

**ORGANISATIONAL CULTURE'S
IMPERATIVES IN ENHANCING
SUSTAINABLE DIGITAL TRANSFORMATION:
A CASE OF MANUFACTURING COMPANIES
IN PENANG, MALAYSIA**

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**ASIA e UNIVERSITY
2025**

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SUSTAINABLE DIGITAL TRANSFORMATION: A CASE OF
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LEONG CHEE YEONG

A Thesis Submitted to Asia e University in
Fulfilment of the Requirements for the
Doctor of Business Administration

September 2025

ABSTRACT

This thesis addresses the persistent "execution gap" in digital transformation (DT) within the manufacturing sector, particularly in Penang, Malaysia. While technological adoption is widely explored, this study argues that the primary barrier to successful, scalable DT is not technological but organizational. The research aims to explore the intricate relationship between organizational culture, leadership, and the effective execution of DT initiatives. It seeks to understand how companies can transition from isolated pilot projects to sustained, enterprise-wide transformation. Grounded in an interpretivist-constructivist paradigm, this qualitative case study examines three manufacturing companies in Penang, a key hub in Southeast Asia's electronics and manufacturing landscape. A purposive sampling approach was employed, selecting senior executives, middle managers, and technical experts directly involved in DT. Data were collected through semi-structured interviews and scenario-based behavioral observations (GEMBA walks) to capture rich, contextual insights. Thematic analysis was used to identify key patterns and emergent themes from the data. The findings reveal that the successful execution of DT is profoundly influenced by two core themes: a trust-based organizational culture and an agile, "walk-the-talk" leadership style. The study demonstrates that these human-centric factors are more critical than strategic planning alone in overcoming resistance to change, fostering innovation, and ensuring the sustainability of DT. This research aligns with the socio-technical systems theory, which posits that the successful implementation of new technology depends on the effective integration of both human and technical components. Based on these findings, a practical framework is proposed that serves as a roadmap to close the execution gap by cultivating cultural enablers and empowering leaders. This study's implications are significant for both academia and industry, highlighting the need to shift focus from technological readiness to cultural and leadership readiness. For practitioners, it provides actionable insights into building the organizational capacity for resilient and scalable digital change. Future research could quantitatively validate the proposed framework and explore its application in other geographical and industry contexts.

Keywords: Digital transformation, organizational culture, sustainable digital transformation, industry 4.0

APPROVAL

This is to certify that this thesis conforms to acceptable standards of scholarly presentation and is fully adequate, in quality and scope, for the fulfilment of the requirements for the Doctor of Business Administration

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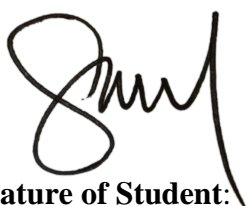
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DECLARATION

I hereby declare that the thesis submitted in fulfilment of the requirements for the Doctor of Business Administration is my own work and that all contributions from any other persons or sources are properly and duly cited. I further declare that the material has not been submitted either in whole or in part, for a degree at this or any other university. In making this declaration, I understand and acknowledge any breaches in this declaration constitute academic misconduct, which may result in my expulsion from the programme and/or exclusion from the award of the degree.

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A handwritten signature in black ink, appearing to read 'Leong Chee Yeong', written in a cursive style.

Signature of Student:

Date: 22 September 2025

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to the individuals and organizations that have contributed their time, expertise, and invaluable insights to this thesis. My heartfelt thanks go to...

Dato' Chu Jenn Weng, President and CEO of ViTrox Corporation Berhad

Datin' Su Pek Fuen, Director of People Culture of ViTrox Corporation Berhad

Mr. Wee Kah Khim, CEO of ViTrox Technologies Sdn. Bhd.

Mr. Yeoh Shih Hoong, Executive Senior VP of ViTrox Corporation Berhad

Mr. Hng Chuan Keat, General Manager of Penang Automation Cluster Sdn. Bhd.

Mr. Chester Tan, CEO of AFA Technology Sdn. Bhd.

