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# 石河子大学

## 博士学位论文



### 高管数字领导力对制造企业创新的影响 机制研究

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研究方向	企业管理
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**Research on the Impact Mechanism of Executive Digital  
Leadership on Innovation in Manufacturing Enterprises**

A Dissertation Submitted to

**Shihezi University**

In Partial Fulfillment of the Requirements

for the Degree of

**Dctor of Management Science**

By

**Zheng Xiong**

**(Enterprise Management)**

Dissertation Supervisor: Prof. Mai Shen

May, 2025



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## 摘要

在经济高质量发展的背景下，我国制造业正从高速发展转向高质量发展。制造企业需要通过创新以实现高质量发展，这对国家创新驱动战略和经济高质量发展战略意义重大。尽管我国制造企业已取得重要成就，但仍面临自主创新能力不足、产品附加值低和要素利用率不高等问题，传统发展模式难以为继，急需转向以创新为动力的高质量发展模式。同时，数字技术的发展为企业创新提供了机遇，制造企业需要抓住数字化转型的契机，释放创新发展潜力，解决创新动力机制转换问题，推动高质量发展。

然而，传统制造企业受困于传统领导思维模式，传统领导力难以适应数字化时代的要求，导致多数制造企业在数字化转型初期面临困难，创新成果不足，竞争优势尚未完全实现。成功的数字化转型是一把手工程，高管数字认知是数字化转型的逻辑起点，高管数字领导能力是推动企业在数字化转型过程中实现创新的重要因素。为解决数字化转型困境，制造企业需提升高管的数字认知和能力，从高管数字领导力着手，破解数字化转型难题，为高质量发展提供创新驱动动力。

在实践中，制造企业需要通过搜寻手段获取数字化转型所需的专业化数字知识。组织外部数字知识搜寻成为制造企业数字化转型的主要实现路径，为数字化情境下的制造企业创新实现提供了新的数字知识要素与要素组合。然而，现有研究大多基于资本投入产出视角解读数字化情境下高管因素与企业创新之间的机制问题，忽视了微观知识流动过程与创新实现的知识基础，且在企业创新内涵解读中缺乏数字要素的表征。因此，有必要从知识搜寻视角拓展高管数字领导力与制造企业创新的路径机制，并在数字情境下创新内涵的阐述中明确体现数字要素。

企业变革战略的实现还与高层决策者和其他非决策人员的数字化意义建构的一致性有关。这种一致性表现为组织层面的意义建构，这影响了企业战略变革行动与变革效果。因此，尽管高管数字领导力可以发挥战略引领作用，但其效能的发挥受到组织意义建构的影响。此外，制造企业从各类组织搜寻到的数字知识是否能够直接被企业用于创新过程，这与企业的资源编排能力密切相关。因此，在研究知识搜寻在高管数字领导力与制造企业创新之间发挥中介作用的过程中，有必要从组织意义建构和资源编排视角识别出知识搜寻发挥中介效应的条件阈值。

基于以上，本研究以“高管数字领导力对制造企业创新的影响机制”为研究主题，对制造企业数字化实践中面临的困境做出理论回应与诠释。在研究过程中，首先采用文献研究法系统梳理高管数字领导力、企业创新、知识搜寻、意义建构和资源编排的文献，对研究核心变量关系研究作出评述。其次，通过采用扎根研究方法对组织战略层面的高管数字领导力进行解构，得出其领导力模型的结构维度，并运用问卷调查法收集数据进行定量分析，开发出对应测量量表，为定量分析提供工具。再次，运用探索性案例研究选取四家制造企业作为案例对象，通过案例的比较分析提炼出五个核心构念特征描述与概念界定，并根据案例分析识别出高管数字领导力、知识搜寻与制造企业创新

间的关系。之后，回顾高层梯队理论、知识基础理论、意义建构理论和资源编排理论并指出在研究中的应用，基于基础理论与相关研究理论研究提出变量间假设关系，整合案例研究结果，构建了高管数字领导力影响制造企业创新的影响机制理论模型。然后，开展实证研究设计，利用问卷调查法获得 359 份数据，采用统计回归定量分析方法验证假设与理论模型。最后得到如下结论、理论贡献与启示：

