Strategic Leadership and Organizational Learning as Dynamic Capabilities: Reframing Digital Maturity and Market Orientation for Innovation and Efficiency

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ABSTRACT

This paper develops an integrative framework explaining how Strategic Leadership (SL) and Organizational Learning Capability (OLC) operate as dynamic meta capabilities that convert Market Orientation (MO) into Supply Chain Innovation (SCI) and Supply Chain Efficiency (SCE). It further examines how Digital Maturity (DM) amplifies this process in the post digital era. Drawing upon the Dynamic Capabilities View, Strategic Leadership Theory, Market Orientation Theory, and Organizational Learning Theory, the study synthesizes literature from 2020–2025 to propose a cyclical capability model (SL → MO → OLC → SCI/SCE → Performance) moderated by DM. SL and OLC co-evolve as orchestrating capabilities that transform market intelligence into adaptive learning, innovation, and efficiency. DM accelerates this transformation by enhancing knowledge integration and decision speed. As a conceptual study, empirical validation using multi-level modelling or PLS-SEM is encouraged. Leaders should treat digital transformation as a learning architecture rather than a technology project, balancing innovation and efficiency through continuous feedback loops. The paper reframes digital maturity as a dynamic amplifier linking leadership cognition and organizational learning, offering a unified explanation of post digital competitiveness.

Keywords: Strategic Leadership; Organizational Learning; Dynamic Capabilities; Digital Maturity; Market Orientation; Innovation and Efficiency.

INTRODUCTION

The acceleration of digital transformation across Europe has profoundly reshaped how organisations sense markets, learn, and renew their capabilities. In the Industry 5.0 era,

competitiveness is defined not merely by technology adoption but by firms' ability to integrate human intelligence, digital systems, and strategic foresight into adaptive learning architectures. Within this dynamic context, Strategic Leadership (SL) and Organisational Learning Capability (OLC) emerge as interdependent dynamic capabilities that convert Market Orientation (MO) into Supply Chain Innovation (SCI), Supply Chain Efficiency (SCE), and superior Organisational Performance (OP) (Asif, 2019; Ferreira et al., 2021; Luh, 2025).

European firms currently face a dual challenge: sustaining competitiveness amid volatility while aligning with the European Union's twin transition toward a digital and green economy. Policy frameworks such as the European Commission (2021) Industry 5.0 strategy highlight the need for human centric, resilient, and digitally mature organisations (Bürgin, 2021). However, many enterprises still struggle to transform market intelligence into coordinated learning and innovation routines (Gelsomino et al., 2025; Zouari et al., 2025). This conceptual paper addresses this gap by theorising how SL and OLC interact with MO and Digital Maturity (DM) to build dynamic supply chain capabilities that underpin sustainable competitiveness in Europe.

From the perspective of the Dynamic Capabilities View (DCV), leadership constitutes a meta capability that orchestrates sensing, learning, and reconfiguring processes (Pitelis & Wagner, 2019; Sotarauta, 2016). Market Orientation provides the sensing mechanism that detects stakeholder needs and competitive shifts (Kohli & Jaworski, 1990; Narver & Slater, 1990), while OLC functions as the learning engine that embeds this intelligence into new routines and operational improvements (Ali & Niu, 2025; Murray & Chapman, 2003; Ni & Sun, 2009). DM enhances these relationships by integrating data analytics, connectivity, and knowledge sharing across organisational levels (Hawrysz et al., 2025; Mwakyeja & Kimario, 2024; Robertson et al., 2022). Together, these mechanisms form an adaptive "leadership–learning capability chain" that links cognitive foresight with digital execution and performance outcomes.

