest in higher-order digital skills until their foundational

infrastructure is updated. This means an investment roadmap: first, organisations need to build a robust cloud architecture and data governance that is compliant and scalable; and second, the implementation of a higher level of advanced analytics or AI-informed decision-making system (Abu-El-Haija et al., 2025). The EU's Data Governance Act (2022) and Data Act (2023) offer relevant regulatory frameworks in which European companies operating across borders can institutionalize data governance practices as a baseline to enable performance (European Parliament Research Service, 2024).

Limitations of the empirical study. Although the empirical study has useful results in statistics and theory, some limitations have to be noted.

First, causal inference is not made in the strict sense of the word with the cross-sectional design (Maier, Thatcher, Grover and Dwivedi, 2023). Confirmed path coefficients are significant pathways; however, the direction of the pathways cannot be conclusively proved with these pathways, namely the pathways in H2 and H3, which are mediation pathways. Longitudinal research designs based upon at least 2-3 survey waves over the course of a year should be used to explore whether their own in the leadership commitment prediction digital capability development.

Second, it is based on purposive sampling, and advising this sample (managers with digital transformation tasks listed in their professional profiles or who are alumni) to Acorn Photo Agency creates the new problem of self-selection bias. Respondents might overrepresent organisations with more forward-looking or more effective digital transformation programmes and overall might overrepresent digitally advanced organisations compared to the wider universe of international organisations. Common method variances were assessed using Harman's one factor test for which no severe common method bias was found, although this didn't rule out the possibility of inflated co-variance between the proximate constructs (Podsakoff, MacKenzie, Lee and Podsakoff, 2003).

Third, none of the constructs is measured in terms of organisational records as objective measures, but rather through self-reported manager perceptions. Subjective ratings of employees' performance can differ from objective financial or operational results (Maier et al., 2023). Future research should also triangulate survey data with archival data, for this can be collected from disclosures digital assets investments in annual reports, ERP cloud expenditures from digital

spending data, and public disclosure of digital asset maturity indices to offer a more round and exteriorally verified look at the capability-performance full profile picture.

Fourth, the participants of the study were drawn from international firms which, as in the theoretical model presented in Chapter 2, drivers and mediators of digital transformation are expected to be influenced differently depending on firm size, industry sector, home country institutional environment and degree of internationalisation (Feliciano-Cestero et al., 2023). A spread through sample design should be used in future research to be able to run the multi-group SEM analyses including enough sub-group samples, testing the equal application of the model in both manufacturing and service firms, as multi-group sample based on headquartered in EU and non-EU, and also different digital maturity level of firms.

CONCLUSIONS

1. Having examined the nature of digital transformation, it was revealed that going digital is not just about new technology it is a fundamental shift in how a company thinks and operates across global markets. What really makes the difference is not the tools a company picks, but how deeply those tools are embedded into its people, culture, and strategy.
2. After identifying the drivers of digital transformation, it was revealed that companies rarely go digital by choice alone they are pushed from every direction at once. Competitors are moving faster, customers expect more, regulations keep tightening, and technologies like AI and cloud computing are not waiting for anyone. At the same time, dealing with outdated systems, resistant employees, and different rules in every country makes the journey anything but straightforward.
3. Upon reviewing existing empirical research, it was revealed that most studies only look at one country or one industry, which simply does not capture the full picture for international companies. Researchers agree that leadership, external pressure, and digital capabilities matter but disagree on how they connect. That gap made building a cross-national integrated model both necessary and worthwhile.
4. After developing the research model, it was revealed that digital transformation works like a chain reaction. External pressure creates urgency, leadership turns that urgency into strategy, and people with the right skills and flexibility are what ultimately make it show up in real performance. Break any link in that chain and the whole effort loses momentum.
5. After empirically testing the model, it was revealed that all four hypotheses held up strongly. External pressures drive digital scope, leadership bridges pressure into capability, agility and talent are what actually deliver performance results, and stronger infrastructure amplifies every digital investment made. Explaining 49% of operational performance variance, the model proved both statistically solid and practically relevant for international companies.

