THE FACTORS INFLIENCING DIGITAL TRANSFORMATION IN ZHEJIANG DONGHUA PLANNING, ARCHITECTURE & LANDSCAPE DESIGN CO. LTD.

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This Independent Study Has Been Approved as a Partial Fulfillment of the Requirements for the Degree of Master of Business Administration

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ABSTRACT

To better adapt to market needs and improve competitiveness, traditional construction enterprises must proactively pursue transformation by restructuring development strategies, adopting new production and management approaches, and driving corporate upgrading. This will enable the industry to achieve sustainable and high-quality development. This study identified the key influencing factors of digital transformation in construction enterprises and explored driving strategies for this transition. Therefore, this study aimed to examine the significant impacts of regional digital infrastructure, human resources and top management team on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd. This study used a quantitative method, and through a scientifically designed questionnaire survey, primary data on digital transformation were collected from the company's employees. The questionnaire data were processed and analyzed using statistical software (SPSS) to validate the research model's effectiveness and identify critical success factors for enterprise digital transformation. The data analysis results indicated that all three independent variables demonstrated statistically significant positive effects on digital transformation. Based on the data analysis results, this study proposes several practical recommendations for enterprises' digital transformation initiatives: 1) Increasing investment in digital human capital; 2) enhancing the digital capabilities of the corporate top management team; and 3) establishing a digital transformation exchange platform.

Keywords: digital transformation, regional digital infrastructure, human resources, top management team, Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

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SHI YUJIE

DECLARATION

I, Shi Yujie, hereby certify that the work embodied in this independent study entitled "The Factors Influencing Digital Transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd." is result of original research and has not been submitted for a higher degree to any other university or institution.

(Shi Yujie)
June 27, 2025

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Chapter 1 Introduction

1.1 Background of the Study

In recent years, the rapid emergence and widespread application of new-generation digital technologies—such as big data, blockchain, cloud computing, the Internet of Things (IoT), artificial intelligence (AI), and 5G—have ushered in a new wave of technological revolution and industrial transformation (Chi et al., 2021). The accelerating digitalization of the global economy and society has given rise to a multitude of innovative products, business models, and industrial paradigms, signifying that the digital economy has become a key driver of modern development. According to forecasts by International Data Corporation (IDC), the global data volume is projected to surge from 33 zettabytes (ZB) in 2018 to 175 ZB by 2025, marking humanity's entry into the era of big data (Xue, 2024). Data has now officially emerged as the fifth essential factor of production, alongside land, labor, capital, and technology. In response, nations worldwide have begun prioritizing the exploration and utilization of data as a strategic resource, with many incorporating digital economy development as a critical component of their national strategies.

China's construction industry has maintained its position as a global leader in total output value since 2010, boasting the world's largest construction scale across various sectors including housing and infrastructure. However, the industry's quality efficiency and core competitiveness have failed to match its rapid expansion, revealing structural contradictions that can be characterized as "large in scale yet low in efficiency, broad in coverage yet weak in innovation." Domestically, the industry faces multiple challenges. As economic growth slows and fixed-asset investment declines, the traditional "demolish-and-rebuild" model has become increasingly unsustainable (Liu & Liu, 2023). The sector grapples with shrinking profit margins, outdated construction methods, and intense homogenized competition, while simultaneously facing mounting pressure to transition toward green and low-carbon practices. Furthermore, inadequate independent innovation capabilities have resulted in technological bottlenecks in critical areas such as construction industrialization and smart building technologies, leaving the industry heavily dependent on advanced international technologies and equipment (Wei & Jiao, 2017).

On the international front, China's construction industry confronts a dual squeeze. While Southeast Asian countries continue to secure low-to-mid-range construction projects through their labor cost advantages, developed nations maintain their

dominance in high-end markets by leveraging technological barriers including BIM and modular construction techniques (Sun et al., 2019). At this critical juncture for industrial transformation, China's construction sector must urgently chart a course toward high-quality development to transition from being a "construction giant" to becoming a true "construction powerhouse." This transformation requires addressing both domestic inefficiencies and international competitive pressures while embracing innovation and sustainable practices.