Accordingly, the study addresses the following research question: How do Strategic Leadership and Organisational Learning Capability interact with Market Orientation and Digital Maturity to generate Supply Chain Innovation, Supply Chain Efficiency, and Organisational Performance within European Industry 5.0 contexts?
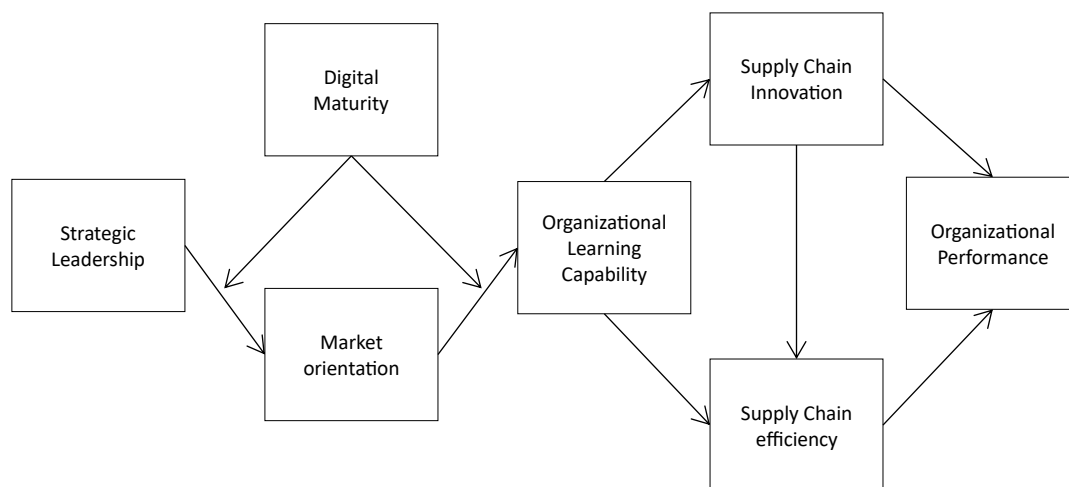

Figure 1. Conceptual Overview of the Leadership–Learning–Capability Framework

This question is explored through an integrative conceptual framework grounded in the DCV, uniting insights from leadership, marketing, operations, and information systems research. The model proposes that SL initiates strategic direction and learning culture, MO captures and interprets market signals, OLC transforms these signals into innovation and efficiency, and DM amplifies each linkage by strengthening knowledge integration. By addressing this process, the paper contributes to three critical debates in the European Business Review:

1. It reconceptualises leadership as a dynamic meta capability that orchestrates organisational learning and digital transformation.
2. It reframes market orientation as a data driven sensing system embedded within leadership cognition.
3. It situates these mechanisms within the European Industry 5.0 policy agenda, emphasising sustainable, human centred performance.

The paper is organised as follows. Section 2 presents the theoretical foundations linking leadership, learning, and digital maturity under the DCV. Section 3 introduces the conceptual framework and propositions. Section 4 discusses theoretical, managerial, and policy implications and Section 5 concludes with future research directions.

The Figure 1 illustrates how Strategic Leadership activates Market Orientation, which, through Organisational Learning Capability, drives Supply Chain Innovation and Supply Chain Efficiency, culminating in improved Organisational Performance. Digital Maturity moderates the MO → OLC relationship by enhancing data driven learning, absorptive capacity, and feedback integration.

THEORETICAL FOUNDATIONS AND LITERATURE REVIEW

The theoretical grounding of this paper rests on the Dynamic Capabilities View (DCV), complemented by Strategic Leadership Theory, Market Orientation Theory, and Organisational Learning Theory. Together, these perspectives provide a coherent explanation of how European firms adapt to turbulence and digitalisation by orchestrating knowledge, technology, and people.

Dynamic Capabilities as the Overarching Lens

The DCV extends the resource based view by shifting focus from static assets to the processes that enable firms to sense opportunities, seize them, and reconfigure resources (Asif, 2019; Sotarauta, 2016). Within volatile European markets, advantage arises from continuously aligning internal competences with external technological and institutional changes.

Dynamic capabilities consist of three core functions: sensing, seizing, and reconfiguring (Asif, 2019). Sensing involves environmental scanning and interpretation; seizing converts identified opportunities into strategic actions; and reconfiguring renews assets and routines to sustain competitiveness. These capabilities depend on leadership cognition, learning routines, and digital infrastructure (Hawrysz et al., 2025; Zouari et al., 2025).

In the context of Industry 5.0, dynamic capabilities manifest as integrated human–machine systems where digital technologies augment not replace organisational cognition (Bürgin, 2021). The DCV thus provides the meta framework for linking leadership, learning, and digital maturity into a unified capability cycle.