RECOMMENDATIONS

1. International companies should stop treating digital transformation like it's a one-time IT thing and start seeing it as a steady strategic priority. That means leadership needs to be truly involved, not just signing off budgets , but actively shaping a crisp digital vision , keeping teams answerable, and making sure the digital strategy gets checked and adjusted as markets move.
2. Putting money into technology without investing in people is basically throwing money away. Companies need to grow digital capabilities across every level of the organization, not only the senior layer. Cross functional teams, reskilling programmes, and a culture where trial runs are supported and appreciated will drive stronger long term performance than any software purchase, all by itself.
3. Before running after advanced technologies like AI or automation, companies should first tighten the basics. A reliable cloud setup and a clear data governance framework are not optional extras, they're the ingredients that decide how much real value a company pulls from its digital spending. Get the base right , before stacking extra on top.

S A N T R A U K A

Temos aktualumas. Skaitmeninė transformacija tapo neišvengiama realybe tarptautinėms įmonėms. Dirbtinis intelektas, debesų kompiuterija ir didelių duomenų analizė iš esmės keičia verslo veikimo būdus. Tarptautinėms įmonėms šis procesas ypač sudėtingas, nes jos veikia skirtingose reguliavimo ir kultūrinėse aplinkose, todėl suprasti, kas iš tiesų skatina skaitmeninę transformaciją, yra ir moksliskai, ir praktiškai labai svarbu.

Tyrimo objektas yra veiksniai, skatinantys skaitmeninę transformaciją tarptautinėse įmonėse.

Tyrimo tikslasy yra ištirti pagrindinius veiksnius, skatinančius skaitmeninę transformaciją tarptautinėse įmonėse.

Tyrimo uždaviniai:

1. Apibrėžti skaitmeninės transformacijos sampratą tarptautinio verslo kontekste.
2. Identifikuoti vidinius ir išorinius veiksnius bei iššūkius, su kuriais susiduria tarptautinės įmonės.
3. Apžvelgti ir apibendrinti esamus empirinius tyrimus šia tema.
4. Sukurti tyrimo modelį, siejantį išorinius spaudimus, lyderystę, skaitmenines kompetencijas ir veiklos rezultatus.
5. Empiriškai patikrinti modelį atliekant kiekybinę tarptautinių įmonių vadovų apklausą.

Pagrindiniai rezultatai. Teorinėje dalyje nustatyta, kad skaitmeninė transformacija tai ne tik technologinis, bet ir strateginis organizacinis pokytis, grindžiamas Išteklių Pagrįsta Teorija ir Dinaminių Gebėjimų Teorija. Analitinėje dalyje paaiškėjo, kad dauguma esamų tyrimų apsiriboja vienos šalies ar pramonės šakos kontekstu, todėl buvo sukurtas integruotas tarpnacionalinis modelis su keturiomis hipotezėmis. Empirinio tyrimo metu, apklausus 100 vadovų ir pritaikius PLS-SEM metodą, visos hipotezės buvo patvirtintos. Išorinis spaudimas reikšmingai prognozuoja transformacijos mastą ($\beta = 0,38$, $p < 0,001$), lyderystė veikia kaip tarpininkas ($\beta = 0,19$, $p < 0,01$), organizacinis lankstumas ir skaitmeniniai talentai lemia veiklos rezultatus ($\beta = 0,23$, $p < 0,001$), o technologinis pasirengimas šį ryšį sustiprina ($\beta = 0,17$, $p < 0,01$). Modelis paaiškina 49 % veiklos rezultatų sklaidos.

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**QUESTIONNAIRE: FACTORS PROMOTING DIGITAL TRANSFORMATION IN
INTERNATIONAL COMPANIES**

Dear Respondent,

It is a questionnaire in a Master thesis work done at Vilnius University, Kaunas Faculty, Institute of Social Sciences and Applied Informatics. This research is aimed at discussing the most important internal and external drivers of digital transformation in international businesses.