**研究结论：**（1）高管数字领导力内涵被解构为包括数字战略定位能力、数字资源建设能力、数字文化氛围创建能力和数字学习实践能力四个维度四维度构念，显著区别于其他领导力模型，且其测量量表由 4 维度 17 个题项组成；（2）高管数字领导力对制造企业创新产生正向影响；（3）知识搜寻在高管数字领导力与制造企业创新间起中介作用，相较于科学型知识搜寻，市场型知识搜寻的中介作用要更大；（4）组织意义建构正向调节科学型知识搜寻和市场型知识搜寻的中介作用；（5）组织意义建构正向调节高管数字领导力对制造企业创新的正向影响；（6）资源编排正向调节科学型知识搜寻的中介作用。

**研究贡献：**丰富了数字化情境下领导力与制造企业创新关系研究，为制造企业数字化转型过程中的创新实现提供理论参考。首先，本研究在企业战略层面探索并明晰了高管数字领导力的结构特征和维度测量研究，细化了数字领导力研究的具体层次，从理论上回答了具备何种特征领导力可以促进制造企业数字化转型过程中的创新，推进了数字化转型背景下的高管领导力与企业创新的关系理论研究进展。这为企业高管衡量和培养数字领导力提供了参考工具。然后，本研究深化了数字化情境下制造企业专业化知识搜寻的维度划分，从知识基础理论视角揭示了科学型知识搜寻和市场型知识搜寻在高管数字领导力与制造企业创新关系间的路径机制。制造企业需要有侧重性的搜寻数字知识，根据自身情况选择对路的数字化路径。最后，本研究从组织意义建构视角和资源编排视角拓展了高管数字领导力影响制造企业创新的理论边界，深化了数字化情境下意义建构理论和资源编排理论的应用研究，明确了“高管数字领导力——知识搜寻——制造企业创新”理论模型的适用情境。企业高管需要重视对数字化战略变革的组织意义建构，塑造全体组织成员对“数字化战略变革对于企业发展具有重要意义”的集体认知，为数字化变革战略获取最广泛的行动支持奠定基础。

**关键词：**数字领导力；企业创新；知识搜寻；意义建构；资源编排

## Abstract

In the context of innovation-driven high-quality economic development, China's manufacturing industry is shifting from high-speed to high-quality development. Manufacturing enterprises need to achieve high-quality development through innovation, which holds significant strategic importance for China's innovation-driven strategy and high-quality economic development. Although Chinese manufacturing enterprises have made substantial achievements, they still face challenges such as insufficient independent innovation capacity, low value-added products, and inefficient resource utilization. Traditional development models are unsustainable, necessitating a shift to an innovation-driven high-quality development paradigm. Concurrently, digital technologies provide opportunities for enterprise innovation. Manufacturing enterprises must seize the momentum of digital transformation to unleash innovation potential, resolve issues in innovation incentive mechanisms, and propel high-quality development.

However, traditional manufacturing enterprises are often constrained by conventional leadership mindsets. Traditional leadership struggles to meet the demands of the digital era, resulting in difficulties during early-stage digital transformation, inadequate innovation outcomes, and unrealized competitive advantages. Successful digital transformation is a "top-down" initiative, where executives' digital cognition serves as the logical starting point, and their digital leadership capabilities are critical drivers of innovation during this process. To overcome digital transformation challenges, manufacturing enterprises must enhance executives' digital awareness and capabilities, leveraging digital leadership to address transformation barriers and provide innovation-driven momentum for high-quality development.

In practice, manufacturing enterprises typically need to employ search strategies to acquire specialized digital knowledge for their transformation efforts. External search for digital knowledge has become a primary pathway for manufacturing firms, providing new digital knowledge elements and combinations necessary for innovation in a digital context. However, existing studies primarily interpret the mechanisms between executive factors and corporate innovation within the framework of capital input-output discussions, overlooking the micro-level knowledge flow processes and the digital knowledge foundations essential to realizing innovation. Consequently, it is imperative to explore the pathways and mechanisms of executive digital leadership and manufacturing enterprise innovation from the perspective of knowledge search, and to explicitly represent digital elements in the interpretation of innovation within digital contexts.

The success of strategic organizational change also depends on the alignment of construction meanings among high-level decision-makers and other non-decision-makers. This alignment manifests as organizational sense-making, impacting both the strategic transformation actions and outcomes of enterprises. Thus, while executive digital leadership can play a strategic guiding role, its effectiveness is influenced by the organizational sense-making processes. Furthermore, can the digital knowledge acquired by manufacturing enterprises through various organizational searches be directly utilized in their innovation processes? This ability relates to the organization's resource orchestration capabilities. Therefore, research examining the mediating role of knowledge search between executive digital leadership and manufacturing enterprise innovation cannot overlook the conditional mechanisms of organizational sense-making and resource orchestration.