Strategic Leadership as a Meta Capability

Strategic Leadership (SL) represents the ability to influence others to make decisions that enhance long term organisational sustainability while navigating uncertainty (Ali & Niu, 2025; Ferreira et al., 2021; Nasir et al., 2022). Unlike operational leadership, SL operates at the meta level it shapes organisational cognition, builds learning culture, and orchestrates dynamic capabilities (Sotarauta, 2016).

From a dynamic capabilities perspective, leadership functions as the micro foundation of sensing, seizing, and reconfiguring (Asif, 2019). Leaders determine strategic direction, prioritise market signals, and align digital initiatives with organisational learning. Empirical studies in European Business Review emphasise leadership's role in orchestrating digital and human resources to achieve agility and innovation (Pitelis & Wagner, 2019; Zouari et al., 2025).

Strategic leaders create cognitive infrastructures shared mental models and interpretive frames that shape how organisations learn and adapt. They also foster learning climates that encourage experimentation and reflection, essential for translating data into knowledge (Ferreira et al., 2021; Nasir et al., 2022). Therefore, SL is conceptualised as the meta capability that activates Market Orientation and Organisational Learning Capability, enabling dynamic reconfiguration in digitally intensive environments.

Market Orientation as a Dynamic Sensing Mechanism

Market Orientation (MO) is traditionally defined as the organisation wide generation, dissemination, and responsiveness to market intelligence (Kohli & Jaworski, 1990; Narver & Slater, 1990). Recent studies, however, reframe MO as a dynamic sensing capability a continuous process of interpreting customer, competitor, and technological signals to guide resource reallocation (Gelsomino et al., 2025; Ochieng, 2018). Within the DCV framework, MO constitutes the sensing phase. It informs decision making by detecting emerging market shifts, sustainability pressures, and digital opportunities. Effective market orientation requires strategic leadership to transform dispersed intelligence into actionable insight (Mwakyeja & Kimario, 2024; Pitelis & Wagner, 2019; Zouari et al., 2025).

European firms have adopted advanced analytics, AI driven dashboards, and cross functional market intelligence platforms to institutionalise MO. Yet, sensing without learning yields superficial adaptation. MO must therefore interact with Organisational Learning Capability (OLC) to translate market data into value creating innovations.

Organisational Learning Capability as the Seizing Engine

Organisational Learning Capability (OLC) refers to the structures and processes that facilitate knowledge acquisition, dissemination, and application (Domínguez-Escrig et al., 2023; Ni & Sun, 2009). It embodies the seizing mechanism of dynamic capabilities by converting sensed information into strategic routines. Firms with strong OLC are more likely to integrate market knowledge into innovation and process improvement (Bafana et al., 2024; Murray & Chapman, 2003). In Europe's Industry 5.0 environment, learning capability determines how effectively organisations can reconfigure socio technical systems for resilience and sustainability.

Learning oriented cultures nurture double loop learning questioning underlying assumptions rather than merely correcting errors (Ferreira et al., 2021). Such cultures foster ambidexterity, enabling simultaneous innovation and efficiency (Negi, 2021). Thus, OLC functions as the cognitive bridge linking leadership foresight and market sensing with innovation and efficiency outcomes.

Digital Maturity as a Contextual Amplifier

Digital Maturity (DM) is the extent to which digital technologies and mindsets are integrated into a firm's strategy, operations, and culture (Robertson et al., 2022). It shapes the infrastructure through which sensing and learning processes occur. High DM firms possess integrated data systems, predictive analytics, and knowledge sharing platforms that enable real time feedback and rapid learning (Hawrysz et al., 2025).

DM thus moderates the MO–OLC relationship by enhancing absorptive capacity (Cohen & Levinthal, 1990) the ability to recognise, assimilate, and apply external knowledge. In highly digitalised European industries, DM amplifies how leadership and learning coevolve. Integrating DM into the DCV framework situates digital transformation within a broader capability logic one that values human interpretation and reflective learning over mere automation.

The Integrative Framework

Synthesising these theories, this study proposes that Strategic Leadership initiates and sustains Market Orientation, which feeds intelligence into Organisational Learning Capability. In turn, OLC produces dual outcomes Supply Chain Innovation and Supply Chain Efficiency that reinforce Organisational Performance (Luh, 2025). Digital Maturity strengthens these relationships by creating digital–human synergy, consistent with the European Commission's Industry 5.0 vision of human centric technological evolution (Bürgin, 2021).