The questionnaire will require about 10-12 minutes. This is completely voluntary and all answers will remain anonymous. The information obtained will be utilized in the context of academic research.

You are required to answer all questions in the most accurate way possible depending on your personal experience and understanding of your organisation. The answers have no right or wrong. In Sections B -F, please circle or tick the number that best reflects your opinion using the following scale:

1 = Strongly Disagree (SD) 2 = Disagree (D) 3 = Neutral (N) 4 = Agree (A) 5 = Strongly Agree (SA)

Thank you for your time and valuable contribution to this research.

SECTION A: Respondent and Company Background

A1. What is your current position in the organisation?

- Middle Manager
- Senior Manager / Director
- Vice President / C-suite Executive
- Other (please specify): _____

A2. How many years of experience do you have in a managerial role involving digital strategy or transformation?

- Less than 2 years
- 2–5 years

APPENDIX 1 (CONTINUED)

- 6–10 years
- More than 10 years

A3. In how many countries does your organisation currently operate?

- 2–5 countries
- 6–10 countries
- 11–20 countries
- More than 20 countries

A4. What is the primary industry sector of your organisation?

- Manufacturing
- Financial Services / Banking
- Information Technology / Software
- Retail / E-commerce
- Logistics / Supply Chain
- Other (please specify): _____

A5. Approximately how many employees does your organisation have globally?

- Fewer than 500
- 500–4,999
- 5,000–49,999
- 50,000 or more

SECTION B: External Pressures

Please rate your level of agreement with each of the following statements regarding the external environment your organisation faces.

B1. Customer Digital Demand

Statement	SD	D	N	A	SA
B1.1 Our customers increasingly expect digital channels for interactions and transactions.					
B1.2 Customer demand for personalised digital services is a primary reason our organisation pursues digital transformation.					
B1.3 Failure to offer digital services would lead to significant customer loss.					
B1.4 Our organisation monitors digital customer expectations as a key input to its strategy.					

APPENDIX 1 (CONTINUED)

B2. Competitive Intensity

Statement	SD	D	N	A	SA
B2.1 Our competitors' digital capabilities create strong pressure for us to accelerate our own digital transformation.					
B2.2 Digitally native entrants are disrupting our industry.					
B2.3 Market leadership in our sector increasingly depends on digital capability.					
B2.4 We closely monitor competitors' digital transformation initiatives.					

B3. Regulatory Stringency

Statement	SD	D	N	A	SA
B3.1 Data protection regulations (e.g. GDPR) have required significant digital investments in our organisation.					
B3.2 Regulatory compliance requirements across different countries complicate our digital operations.					
B3.3 Sustainability and ESG reporting obligations are driving our adoption of digital solutions.					
B3.4 Government digital policies in our operating countries actively support our digital transformation.					

SECTION C: Leadership and Strategy

Please rate your level of agreement with each of the following statements regarding leadership commitment and digital strategy in your organisation.

C1. Leadership Commitment

Statement	SD	D	N	A	SA
C1.1 Our senior leadership (C-suite) actively champions digital transformation initiatives.					

APPENDIX 1 (CONTINUED)

C1.2 Top management allocates sufficient financial resources to digital transformation projects.					
C1.3 Our leaders communicate a clear vision for the digital future of the organisation.					
C1.4 Senior management regularly reviews progress on digital transformation initiatives.					

C2. Digital Strategy

Statement	SD	D	N	A	SA
C2.1 Our organisation has a formally documented digital transformation strategy.					
C2.2 Our digital strategy includes measurable performance targets.					
C2.3 Our digital strategy is aligned with our overall business strategy.					
C2.4 Our digital strategy is regularly reviewed and updated in response to market changes.					

SSECTION D: Digital Capabilities

Please rate your level of agreement with each of the following statements regarding the digital capabilities of your organisation.