Based on the above considerations, this study addresses the theme of "The Impact Mechanism of

Executive Digital Leadership on Innovation in Manufacturing Enterprises," providing a theoretical response to the challenges faced in the digital practices of manufacturing firms. Initially, through a literature review approach, we systematically organize the research on executive digital leadership, corporate innovation, knowledge search, sense-making, and resource orchestration. Subsequently, employing grounded theory methodology, we deconstruct executive digital leadership at the organizational strategic level to derive the structural dimensions of its leadership model. Using questionnaire surveys, we collected quantitative data, developing measurement scales to facilitate this analysis. Additionally, using an exploratory case study, four manufacturing companies were selected. Comparative analysis of these cases yielded descriptions and definitions of five key constructs, and identified the relationships between executive digital leadership, knowledge search, and innovation in manufacturing. Subsequently, the upper echelons theory, knowledge-based theory, sense-making theory, and resource orchestration theory were reviewed, with their applications in this study highlighted. Based on these fundamental and related research theories, hypotheses about the relationships between variables were proposed. The results of the case study were then integrated to develop a theoretical model of the impact mechanism by which executive digital leadership influences innovation in manufacturing. Following this, we integrated the findings from the case studies with sense-making and resource orchestration theory to establish a theoretical model illustrating how executive digital leadership influences innovation in manufacturing enterprises, proposing hypotheses on the relationships among variables within the theoretical model. Finally, we conducted research design, obtaining 359 valid responses via questionnaires and employing statistical regression to test our hypotheses.

Research conclusions: (1) Executive digital leadership is theoretically deconstructed into four dimensions: digital strategic positioning capability, digital resource development capability, creation of a digital cultural atmosphere, and digital learning and practice capability. This framework is significantly distinct from other leadership models, and the corresponding measurement scale comprises 17 items across the four dimensions; (2) Executive digital leadership positively influences innovation in manufacturing enterprises; (3) Knowledge search plays a mediating role between executives' digital leadership and innovation in manufacturing enterprises. Compared to science-oriented knowledge search, market-oriented knowledge search exerts a stronger mediating effect; (4) Organizational sense-making positively moderates the mediating effects of scientific and market-oriented knowledge search; (5) Organizational sense-making also positively moderates the influence of executive digital leadership on innovation in manufacturing enterprises; (6) Resource orchestration positively moderates the mediating effect of science-oriented knowledge search.

Research contributions: Enriches the study of leadership - innovation relationships in digital contexts, offering theoretical references for innovation in manufacturing digital transformation. Firstly, the study explores and clarifies the structural characteristics and dimensions of executive digital leadership at the strategic level, refining the specific levels of digital leadership research. It provides a theoretical response regarding which leadership characteristics can promote innovation during the digital transformation process of manufacturing enterprises, advancing the theoretical exploration of the relationship between executive leadership and corporate innovation in the context of digital transformation. This research offers a reference tool for executives to measure and cultivate digital leadership capabilities. Secondly, this study advances the dimensional classification of specialized knowledge search in manufacturing enterprises under digital contexts, unveiling the pathway mechanisms through which science-oriented knowledge search and market-oriented knowledge search mediate the relationship between executives' digital leadership and corporate innovation from the perspective of knowledge-based theory. Manufacturing enterprises should

conduct targeted searches for digital knowledge, selecting appropriate digital pathways based on their circumstances. Lastly, this research extends the theoretical boundaries concerning the impact of executive digital leadership on innovation in manufacturing firms from the perspectives of organizational sense-making and resource orchestration. It deepens the application of sense-making and resource orchestration theories in digital contexts, clarifying the applicable scenarios of the theoretical model of "executive digital leadership — knowledge search — manufacturing enterprise innovation." Executives must prioritize the organizational sense-making of digital strategic changes, fostering a collective recognition among all members of the organization regarding the significant importance of digital transformation for the development of the enterprise, thereby laying a foundation for obtaining widespread support for digital transformation initiatives.