This integrative logic positions leadership and learning as meta capabilities not isolated managerial functions. Therefore, the constructs and definitions have been shown in Table 1. The next section elaborates this conceptual model and its propositions.

Table 1. Constructs and Definitions

Construct	Definition	Key Sources
Strategic Leadership (SL)	The cognitive and relational capability of leaders to shape organisational vision, interpret environmental signals, and orchestrate learning and digital transformation.	(Ferreira et al., 2021); (Reuter & Floyd, 2024; Sotarauta, 2016)
Market Orientation (MO)	The process of generating, disseminating, and responding to market intelligence to guide strategic decisions and innovation.	(Gelsomino et al., 2025; Kohli & Jaworski, 1990; Narver & Slater, 1990)
Organisational Learning Capability (OLC)	The organisational processes that enable acquisition, sharing, and application of knowledge for innovation and efficiency.	(Domínguez-Escrig et al., 2023; Murray & Chapman, 2003)
Digital Maturity (DM)	The integration of digital technologies, culture, and analytics into organisational strategy and operations.	(Hawrysz et al., 2025; Pham et al., 2024; Robertson et al., 2022)

Supply Chain Innovation (SCI)	The development of new supply chain processes, collaborations, or technologies to improve value creation.	(Lai et al., 2023; Wong & Ngai, 2022)
Supply Chain Efficiency (SCE)	The firm's ability to optimise cost, time, and reliability in supply chain operations.	(Bafana et al., 2024; Negi, 2021)
Organisational Performance (OP)	The composite outcome of innovation, efficiency, and strategic adaptability achieved through dynamic capability orchestration.	(Ochieng, 2018; Tripathi & Roy, 2024)

CONCEPTUAL FRAMEWORK AND PROPOSITIONS

The proposed Leadership–Learning–Capability Framework explains how Strategic Leadership (SL) and Organisational Learning Capability (OLC) function as dynamic meta capabilities that integrate Market Orientation (MO), Digital Maturity (DM), and supply chain outcomes within Europe's Industry 5.0 transformation. Rooted in the Dynamic Capabilities View (DCV), this framework positions leadership and learning as mechanisms that continuously sense, interpret, and reconfigure knowledge for sustainable competitiveness (Asif, 2019) (Pitelis & Wagner, 2019; Zouari et al., 2025).

In this system, SL initiates strategic direction and shapes collective cognition, MO captures and disseminates market intelligence, OLC transforms this intelligence into dual outcomes Supply Chain Innovation (SCI) and Supply Chain Efficiency (SCE) and these outcomes together drive Organisational Performance (OP). Digital Maturity moderates how effectively organisations assimilate and apply market information through learning processes. This integrative logic reflects a cyclical capability chain: Leadership cognition → Market sensing → Learning assimilation → Innovation and efficiency → Performance reinforcement.

Leadership as the Cognitive Catalyst for Market Orientation

Within dynamic capability theory, leadership cognition provides the foundation for organisational adaptation. Leaders act as architects of sense making systems that determine how organisations perceive markets, prioritise information, and allocate attention (Asif, 2019; Ferreira et al., 2021; Sotarauta, 2016). By articulating vision, scanning the environment, and modelling learning behaviour, leaders shape the organisational climate necessary for Market Orientation to flourish. When leaders champion cross functional communication and customer centric dialogue, they transform MO from a marketing function into a strategic sensing capability (Gelsomino et al., 2025; Zouari et al., 2025).

In this context, leadership is not only a behavioural driver but a meta capability that aligns organisational cognition with environmental complexity. Leaders who exhibit digital literacy and strategic foresight embed digital sensing mechanisms analytics, dashboards, AI feedback loops into strategic routines (Hawrysz et al., 2025; Robertson et al., 2022).

Hence, SL acts as the antecedent and enabler of MO.

Proposition 1 (P1): Strategic Leadership is positively related to Market Orientation.

Proposition 2 (P2): The positive relationship between Strategic Leadership and Market Orientation strengthens under higher levels of Digital Maturity.