Dr. Janaka Low, Principal of ViTrox Academy

and my Analytics Intelligence Solutions team members who has been with us since 2019 in this wonderful startup journey for transforming our customers operations efficiency through digital transformation step by step, stone by stone. Finally, I extend my sincere appreciation to all the anonymous respondents who participated in my interviews and surveys, providing critical data and perspectives. This thesis would not have been possible without your generous cooperation and support. Thank you.

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LIST OF ABBREVIATION

AeU	Asia e University
AI	Artificial Intelligence
CM	Contract Manufacturers
DIMo	Digital Intelligence Module
DT	Digital transformation
EMS	Electronics Manufacturing Services
IoT	Internet of Things (IoT)
LLC	Local Large Companies
MITI	Ministry of Investment, Trade and Industry
MNC	Multinational Corporations
MVP	Minimum Viable Product
NIMP	New Industrial Master Plan
ODM	Original Design Manufacturers
OEM	Original Equipment Manufacturers
OKR	Objectives and Key Results
OSAT	Outsourced Assembly and Test
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
SME	Medium-Sized Enterprises
SOP	Standard Operating Procedures
TAM	Technology Acceptance Model

CHAPTER 1

INTRODUCTION

1.0 Background of Study

Digital transformation (DT) stands as a paramount strategic imperative for organizations globally, with projections indicating significant growth in related spending to a staggering \$3.9 trillion by 2027 (IDC, 2024). Within the manufacturing sector, the adoption of Industry 4.0 technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and Big Data Analytics promises unprecedented gains in operational efficiency and competitiveness (Accenture, 2024; Tableau, 2022). This paradigm shift is particularly crucial for Malaysia, a manufacturing-centric economy, where national policies like the New Industrial Master Plan (NIMP) 2030 and the Industry4WRD initiative have set ambitious goals to propel the nation into a high-tech future.

However, a persistent and critical challenge has emerged; despite considerable investment in technology, many manufacturing firms struggle to advance their digital transformation efforts beyond initial pilot projects. The inability to scale and sustain these initiatives across the entire organization leads to fragmented efforts and unrealized value (McKinsey & Company, 2021; Confronto, 2023). While technological factors are often a primary focus, this research argues that the root cause of this challenge lies in a deeper, more complex area: the human and organizational factors. The prevailing literature, while acknowledging the importance of these elements, lacks a comprehensive, empirically-grounded understanding of how and why a firm's organizational culture directly impact the long-term sustainability of digital transformation. This study addresses this critical gap by examining the

organizational cultural imperatives for successful and sustainable DT, moving beyond the "what" to explore the "how" in a real-world context.

1.1 Problem Issue

Despite the significant investments and widely acknowledged benefits of digital transformation (DT), a persistent challenge is the inability of many manufacturing companies to effectively scale and replicate successful digital transformation initiatives beyond initial pilot projects across various departments or business units. This implementation gap is particularly evident within the manufacturing sector, where the failure rate for such initiatives is alarmingly high, with some estimates placing it at over 70% (Boston Consulting Group, 2020). In Malaysia, while national initiatives like the New Industrial Master Plan (NIMP) 2030 and the Industry4WRD have set clear targets for digital adoption, the qualitative and human centric aspects of this transformation have received comparatively less attention in scholarly and industry discourse.

Extant literature demonstrates that the failure to scale DT initiatives often extends beyond technical and financial hurdles, revealing a critical and often underestimated factor: the under-valuation or disregard of organizational culture (McKinsey & Company, 2021; Deloitte, 2021). While technology adoption models like the Technology Acceptance Model (TAM) provide insights into individual user acceptance, they do not fully address the broader organizational and cultural contexts that enable or inhibit enterprise-wide change (Venkatesh & Davis, 2000). The success of digital transformation, therefore, necessitates a holistic reconfiguration of an organization's strategy, structure, and, most importantly, its culture (Accenture, 2024; Fortier, 2025).