1.2 Questions of the Study

For large-scale construction projects, relying solely on traditional project management methods makes it challenging to enhance quality control across production stages or meet increasingly stringent client demands. To better adapt to market needs and improve competitiveness, traditional construction enterprises must proactively pursue transformation by restructuring development strategies, adopting new production and management approaches, and driving corporate upgrading (Li et al., 2023). This will enable the industry to achieve sustainable and high-quality development.

1. Does regional digital infrastructure have a significant effect on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.?

2. Do human resources have a significant effect on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.?

3. Does top management team have a significant effect on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.?

1.3 Objectives of the Study

This study examines the key influencing factors of digital transformation in construction enterprises and explores driving strategies for this transition. The research aims to enhance the initiative and motivation of construction firms in digital transformation, promote industrial collaborative development, and provide theoretical support and actionable recommendations.

1. To examine the significant impact of regional digital infrastructure on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

2. To examine the significant impact of human resources on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

3. To examine the significant impact of top management team on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

1.4 Scope of the Study

This study conducted a systematic review of literature closely related to the research topic, encompassing both the conceptualization of digital transformation and existing discussions on its influencing factors. Based on this foundation, it specifically examined key factors affecting digital transformation, including regional digital infrastructure, human resources, and top management team characteristics, while developing an integrated research model.

Using a quantitative method, the study investigated the interaction effects of these dimensions on corporate digital transformation. The research selected Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd. as the case study. Through a scientifically designed questionnaire survey, primary data on digital transformation were collected from the company's employees, measured with a five-point Likert scale. The questionnaire data were processed and analyzed using statistical software (SPSS) to validate the research model's effectiveness and identify critical success factors for enterprise digital transformation.

1.5 Significance of the Study

1.5.1 Theoretical Significance

At a critical juncture when China is vigorously developing the digital economy, building a "Digital China," and promoting high-quality economic development, construction enterprises—as key players in this pillar industry of the national economy—must integrate into the digital economy and undergo digital transformation. This is essential for achieving industrial digitization in construction and accelerating

progress toward becoming a global leader in engineering.

Moreover, research on digital transformation remains largely theoretical, and construction enterprises have received relatively limited academic attention in this field in recent years. Therefore, by examining the digital transformation practices of Chinese construction enterprises and investigating the influencing factors behind their transition, this study holds significant value—both theoretically, by expanding the boundaries of existing research, and practically, by providing actionable insights for government policymakers and corporate managers.

1.5.2 Practical Significance

China is currently transitioning from a major construction country to a construction powerhouse, making the acceleration of construction industry digitalization and the promotion of enterprise transformation imperative and practically significant.

This study's examination and analysis of Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd. provides valuable empirical reference for other construction enterprises, while the identified influencing factors and their mechanisms can enhance the industry's understanding of digital transformation, enabling targeted improvements.

The findings assist construction enterprises in strategically allocating resources and selecting appropriate transformation pathways based on their unique resource endowments and developmental conditions, thereby facilitating more effective digital transformation implementation.

Furthermore, the proposed countermeasures and recommendations enable government authorities to better assess the strengths and weaknesses of construction enterprises' digital transformation efforts, supporting evidence-based policymaking to enhance the precision and effectiveness of policy interventions.

1.6 Definition of Key Terms

Digital transformation refers to the process of digitizing production factors such as equipment, technology, and systems, while integrating digital information systems, big data analytics, cloud computing, and other technologies with enterprise

operations and management.

Regional digital infrastructure refers to the integrated system of foundational hardware facilities, software platforms, and institutional frameworks that support digital development within a specific geographic area.

Human resources refer to the total population with labor capabilities, encompassing physical strength, intelligence, knowledge, skills, and experience.

Top management team refers to the group of senior executives at the highest decision-making level within an enterprise or organization.

Chapter 2 Literature Review

2.1 Theoretical Foundation

2.1.1 Contingency Theory

Contingency Theory, first emerged in the United States during the late 1960s and early 1970s, focusing on the dynamic management process where leaders had to adapt to environmental changes. The theory posited that organizations needed to adjust their operations in response to external environmental shifts and identify the most reasonable and effective solutions at appropriate moments (Peng & Liu, 2020). From the contingency perspective, corporate operations management could not remain static - to address internal and external uncertainties, managers had to make timely adjustments accordingly.