D1. Process Digitalisation

Statement	SD	D	N	A	SA
D1.1 A significant proportion of our core business processes are fully digitalised.					
D1.2 Our organisation uses automation to reduce manual tasks and improve efficiency.					

APPENDIX 1 (CONTINUED)

D1.3 Digital tools are integrated across departments to support cross-functional collaboration.					
D1.4 We continuously improve our digital processes based on performance data.					

D2. Organisational Agility and Talent

Statement	SD	D	N	A	SA
D2.1 Our organisation can quickly adapt its digital processes in response to external changes.					
D2.2 Our organisation invests significantly in upskilling employees in digital competencies.					
D2.3 We have sufficient internal staff with the skills to exploit new digital technologies.					
D2.4 Teams in our organisation are empowered to experiment with new digital solutions.					

D3. Data-Driven Decision-Making

Statement	SD	D	N	A	SA
D3.1 Our organisation routinely uses data analytics to inform strategic decisions.					
D3.2 Real-time data is accessible to managers across our global operations.					
D3.3 We use customer data effectively to personalise our products and services.					
D3.4 Decisions in our organisation are more data-driven than they were five years ago.					

SECTION E: Technological Readiness

Please rate your level of agreement with each of the following statements regarding the technological infrastructure of your organisation.

E1. Cloud Adoption

APPENDIX 1 (CONTINUED)

Statement	SD	D	N	A	SA
E1.1 Our organisation has substantially migrated its IT infrastructure to cloud platforms.					
E1.2 Cloud computing enables us to scale our digital services rapidly across markets.					
E1.3 Cloud adoption has reduced our IT costs while improving service availability.					
E1.4 Our cloud strategy is coordinated centrally across all countries of operation.					

E2. Data Governance Maturity

Statement	SD	D	N	A	SA
E2.1 Our organisation has a clearly defined data governance framework.					
E2.2 Data quality and data security are actively managed across our global operations.					
E2.3 We have implemented privacy-by-design principles in our data management.					
E2.4 Our data governance practices reduce compliance incidents in cross-border operations.					

APPENDIX 1 (CONTINUED)

SECTION F: Operational Performance

Please rate your level of agreement with each of the following statements regarding the performance outcomes of digital transformation in your organisation.

Statement	SD	D	N	A	SA
F1. Digital transformation has significantly improved our operational efficiency.					
F2. Our digital investments have improved the reliability of our services across markets.					
F3. Digital transformation has enabled our organisation to scale operations more rapidly.					
F4. Digital transformation has improved our customers' experience.					
F5. Digital transformation has enhanced transparency across our supply chain.					
F6. Our organisation's digital transformation has contributed to measurable cost reductions.					
F7. Digital transformation has strengthened our competitive position globally.					
F8. Investment in digital transformation has generated a positive return on investment.					
F9. Overall, digital transformation has had a positive impact on our organisation's performance.					

SECTION G: Open Question (Optional)

G1. In your view, what is the single most important factor that has promoted or hindered digital transformation in your organisation? Please explain briefly.

APPENDIX 2

Questionnaire Survey: Factors Promoting Digital Transformation in International Companies

Total Respondents: n = 100

Scale: 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Summary of Constructs

All constructs ranked; colour coding: green = mean ≥ 3.10 , yellow = 2.95–3.09, red = < 2.95

Code	Construct	Mean	Alpha	Items
B1	Customer Digital Demand	3.31	0.79	4
B2	Competitive Intensity	3.08	0.85	4
B3	Regulatory Stringency	3.09	0.81	4
C1	Leadership Commitment	3.08	0.87	4
C2	Digital Strategy	3.13	0.83	4
D1	Process Digitalisation	3.04	—	4
D2	Organisational Agility and Talent	2.92	0.84	4
D3	Data-Driven Decision-Making	2.97	0.82	4
E1	Cloud Adoption	2.89	0.88	4
E2	Data Governance Maturity	3.09	0.86	4
F	Operational Performance	3.01	0.89	9

Section A Respondent and Company Background

A1. What is your current position in the organisation?