This study identifies a specific gap in the literature concerning the empirically grounded understanding of how organizational culture act as foundational imperatives for achieving scalable and sustainable digital transformation within the unique context of the Malaysian manufacturing sector. Drawing from Sociotechnical Systems Theory, which posits that effective technological change requires the deliberate alignment of both social and technical systems, this research issue posits that a robust and aligned organizational culture is not a peripheral concern, but rather a critical prerequisite for sustained implementation across organizational boundaries (Mumford, 2006).

Therefore, this thesis will address the core research issue: While the technological and economic drivers for digital transformation are well-established, there remains a critical gap in understanding how organizational culture influence the successful and sustainable scaling of digital transformation initiatives in manufacturing companies in Penang, Malaysia. This research issue directly leads to the following research questions, which are designed to explore this gap in detail.

1.2 Research Questions

This study aims to address the aforementioned research issue by answering the following key research questions:

- i. What is the influence of organizational culture on the success of digital transformation initiatives in manufacturing companies in Penang, Malaysia?
- ii. How does a culture that supports and sustains digital transformation manifest in the manufacturing sector?
- iii. What is the role of organizational alignment in embedding a culture that supports sustainable digital transformation?
- iv. Apart from organizational culture, what are the other factors affecting digital transformation's prolonged success?

1.3 Research Objectives

This study is guided by the following objectives, which are directly derived from the research questions and are designed to address the identified research issue:

- i. To explore the factors affecting the prolonged success of digital transformation among manufacturing companies in Penang, Malaysia.
- ii. To analyze the role of organizational culture in supporting or hindering digital transformation efforts among manufacturing companies in Penang, Malaysia.
- iii. To examine the impact of organizational alignment on the manifestation of a culture that supports digital transformation among manufacturing companies in Penang, Malaysia.
- iv. To identify and investigate other critical factors, apart from organizational culture, that affect the prolonged success of digital transformation, including the role of strategic leadership.

1.4 Scope of Study

This qualitative case study focuses on the organizational culture imperatives for sustainable digital transformation within the manufacturing sector in Penang, Malaysia. The research is limited to three manufacturing companies operating within the state and involves data collection from a purposely selected group of participants who can provide deep insights into the cultural aspects of their respective organizations. This approach provides a multi-faceted and holistic view of the phenomena under investigation. The findings are not intended for statistical generalization but aim to provide a rich, contextual understanding and analytical generalization to similar high-tech manufacturing contexts.

1.4.1 Geographical and Industrial Justification

Penang was chosen as the research location due to its established and globally recognized status as a high-technology manufacturing hub. Often referred to as the "Silicon Valley of the East," the state has a rich industrial history spanning over five decades and plays a pivotal role in the global electronics and electrical (E&E) supply chain (InvestPenang, 2024; The Star, 2024). This makes it an ideal setting to study digital transformation, as the manufacturing firms here are not only adopting technology but are often at the forefront of the technological evolution.

The state's industrial ecosystem is robust and comprehensive, with over 350 multinational corporations (MNCs) and more than 3,000 small and medium-sized enterprises (SMEs) operating within its borders (SEMI, 2024). This concentration of diverse firms provides a fertile ground for a case study approach focused on organizational culture. These companies, both large and small, represent a microcosm of the challenges and successes of digital transformation, allowing for a comparative analysis of how different corporate cultures manage technological change. Furthermore, Penang consistently ranks as a leading contributor to Malaysia's manufacturing investments and exports, securing RM17.3 billion in approved manufacturing investments in 2024 (The Vibes, 2025). The state's economic significance and its ongoing commitment to Industry 4.0 initiatives as evidenced by these figures underscore the relevance and timeliness of a study focused on its manufacturing sector.

1.4.2 Methodological and Participant Justification

A qualitative case study approach was selected to move beyond simple correlation and delve into the intricate "how" and "why" behind the influence of organizational culture on digital transformation. Unlike quantitative methods that identify patterns across

large populations, this approach allows for a deep, contextual exploration of the complex interplay between shared values, beliefs, and technological change.