In organizational studies, Contingency Theory advocated viewing organizations through the lenses of "change" and "systematization." Scholars subsequently identified organizations as having open and dynamic characteristics, suggesting that managers should have made decisions based on their specific organizational circumstances (Jiang & Ding, 2024). No corporate strategy could remain perpetually effective; only when growth strategies achieved optimal alignment with environmental factors could organizational efficiency be maximized. However, identifying practical and effective approaches within specific contexts remained a persistent "bottleneck" in actual business practice. Contingency Theory systematically analyzed both internal and external organizational factors, recognizing that each company operated within unique environmental conditions. Consequently, managers had to base their decisions on the organization's internal resources and external environment while continuously adapting their management strategies according to the company's evolving development needs.

Contingency Theory was characterized by its systematic openness, practice-oriented approach, and variable-based analytical framework. Enterprises needed to implement hierarchical management configurations based on their internal and external conditions while establishing fair and transparent operational mechanisms to stimulate organizational initiative, which was essential for achieving sustainable development (Peng & Liu, 2020).

Fundamentally practice-driven in nature, the theory's primary objective involved conducting in-depth examinations of various management processes before

implementing corresponding adjustments based on concrete practical research findings. This analytical process relied heavily on variable analysis, whereby organizations examined operational factors through controlled variable assessment during operations, analyzing how different elements influenced business performance and consequently prompting managers to modify their management approaches (Xia & Huang, 2019). In modern society, information technology experienced rapid advancement, with cutting-edge emerging technologies completely transforming traditional production and operational models. Enterprises found it necessary to continuously adapt to these new environmental conditions to maintain sustainable and healthy development, a principle that remained consistent with Contingency Theory's core propositions about organizational adaptation.

2.1.2 Resource Orchestration Theory

Resource Orchestration Theory was developed to guide enterprises in managing resources throughout their entire lifecycle and across organizational boundaries in general contexts, with particular emphasis on the pivotal role managers play in coordinating resources and capabilities (Wu et al., 2023). This theoretical framework effectively addressed the limitations inherent in Resource-Based View.

Resource-Based View (RBV) has been one of the pivotal theories in strategic management research, fundamentally proposing that firms can be conceptualized as unique bundles of resources that serve as prerequisites for sustaining competitive advantages. As the theory evolved, scholars like Feng et al. (2022) categorized these resources into tangible and intangible classifications to enhance comprehension. Tangible resources encompassed physical assets (including corporate locations and facilities), financial assets (such as profitability and financing capabilities), and organizational structural assets (like management systems). Intangible resources included innovative assets (R&D capabilities and change management competencies), human capital assets (talent pools and organizational culture), and reputational assets (brand equity and corporate goodwill) (Feng et al., 2022). These resource portfolios not only facilitated the construction of effective isolating mechanisms for firms but also, through four strategic approaches, creating heterogeneous resources, establishing pre-competitive constraints, leveraging resource immobility, and implementing post-competitive restrictions - substantially reduced transaction costs. This strategic resource management consequently expanded profit margins and ultimately shaped sustainable market advantages.

2.2 Digital Transformation

Corporate digital transformation refers to the process of digitizing production factors such as equipment, technology, and systems, while integrating digital information systems, big data analytics, cloud computing, and other technologies with enterprise operations and management. Ultimately, this creates an interconnected digital ecosystem encompassing resources, elements, and business processes (Qian & He, 2021).

The essence of digital transformation lies in leveraging digital technologies and data resources to navigate complex uncertainties, achieve quantum leaps in efficiency, and ultimately create new competitive advantages for enterprises (Li & Cao, 2022). Notably, the effectiveness of digital transformation demonstrates network effects, the more companies undergo this transformation simultaneously within the same geographical region, the more pronounced its collective benefits become. At its core, digital transformation represents a market-driven response to consumer demand, involving systematic data collection and analysis to understand users and uncover their personalized needs, thereby enabling market-adaptive strategies. To realize synergistic development of digital operations, enterprises must fundamentally restructure their organizational frameworks through information technology and establish comprehensive network connectivity.

The ultimate objectives of digital transformation encompass enhancing three critical dimensions of enterprise efficiency: economic performance through optimized operations, social value creation via improved services, and innovation capacity by fostering data-driven decision making. This multidimensional efficiency improvement constitutes the fundamental purpose of developing a digital economy. A cohort of scholars has dedicated research efforts to investigating critical drivers of digital transformation, including regional digital infrastructure, human resources, top management team, and other enabling factors (Liu et al., 2019; Lin & Zhang, 2022).