**Key words:** Digital leadership; Enterprise innovation; Knowledge searching; Sense-making; Resource orchestration

# 目录

摘要 .....	I
<b>Abstract</b> .....	<b>III</b>
第 1 章 绪论 .....	1
1.1 研究背景 .....	1
1.1.1 现实背景 .....	1
1.1.2 理论背景 .....	6
1.2 研究目的与意义 .....	12
1.2.1 研究目的 .....	12
1.2.2 研究意义 .....	13
1.3 研究内容与结构安排 .....	17
1.3.1 研究主要内容 .....	17
1.3.2 结构安排 .....	19
1.4 技术路线与研究方法 .....	20
1.4.1 技术路线 .....	20
1.4.2 研究方法 .....	22
1.5 研究创新点 .....	23
第 2 章 文献综述 .....	27
2.1 数字领导力研究文献综述 .....	27
2.1.1 数字领导力内涵 .....	27
2.1.2 数字领导力维度与测量 .....	31
2.1.3 数字领导力的作用后果 .....	34
2.1.4 数字领导力研究评述 .....	37
2.2 企业创新研究文献综述 .....	38
2.2.1 企业创新内涵 .....	39
2.2.2 数字化情境下的企业创新类型 .....	41
2.2.3 数字化情境下的企业创新研究进展 .....	42
2.2.4 数字化情境下的企业创新研究评述 .....	44
2.3 知识搜寻研究文献综述 .....	46
2.3.1 知识搜寻内涵 .....	46
2.3.2 知识搜寻维度与测量 .....	46
2.3.3 知识搜寻研究进展 .....	49

2.3.4 知识搜寻研究评述 .....	50
2.4 组织意义建构研究文献综述 .....	52
2.4.1 组织意义建构相关概念内涵 .....	52
2.4.2 组织意义建构测量 .....	54
2.4.3 组织变革情境下的意义建构研究进展 .....	55
2.4.4 组织变革情境下的意义建构研究展望 .....	56
2.5 资源编排研究文献综述 .....	57
2.5.1 资源编排内涵 .....	57
2.5.2 资源编排测量 .....	58
2.5.3 资源编排研究进展 .....	59
2.5.4 数字化变革情境下资源编排研究展望 .....	61
2.6 数字领导力与企业创新研究综述 .....	61
2.6.1 数字领导力与企业创新研究进展 .....	61
2.6.2 数字领导力与企业创新研究评价与展望 .....	62
2.7 文献述评 .....	63
第3章 高管数字领导力结构维度与量表开发 .....	66
3.1 研究目的 .....	66
3.2 高管数字领导力结构维度探索 .....	67
3.2.1 研究设计 .....	67
3.2.2 质性数据分析与理论饱和度检验 .....	69
3.2.3 高管数字领导力结构维度研究结果 .....	76
3.2.4 高管数字领导力结构维度理论模型对比辨析 .....	77
3.3 高管数字领导力量表开发 .....	81
3.3.1 量表开发设计流程 .....	81
3.3.2 初始量表形成 .....	82
3.3.3 量表的探索性因子分析 .....	83
3.3.4 量表的验证性因子分析 .....	87
3.3.5 变量间区分效度、效标关联效度和增值效度检验 .....	91
3.3.6 量表开发结果 .....	94
3.4 本章小结 .....	94
第4章 高管数字领导力影响制造企业创新的探索性案例研究 .....	96
4.1 案例研究问题 .....	96
4.2 案例理论分析逻辑框架 .....	97
4.3 案例研究设计 .....	98

4.3.1 案例研究方法 .....	98
4.3.2 案例企业选择 .....	101
4.3.3 案例企业描述 .....	101
4.3.4 案例数据收集 .....	108
4.4 案例数据分析 .....	109
4.4.1 效度检验与饱和度检验 .....	109
4.4.2 数据编码 .....	110
4.5 案例发现与讨论 .....	115
4.5.1 核心概念特征描述与概念界定 .....	115
4.5.2 案例研究核心构念间关系 .....	126
4.6 本章小结 .....	132
第 5 章 理论基础、研究假设与理论模型 .....	132
5.1 理论基础 .....	133
5.1.1 高层梯队理论 .....	133
5.1.2 知识基础理论 .....	136
5.1.3 意义建构理论 .....	138
5.1.4 资源编排理论 .....	140
5.2 研究假设 .....	142
5.2.1 高管数字领导力与制造企业创新 .....	142
5.2.2 知识搜寻的中介作用 .....	146
5.2.3 组织意义建构的调节作用 .....	149
5.2.4 资源编排的调节作用 .....	152
5.3 理论模型构建 .....	153
5.3.1 基于理论假设演绎和案例研究结果的直接关系构建 .....	153
5.3.2 基于理论假设演绎和案例研究结果的中介模型构建 .....	154
5.3.3 基于理论假设演绎的调节中介模型构建 .....	154
5.4 本章小结 .....	156
第 6 章 实证研究 .....	158
6.1 问卷设计 .....	158
6.1.1 设计原则 .....	158
6.1.2 设计流程 .....	158
6.1.3 误差控制 .....	160
6.2 变量测量 .....	160
6.2.1 高管数字领导力 .....	160