Market Orientation and Organisational Learning Capability: From Sensing to Assimilation

Market Orientation enables firms to generate actionable insights from environmental data, yet its impact depends on how effectively these insights are internalised through learning processes. Organisational Learning Capability converts sensed signals into collective understanding and routines (Darling et al., 2009; Domínguez-Escrig et al., 2023; Murray & Chapman, 2003; Ni & Sun, 2009).

When MO and OLC interact, organisations shift from reactive to proactive adaptation. MO provides external input, while OLC ensures its assimilation and diffusion across units. For example, customer insights collected by marketing teams are transformed into process improvements and product innovations through internal learning forums. High Digital Maturity magnifies this relationship by providing the technological infrastructure for rapid data translation shared knowledge platforms, analytics systems, and AI assisted decision tools (Lopez-Sanchez et al., 2025; Robertson et al., 2022).

Hence, DM acts as a contextual amplifier that enhances the organisation's absorptive capacity (Cohen & Levinthal, 1990) and learning speed.

Proposition 3 (P3): Market Orientation is positively related to Organisational Learning Capability.

Proposition 4 (P4): The positive relationship between Market Orientation and Organisational Learning Capability strengthens under higher Digital Maturity.

Organisational Learning Capability as the Dynamic Integrator

Organisational Learning Capability operates as the central integrative mechanism that links sensing with performance. Learning enables the creation, interpretation, and sharing of knowledge that drives innovation and efficiency simultaneously (Ferreira et al., 2021; Murray & Chapman, 2003; Negi, 2021).

From a DCV perspective, OLC embodies the seizing phase it transforms market information into reconfigured capabilities and renewed routines (Sotarauta, 2016). Learning capability also serves as a bridge between leadership's cognitive influence and operational adaptation, translating vision into actionable behaviour. In the European Industry 5.0 context, OLC integrates human reflection with digital intelligence, supporting experimentation, feedback, and continual improvement (Bürgin, 2021; Zouari et al., 2025).

Proposition 5 (P5): Organisational Learning Capability is positively related to Supply Chain Innovation.

Proposition 6 (P6): Organisational Learning Capability is positively related to Supply Chain Efficiency.

Supply Chain Innovation and Efficiency: Complementary Outcomes

Supply Chain Innovation (SCI) and Supply Chain Efficiency (SCE) are often considered trade offs; however, learning capability allows firms to achieve both simultaneously. Innovation arises from exploratory learning developing new processes or partnerships whereas efficiency stems from exploitative learning refining existing operations (Ferreira et al., 2021).

The two outcomes are complementary, forming a virtuous cycle: innovations improve efficiency by reducing waste and cycle time, while efficiency releases resources for further innovation (Bafana et al., 2024; Wong & Ngai, 2022). This dual outcome aligns with the ambidexterity

literature, positioning learning as the integrative capability balancing exploration and exploitation (Negi, 2021).

Proposition 7 (P7): Supply Chain Innovation is positively related to Supply Chain Efficiency.

Proposition 8 (P8): Supply Chain Innovation is positively related to Organisational Performance.

Proposition 9 (P9): Supply Chain Efficiency is positively related to Organisational Performance.

Mediating and Sequential Roles of Organisational Learning Capability

Learning capability mediates the relationship between MO and both SCI and SCE by transforming information into routines and knowledge structures. This mediating pathway ensures that sensing translates into concrete performance outcomes (Domínguez-Escrig et al., 2023; Zouari et al., 2025).

Moreover, the process unfolds sequentially: Market Orientation strengthens learning; learning drives innovation; innovation enhances efficiency; and efficiency leads to performance improvement. This cumulative mechanism reflects a sequential mediation chain consistent with complex adaptive systems (Asif, 2019).

Proposition 10 (P10): Organisational Learning Capability mediates the relationship between Market Orientation and both Supply Chain Innovation and Supply Chain Efficiency.

Proposition 11 (P11): A sequential mediation (MO → OLC → SCI → SCE → OP) explains how learning transforms market intelligence into superior organisational performance.

Integrative System Logic

The complete model represents a dynamic capability cycle in which leadership and learning co-evolve with digital maturity.