2.2.1 Regional Digital Infrastructure

Regional digital infrastructure refers to the integrated system of foundational hardware facilities, software platforms, and institutional frameworks that support digital development within a specific geographic area (Tian et al., 2011). Its core function is to provide inclusive digital services for governments, businesses, and residents within the region, while facilitating data flow and collaborative innovation.

An innovative regional environment further facilitates the optimization and rationalization of industrial structures within the region, providing robust support for the long-term development of enterprises. In this context, regional innovation infrastructure plays a pivotal enabling role. By offering a comprehensive set of facilitative conditions for innovation activities, it ensures the smooth progression of innovation processes and stimulates deeper engagement in innovative endeavors. This infrastructure encompasses full-spectrum support, from hardware facilities to software services, providing essential resources and environments for innovation actors, thereby accelerating the emergence and commercialization of innovative outcomes (Zhang et al.,2022).

Well-developed regional digital infrastructure plays a crucial role in enabling more enterprises to adopt information technologies effectively. In areas with advanced information infrastructure, companies' investments in digital equipment benefit from better service support and achieve higher utilization efficiency, thereby significantly improving individual firms' information technology productivity. The reliability, applicability, and completeness of digital infrastructure exert substantial influence on managers' digital strategy orientation. Zhu and Yan (2022) emphasized that comprehensive digital economic infrastructure serves as a fundamental prerequisite for enterprises to implement digital technologies and achieve successful transformation. As regional digital infrastructure continues to improve, the digital business ecosystem gains increasingly expansive development space, creating more favorable conditions for corporate digitalization.

2.2.2 Human Resources

Human resources refer to the total population with labor capabilities, encompassing physical strength, intelligence, knowledge, skills, and experience (Gu & Zhang, 2023).

You et al. (2021) posited that human resources constitute an organization's most vital intangible asset. As the core strategic resource, human capital exerts a determinant influence on corporate sustainable development and competitive advantage enhancement. A high-caliber talent pool forms the foundation of enterprise growth. During digital transformation initiatives, companies must particularly rely on these professionals' expertise to effectively deploy emerging technologies and assimilate new knowledge, thereby driving the transformation agenda. Contemporary management practices demonstrate that human resource superiority serves as the wellspring of enduring organizational competitiveness. To achieve optimal operational

performance, firms must achieve deep integration between their human capital strategies and daily operational management.

With the widespread adoption of digital technologies and smart devices in economic activities, corporate digital transformation has raised higher skill requirements for the workforce. The higher a company's level of digital integration, the greater its relative demand for highly skilled labor (Li, 2023). This is because increased digitalization and automation tend to replace simple, repetitive tasks while reducing coordination time in production. In contrast, complex, high-skilled labor remains less susceptible to substitution.

2.2.3 Top Management Team

Top management team refers to the group of senior executives at the highest decision-making level within an enterprise or organization. It typically includes core leadership members such as the Chief Executive Officer (CEO), Chief Financial Officer (CFO), and Chief Operating Officer (COO) (Wu et al., 2023). Collectively, the TMT is responsible for formulating corporate strategy, making critical business decisions, and steering the organization's development direction.

In corporate operational practice, the top management team (TMT) significantly influences strategic decision-making and business performance. Upper Echelons Theory posits two fundamental propositions: first, when presented with identical organizational environments and strategic information, different executives demonstrate marked variations in their interpretation and subsequent strategic choices. Second, these differences primarily stem from executives' prior experiences, deeply-held values, cognitive frameworks, and individual characteristics (Liu & Fu, 2022).

Corporate digital transformation typically constitutes a "top-down" initiative that rarely succeeds through bottom-up approaches. Most enterprises implement such transformations through executive-driven, hierarchical processes where senior management assumes responsibility for both strategic decision-making and operational execution. The success or failure of these digital transformation efforts is fundamentally contingent upon three critical executive factors: their attitudinal orientation toward digitalization, cognitive understanding of technological disruptions, and competency levels in leading organizational change (Liu & Wang, 2019).

Enterprise digital transformation spans multiple functions and business domains.