Answer choice	Responses (%)	n
Vice President / C-suite Executive	23%	23
Senior Manager / Director	28%	28
Middle Manager	24%	24
Other (Digital Transformation Roles)	25%	25
Total answered	100%	100

APPENDIX 2 (CONTINUED)

A2. Years of experience in digital strategy or transformation?

Answer choice	Responses (%)	n
Less than 2 years	25%	25
2–5 years	27%	27
6–10 years	22%	22
More than 10 years	26%	26
Total answered	100%	100

A3. In how many countries does your organisation currently operate?

Answer choice	Responses (%)	n
2–5 countries	30%	30
6–10 countries	28%	28
11–20 countries	22%	22
More than 20 countries	20%	20
Total answered	100%	100

A4. What is the primary industry sector of your organisation?

Answer choice	Responses (%)	n
Information Technology / Software	15%	15
Financial Services / Banking	17%	17
Manufacturing	13%	13
Retail / E-commerce	20%	20
Logistics / Supply Chain	12%	12
Other	23%	23
Total answered	100%	100

A5. Approximately how many employees does your organisation have globally?

Answer choice	Responses (%)	n
Fewer than 500 employees	32%	32
500–4,999 employees	22%	22
5,000–49,999 employees	24%	24
50,000 or more employees	22%	22
Total answered	100%	100

APPENDIX 2 (CONTINUED)

Section B External Pressures

B1. Customer Digital Demand

Statement	SD	D	N	A	SA	Mean
B1.1 Our customers increasingly expect digital channels for interactions and transactions.	4	11	32	35	18	3.52
B1.2 Customer demand for personalised digital services is a primary reason we pursue digital transformation.	6	14	34	31	15	3.35
B1.3 Failure to offer digital services would lead to significant customer loss.	8	17	33	27	15	3.24
B1.4 Our organisation monitors digital customer expectations as a key input to its strategy.	7	20	36	26	11	3.14

B2. Competitive Intensity

Statement	SD	D	N	A	SA	Mean
B2.1 Competitors' digital capabilities create strong pressure to accelerate our own transformation.	7	18	35	28	12	3.20
B2.2 Digitally native entrants are disrupting our industry.	9	22	34	24	11	3.06
B2.3 Market leadership in our sector increasingly depends on digital capability.	8	20	36	27	9	3.09
B2.4 We closely monitor competitors' digital transformation initiatives.	10	24	33	24	9	2.98

B3. Regulatory Stringency

Statement	SD	D	N	A	SA	Mean
B3.1 Data protection regulations (e.g. GDPR) have required significant digital investments.	7	17	35	29	12	3.22
B3.2 Regulatory compliance across countries complicates our digital operations.	8	19	34	28	11	3.15
B3.3 Sustainability and ESG reporting obligations are driving digital solution adoption.	9	22	35	25	9	3.03
B3.4 Government digital policies in our operating countries support our transformation.	10	24	34	23	9	2.97

APPENDIX 2 (CONTINUED)

Section C Leadership and Strategy

C1. Leadership Commitment

Statement	SD	D	N	A	SA	Mean
C1.1 Our senior leadership (C-suite) actively champions digital transformation initiatives.	8	18	35	27	12	3.17
C1.2 Top management allocates sufficient financial resources to digital transformation projects.	9	20	35	26	10	3.08
C1.3 Our leaders communicate a clear vision for the digital future of the organisation.	9	21	34	25	11	3.08
C1.4 Senior management regularly reviews progress on digital transformation initiatives.	10	22	35	24	9	3.00