- Strategic Leadership provides direction and interpretation.
- Market Orientation captures and disseminates intelligence.
- Learning Capability transforms this intelligence into innovations and efficiencies.
- Digital Maturity accelerates feedback loops, amplifying learning effectiveness.
- Innovation and efficiency collectively enhance Organisational Performance and resilience.

This cyclical model embodies the European vision of human centred digital transformation where leadership and learning, augmented by digital maturity, drive both economic and societal value (Bürgin, 2021; Hawrysz et al., 2025). Therefore, the summary of propositions and theoretical foundations has been presented in the Table 2.

Table 2. Summary of Propositions and Theoretical Foundations

Proposition	Relationship	Theoretical Basis	Moderating or Mediating Role
P1	SL → MO	Strategic Leadership Theory	—
P2	SL → MO (moderated by DM)	Digital Leadership Perspective	Digital Maturity
P3	MO → OLC	Market Orientation Theory	—

P4	MO → OLC (moderated by DM)	Knowledge Integration Theory	Digital Maturity
P5	OLC → SCI	Organisational Learning Theory	—
P6	OLC → SCE	Process Learning / Efficiency Theory	—
P7	SCI → SCE	Ambidexterity Theory	—
P8	SCI → OP	Innovation–Performance Link	—
P9	SCE → OP	Operational Efficiency Theory	—
P10	MO → OLC → SCI/SCE	Mediation Mechanism	—
P11	MO → OLC → SCI → SCE → OP	Sequential Mediation	—

DISCUSSION AND IMPLICATIONS

The proposed Leadership–Learning–Capability Framework offers an integrated explanation of how Strategic Leadership (SL) and Organisational Learning Capability (OLC) act as dynamic meta capabilities, transforming Market Orientation (MO) and Digital Maturity (DM) into sustainable supply chain performance outcomes. This section discusses the study's theoretical, managerial, and policy implications, along with its practical relevance for Industry 5.0 organisations in Europe.

Theoretical Implications
Advancing the Dynamic Capabilities View

This study extends the Dynamic Capabilities View (DCV) by positioning leadership and learning as meta capabilities that orchestrate sensing, seizing, and reconfiguring mechanisms (Asif, 2019; Sotarauta, 2016). It reframes the DCV from an operational to a cognitive system perspective, where Strategic Leadership represents the meta level intelligence that integrates digital sensing and human learning processes. Thus, the framework aligns with emerging literature that identifies cognition and learning as the microfoundations of dynamic capabilities (Hawrysz et al., 2025; Pitelis & Wagner, 2019; Zouari et al., 2025).

Leadership and Learning as Co-Evolving Capabilities

The paper reconceptualises Strategic Leadership (SL) not as a behavioural style but as a systemic capability that enables the formation, development, and renewal of other capabilities. SL provides interpretive direction and cognitive framing, while OLC translates these into collective learning routines. This duality contributes to the ongoing debate in European Business Review regarding how human and technological systems interact to produce dynamic competitiveness (Ferreira et al., 2021; Nasir et al., 2022; Robertson et al., 2022). Hence, SL and OLC are presented as co-evolving engines of adaptability, reinforcing the theoretical view that sustainable advantage derives from capability orchestration rather than possession.

Reframing Market Orientation as a Dynamic Sensing Capability

While MO has historically been conceptualised as a marketing construct, this study embeds it within the DCV as a dynamic sensing capability that enables continuous environmental scanning and signal interpretation (Gelsomino et al., 2025; Ochieng, 2018). By integrating MO into a leadership–learning–digital chain, the paper demonstrates that market intelligence acquisition is insufficient unless it is embedded within learning architectures supported by digital maturity.

Integrating Digital Maturity into the Dynamic Capabilities Framework

Digital Maturity (DM) is redefined here as a contextual amplifier a variable that enhances the strength of capability linkages. Rather than viewing digital transformation as a separate strategic domain, this study embeds DM within the DCV as an enabler of faster sensing and more effective learning. This contribution bridges two emerging academic conversations: dynamic managerial capabilities and digital transformation strategy (Hawrysz et al., 2025; Robertson et al., 2022).

Theoretical Synthesis

Overall, the framework contributes a multi-level synthesis to strategic management theory. It connects leadership cognition (macro-level), organisational learning (meso-level), and digital infrastructure (micro-level) into a continuous renewal system. This integration provides a richer theoretical explanation of how European firms build resilience and adaptiveness under Industry 5.0.