From a strategic decision-making perspective, digital transformation strategy encompasses the introduction and application of digital technologies, innovation in corporate operational processes, and business model restructuring (Ma & Wang, 2023). This presents unprecedented challenges for the top management team responsible for formulating and implementing transformation strategies, requiring them to quickly comprehend digital characteristics and redefine traditional roles to effectively address digital transformation.

2.3 Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd. is a Hangzhou-based design firm holding China's highest-level professional qualifications in architectural design, urban planning and landscape architecture. As an industry leader with comprehensive Class-A design certifications, the company has cultivated extensive strategic partnerships with major real estate developers, government agencies, EPC contractors and design institutes across China.

Over years of professional practice, Donghua has built an impressive portfolio spanning urban and rural planning, landscape architecture, cultural/educational facilities, office/hotel complexes, healthcare/senior living projects, residential/commercial developments, industrial parks, characteristic towns, urban renewal initiatives, interior design and municipal engineering. The company's completed projects have earned widespread recognition, establishing Donghua as a distinctive brand known for innovatively blending regional characteristics with sustainable design principles.

Key advantages include the firm's multidisciplinary design capabilities, government-recognized expertise, large-scale project experience and integrated design solutions - all supported by its national Class-A certifications in architecture, planning and landscape design.

2.4 Conceptual Framework

The conceptual framework of this study is showed in Figure 2.1.

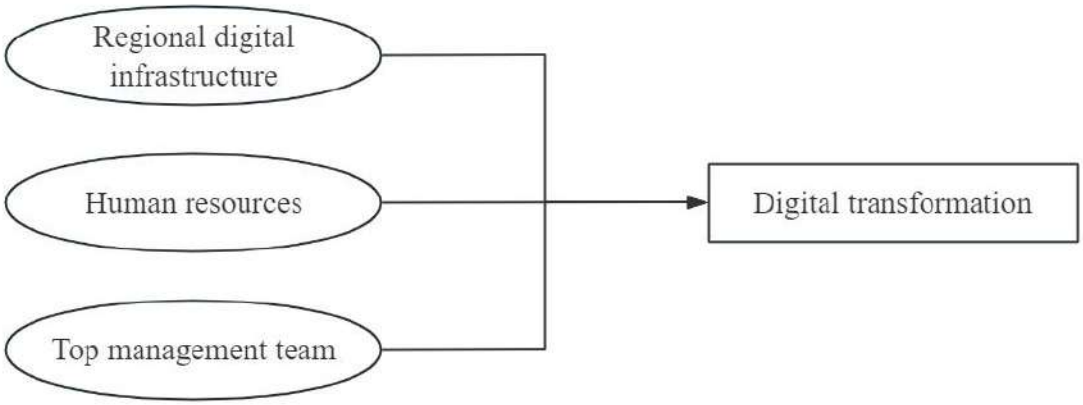

Figure 2.1 Conceptual Framework

Chapter 3 Research Methodology

3.1 Research Design

This study constructed a theoretical model of digital transformation. However, the variables in the theoretical model cannot be directly observed and thus need to be connected to specific phenomena through measurement. Therefore, this research adopted a quantitative approach and followed scientifically rigorous principles in questionnaire design. The survey instrument was developed by drawing upon relevant domestic and international studies as well as established measurement scales.

Ultimately, the questionnaire was distributed on a large scale via the Wenjuanxing platform. The collected data underwent reliability and validity analyses to ensure measurement quality, laying the foundation for subsequent empirical research.

3.2 Population and Sample

The population of this study comprised the employees of Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd., with a total of 208 responses collected.

3.3 Hypothesis

H1: Regional digital infrastructure has a significant effect on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

H2: Human resources have a significant effect on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

H3: Top management team has a significant effect on the digital transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

3.4 Research Instrument

This study developed a questionnaire by adapting well-established measurement scales to fit the research context. The questionnaire comprises two sections: an introductory statement explaining the survey purpose, content and expressing appreciation to participants, followed by the main body which collects respondents' demographic information and measures key variables using a 5-point Likert scale (1 = "Strongly Disagree" to 5 = "Strongly Agree"), with respondents evaluating each item based on their actual organizational experiences.

3.4.1 Regional Digital Infrastructure Scale

The construction of regional digital infrastructure can be regarded as a heterogeneous resource that influences the competitive digital advantages of construction enterprises (Gong & Jin, 2023). Since the application of digital technologies must be supported by corresponding digital infrastructure, such infrastructure development serves as the material foundation for the digital transformation of construction enterprises. The regional digital infrastructure scale in this study consists of five measurement items.