The purposeful sampling of participants from various organizational levels including senior executives, middle managers, and operational staff is crucial for a comprehensive understanding of organizational culture. Culture is not a monolithic entity; it is often shaped by the vision of leadership but experienced and interpreted differently across the organizational hierarchy. By interviewing a diverse group of participants, this study can uncover potential misalignments between espoused values (what leaders claim) and enacted values (what employees actually do). This multi-level approach is essential to generate a rich, nuanced dataset for this thesis.

1.5 Significance of Study

This study holds both academic and practical significance by addressing a critical gap in the existing body of knowledge and providing actionable insights for industry practitioners. The findings are particularly relevant to the unique industrial context of Penang, and they are also intended to assist other manufacturing companies throughout Malaysia.

1.5.1 Academic Significance

This thesis makes a significant academic contribution by providing an empirical investigation into a key, under-researched area. While much of the existing literature on digital transformation focuses on technological aspects, there is a clear gap in understanding the foundational role of organizational culture in its prolonged success (McKinsey & Company, 2021; Deloitte, 2021). By examining this through a qualitative case study of three high-tech manufacturing companies in Penang, this research will fill that void.

The study's theoretical contribution lies in its application of Sociotechnical Systems Theory to the context of digital transformation. By demonstrating how the social and technical systems must be intentionally aligned for sustainable change, this research offers a refined theoretical lens through which to analyze future digital transformation initiatives (Baxter & Sommerville, 2011; Mumford, 2006).

1.5.2 Practical Significance

This research provides tangible, evidence-based insights for senior leaders and managers in the manufacturing sector. By moving beyond anecdotal evidence, the study's in-depth analysis of three distinct companies offers a playbook for addressing the human and cultural challenges of digital transformation.

Furthermore, this study directly assists in the goals of the New Industrial Master Plan (NIMP) 2030. The NIMP 2030 aims to elevate Malaysia's manufacturing sector by focusing on digitalization and high-value activities (Ministry of Investment, Trade and Industry, 2023). The findings from this research particularly its focus on organizational culture as a key driver of success can serve as a valuable reference for the Ministry of Investment, Trade and Industry (MITI) and other government agencies responsible for implementing these national initiatives. By understanding what works (and what doesn't) on the ground in a major industrial hub like Penang, policymakers can develop more effective strategies and support systems to assist other companies in Malaysia in their own digital transformation journeys.

The study's insights on how to align culture with technology can help other companies avoid common pitfalls, reduce failure rates, and make a more successful transition to an Industry 4.0-ready workforce and operational model.

1.6 Definition of Terms

This section provides a clear definition of the key terms used throughout this thesis, grounded in contemporary academic literature and industry reports.

- i. **Digital Transformation (DT):** The process of leveraging digital technologies to create or modify existing business processes, culture, and customer experiences to meet changing business and market requirements. Unlike a one-off IT project, DT is a continuous strategic process that requires a fundamental shift in how an organization operates and delivers value (Vial, 2019).
- ii. **Organizational Culture:** The collective values, beliefs, behaviors, and norms that shape the social and psychological environment of an organization. This "unwritten set of rules" influences how employees interact, collaborate, and respond to change, and is a critical factor in the success of any major organizational initiative (Cameron & Quinn, 2011).
- iii. **Sustainable Digital Transformation:** This refers to the ability of an organization to not only successfully implement digital initiatives but also to scale and sustain them over the long term. It implies a continuous process of adaptation and integration rather than a one-time project, and it is characterized by the embedding of new technologies and work practices into the core operational and cultural fabric of the business (Deloitte, 2021).
- iv. **Sociotechnical Systems Theory:** A conceptual framework that posits that an organization is composed of two interdependent systems: a social system (people and their relationships) and a technical system (tools, technology, and processes). The theory asserts that for a new technology or system to be effective, both the social and technical systems must be designed and aligned to support one another (Baxter & Sommerville, 2011).