Managerial Implications

The findings carry several actionable insights for European executives navigating digital transition and market volatility.

Leadership as Orchestration, Not Supervision

Managers should view leadership as a capability orchestration process rather than a top-down authority mechanism. By creating learning architectures cross functional review meetings, shared digital dashboards, and reflection loops leaders can ensure that sensing, learning, and execution interact seamlessly (Nasir et al., 2022; Pitelis & Wagner, 2019).

Institutionalising Learning through Digital Maturity

Digital transformation should be accompanied by deliberate efforts to institutionalise learning routines. DM should not only involve technology deployment but also cultural readiness, data literacy, and interpretive competence. Managers must integrate digital feedback systems into regular learning cycles so that analytics serve as tools for insight rather than control (Hawrysz et al., 2025; Zouari et al., 2025).

Balancing Innovation and Efficiency through Learning

Executives must abandon the misconception that innovation and efficiency are opposing forces. Learning driven organisations can simultaneously explore new processes (innovation) and exploit existing systems (efficiency). The OLC framework provides managers with a roadmap for building this ambidexterity, leading to supply chain performance improvement (Wong & Ngai, 2022).

Leadership as a Resilience Capability

Leadership should be recognised as a resilience enabler. Strategic leaders convert crises economic shocks, technological disruptions, and sustainability mandates into opportunities for reflection and renewal. By framing uncertainty as a learning opportunity, leaders strengthen organisational adaptability and agility (Asif, 2019; Ferreira et al., 2021).

Policy Implications

Alignment with European Union Strategies

The proposed model directly supports the European Commission's Industry 5.0 and Digital Europe initiatives, which advocate for human centric, sustainable, and resilient digitalisation (Bürgin, 2021). By showing how leadership and learning can operationalise these policy visions, this paper contributes a theoretical framework for designing institutional programmes that enhance organisational adaptability and digital maturity across the EU.

Public–Private Collaboration and Learning Ecosystems

Policymakers should encourage learning ecosystems where firms, universities, and government agencies share digital resources and best practices. Such ecosystems can accelerate knowledge diffusion, digital skills, and innovation adoption especially among small and medium enterprises (SMEs). These initiatives align with the EU's Digital Skills and Jobs Coalition and Horizon Europe agendas.

Educational and Leadership Development Programmes

Governments and business schools should develop digital leadership curricula that integrate systems thinking, reflective learning, and ethical digital transformation. These programmes would cultivate leaders capable of managing the dual challenge of technological speed and human centred decision making.

Practical Relevance

For practitioners, this paper provides a strategic blueprint for integrating human and digital capabilities.

It advises European organisations to:

- Treat leadership as an enabler of learning ecosystems
- Embed digital maturity into organisational culture
- Balance innovation and efficiency as coexisting outcomes
- Embrace learning as a continuous process linking strategy and execution

These practices will help organisations achieve sustainable competitiveness while advancing the EU's vision for a resilient, inclusive, and digitally empowered economy. Therefore, the summary of theoretical, managerial and policy implications has been shown in Table 3.

Table 3. Summary of Theoretical, Managerial and Policy Implications

Dimension	Key Contribution / Guidance	Core References

Theoretical Implications	Integrates DCV with leadership, learning, and digital transformation. Reframes leadership and learning as meta capabilities.	(Pham et al., 2024; Sotarauta, 2016; Tripathi & Roy, 2024)
Managerial Implications	Leadership as orchestration; integrate digital feedback into learning; balance innovation and efficiency.	(Hawrysz et al., 2025; Lai et al., 2023; Reuter & Floyd, 2024)
Policy Implications	Supports EU Industry 5.0 and Digital Europe agendas; promotes learning ecosystems and leadership education.	(Bürgin, 2021)
Practical Relevance	Human centred, digitally mature leadership drives adaptive and resilient supply chains.	(Ferreira et al., 2021; Nasir et al., 2022)

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

Summary of Core Contributions

This conceptual paper integrates Strategic Leadership (SL), Market Orientation (MO), Organisational Learning Capability (OLC), and Digital Maturity (DM) into a unified framework explaining how European firms build dynamic supply chain capabilities under the Industry 5.0 paradigm. Drawing upon the Dynamic Capabilities View (DCV), the framework demonstrates that leadership and learning act as meta capabilities enabling organisations to sense, seize, and reconfigure resources to sustain competitiveness (Asif, 2019; Sotarauta, 2016).