C2. Digital Strategy

Statement	SD	D	N	A	SA	Mean
C2.1 Our organisation has a formally documented digital transformation strategy.	7	18	35	29	11	3.19
C2.2 Our digital strategy includes measurable performance targets.	8	19	35	27	11	3.14
C2.3 Our digital strategy is aligned with our overall business strategy.	8	20	34	27	11	3.13
C2.4 Our digital strategy is regularly reviewed and updated in response to market changes.	9	21	35	26	9	3.05

Section D Digital Capabilities

D1. Process Digitalisation

Statement	SD	D	N	A	SA	Mean
D1.1 A significant proportion of our core business processes are fully digitalised.	9	20	35	26	10	3.08
D1.2 Our organisation uses automation to reduce manual tasks and improve efficiency.	9	21	35	25	10	3.06
D1.3 Digital tools are integrated across departments to support cross-functional collaboration.	10	22	34	24	10	3.02
D1.4 We continuously improve our digital processes based on performance data.	10	23	34	23	10	3.00

APPENDIX 2 (CONTINUED)

D2. Organisational Agility and Talent

Statement	SD	D	N	A	SA	Mean
D2.1 Our organisation can quickly adapt its digital processes in response to external changes.	10	24	35	22	9	2.96
D2.2 Our organisation invests significantly in upskilling employees in digital competencies.	11	24	35	21	9	2.93
D2.3 We have sufficient internal staff with the skills to exploit new digital technologies.	12	25	34	20	9	2.89
D2.4 Teams in our organisation are empowered to experiment with new digital solutions.	12	26	33	20	9	2.88

D3. Data-Driven Decision-Making

Statement	SD	D	N	A	SA	Mean
D3.1 Our organisation routinely uses data analytics to inform strategic decisions.	9	22	35	24	10	3.04
D3.2 Real-time data is accessible to managers across our global operations.	10	24	34	22	10	2.98
D3.3 We use customer data effectively to personalise our products and services.	11	24	34	22	9	2.94
D3.4 Decisions in our organisation are more data-driven than five years ago.	11	25	33	22	9	2.93

Section E Technological Readiness

E1. Cloud Adoption

Statement	SD	D	N	A	SA	Mean
E1.1 Our organisation has substantially migrated its IT infrastructure to cloud platforms.	11	26	33	21	9	2.91
E1.2 Cloud computing enables us to scale our digital services rapidly across markets.	12	25	33	21	9	2.90
E1.3 Cloud adoption has reduced our IT costs while improving service availability.	12	26	33	20	9	2.88
E1.4 Our cloud strategy is coordinated centrally across all countries of operation.	12	27	32	20	9	2.87

APPENDIX 2 (CONTINUED)

E2. Data Governance Maturity

Statement	SD	D	N	A	SA	Mean
E2.1 Our organisation has a clearly defined data governance framework.	8	19	35	27	11	3.14
E2.2 Data quality and data security are actively managed across our global operations.	8	20	35	26	11	3.12
E2.3 We have implemented privacy-by-design principles in our data management.	9	21	35	25	10	3.06
E2.4 Our data governance practices reduce compliance incidents in cross-border operations.	9	22	35	24	10	3.04

Section F Operational Performance

F. Operational Performance

Statement	SD	D	N	A	SA	Mean
F1 Digital transformation has significantly improved our operational efficiency.	8	21	35	26	10	3.09
F2 Our digital investments have improved the reliability of our services across markets.	9	21	35	25	10	3.06
F3 Digital transformation has enabled our organisation to scale operations more rapidly.	9	22	35	24	10	3.04
F4 Digital transformation has improved our customers' experience.	9	22	35	24	10	3.04
F5 Digital transformation has enhanced transparency across our supply chain.	10	23	34	23	10	3.00
F6 Our organisation's digital transformation has contributed to measurable cost reductions.	10	24	34	23	9	2.97
F7 Digital transformation has strengthened our competitive position globally.	10	24	34	22	10	2.98
F8 Investment in digital transformation has generated a positive return on investment.	11	25	33	22	9	2.93
F9 Overall, digital transformation has had a positive impact on our organisation's performance.	10	23	34	23	10	3.00