Three major contributions emerge. First, the paper reconceptualises Strategic Leadership as a cognitive and systemic capability that orchestrates learning and digitalisation. Second, it reframes Market Orientation as a dynamic sensing system embedded within leadership cognition and amplified by DM. Third, it positions Organisational Learning Capability as the core integrator translating market signals into innovation and efficiency, providing a multi stage explanation of organisational renewal (Pitelis & Wagner, 2019; Zouari et al., 2025).

Overall, the framework advances both theoretical discourse and managerial practice by showing that sustainable performance in Europe depends on the interaction of human cognition, learning infrastructure, and digital maturity.

Practical Contributions

The model offers clear guidance for executives and policymakers:

- Build learning architectures linking digital systems and human collaboration.
- Treat leadership as orchestration rather than supervision.
- Align digital maturity investments with learning culture and reflection.
- Pursue innovation and efficiency simultaneously as complementary outcomes.

These insights are particularly relevant for European industries transitioning towards sustainability, resilience, and ethical digitalisation.

Limitations

This research is conceptual in nature and therefore lacks empirical testing. Its scope is limited to theoretical synthesis, yet this also creates opportunities for diverse empirical

validation. Future studies should test the framework across sectors, levels of digital maturity, and cultural contexts. Furthermore, the relationships among SL, OLC, and DM may be non-linear, requiring longitudinal and multilevel analyses to capture feedback effects.

Future Research Directions

To deepen scholarly understanding, future work could address the following directions: **(1)** Empirical Validation through Structural Modelling: Researchers may apply PLS-SEM or network based SEM to test the mediation (OLC) and moderation (DM) effects across European datasets (Hair et al., 2019; Zouari et al., 2025). (2) Cross Cultural and Multi Level Analysis: Future work could examine variations across European regions, considering institutional and cultural moderators influencing leadership–learning dynamics (Gelsomino et al., 2025). (3) Longitudinal and Case-Based Research: Qualitative and longitudinal studies could explore how leadership cognition evolves and how learning routines mature within digital ecosystems. (4) Integration with Sustainability, Ethics, and AI Governance: As the EU moves toward human centred artificial intelligence, scholars should integrate ethical AI, circular economy principles, and sustainable operations into the leadership–learning–capability nexus. Therefore, the future research agenda has been presented in Table 4.

Table 4. Future Research Agenda

Research Focus	Key Questions	Suggested Methods	Expected Contribution	Core References
Empirical Validation of Framework	How do SL, MO, OLC, and DM interact to affect SCI, SCE, and OP?	PLS-SEM; network SEM	Quantifies the framework's causal logic	(Hair et al., 2019; Pham et al., 2024)
Multi Level Leadership Effects	How do top management cognition and team learning interact?	Multi level modelling	Links micro foundations to firm level resilience	(Ferreira et al., 2021; Nasir et al., 2022)
Longitudinal Case Studies	How do learning routines evolve during digital transformation?	Process tracing; qualitative longitudinal	Captures temporal feedback within DCV	(Hawrysz et al., 2025)
Digital Maturity and Sustainability	How does DM enable sustainable Industry 5.0 outcomes?	fsQCA; mixed methods	Integrates digital and sustainability literatures	(Robertson et al., 2022)
Ethical AI and Learning	What role does leadership play in responsible AI adoption?	Conceptual modelling; Delphi studies	Extends DCV into ethical digital transformation	(Reuter & Floyd, 2024; Tripathi & Roy, 2024)

Concluding Remarks

In conclusion, the Leadership–Learning–Capability Framework offers a theoretically grounded and policy relevant explanation of how European organisations can thrive in the Industry 5.0 landscape. By integrating leadership cognition, learning architecture, and digital maturity, firms can transform market intelligence into adaptive capacity, innovation, and resilience. The study reinforces the premise that technology alone does not create advantage it is the synergy between human leadership and digital capability that ensures enduring competitiveness and societal value (Asif, 2019).

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