Table 3.1 Regional Digital Infrastructure Scale

1.	Hangzhou has established a high-performance computing cloud platform specifically for architecture and design enterprises.
2.	Our company's local area provides dedicated bandwidth guarantees for BIM collaborative design in architectural landscaping projects.
3.	The regional planning and construction industry digital twin technology support platform has been implemented in our company's vicinity.
4.	The local construction project approval system achieves seamless data integration with design software in our company's area.
5.	The regional architectural design industry big data center provides real-time updates of design standards in our company's location.

3.4.2 Human Resources Scale

Human resources can facilitate knowledge sharing and collaboration between enterprises, creating more cooperative opportunities and thereby accelerating the digital transformation process (Gu & Zhang, 2023). The human resources scale in this study consists of five measurement items.

Table 3.2 Human Resources Scale

6.	The company's recruitment system can automatically match BIM skill requirements for design positions.
7.	The company provides planning and design skills training supported by AR/VR technologies.
8.	The training system intelligently recommends learning content based on project types.
9.	The company utilizes digital tools to quantify the creative output of design staff.
10.	The knowledge management system enables intelligent push notifications of architectural design expertise.

3.4.3 Top Management Team Scale

In both industry and academia, a company's digital transformation is universally recognized as a typical "top-down" initiative, primarily driven by leadership. The success of such transformation largely depends on the willingness, degree of emphasis, level of understanding, and support from senior management, particularly top leadership (Du & Jia, 2017). Therefore, the executive team serves as the central driving force for digital transformation in construction enterprises, determining whether the company "chooses to" transform. The top management team scale in this study consists of five measurement items.

Table 3.3 Top Management Team Scale

11.	The company's five-year development plan includes clearly defined R&D investment plans for smart city design technologies.
12.	Major design project review meetings utilize big data analytics platforms to support decision-making.
13.	Executives can leverage City Information Modeling (CIM) data for market opportunity analysis.
14.	Management performance evaluation indicators incorporate digital transformation outcomes.
15.	Digital competencies are incorporated into promotion criteria.

3.4.4 Digital Transformation Scale

During the digital transformation process, it is essential to establish a collaborative mechanism among construction industry stakeholders that enables data

sharing and mutually beneficial outcomes. Simultaneously, greater integration of BIM technology with next-generation technologies like big data, IoT, and blockchain should be strengthened (Zhang et al., 2023). Supported by digital technologies, this approach continuously improves information exchange and collaboration methods between enterprises. These digital solutions enable companies to acquire project data and achieve integrated management of project information, thereby advancing intelligent construction processes (Zhang et al., 2022). The digital transformation scale in this study consists of five measurement items.

Table 3.4 Digital Transformation Scale

16.	The company has established a standardized digital asset library for design materials.
17.	Construction drawing reviews now feature automated intelligent verification.
18.	Design modifications are automatically synchronized with all relevant stakeholders.
19.	The company utilizes big data analytics to guide regional business deployment.
20.	A digital-sharing culture for design deliverables has been institutionalized within the company.

3.5 Reliability and Validity Analysis of the Scale

3.5.1 Questionnaire Reliability Analysis

Table 3.5 Questionnaire Reliability Analysis Results

Scale	Item	Cronbach's α
TMT Scale	5	0.824
RDI Scale	5	0.776
HR Scale	5	0.812
DT Scale	5	0.749

Notes：
Digital transformation: DT;
Regional digital infrastructure: RDI;
Human resources: HR;
Top management team: TMT

Reliability analysis is a method used to examine the internal consistency and stability of measurement scales. The Cronbach's alpha coefficient (α) serves as the predominant indicator for assessing internal consistency reliability. When the coefficient exceeds 0.7, it demonstrates that the scale possesses high reliability and that the measurement items maintain strong internal consistency.

Using SPSS software, the reliability test results are presented in Table 3.5. As shown, all measured variables demonstrate Cronbach's α coefficients exceeding 0.7, indicating good reliability of the scales in the questionnaire.

3.5.2 Questionnaire Validity Analysis

Table 3.6 Questionnaire Validity Analysis Results

KMO Value		0.812
The Sphericity Test of the Bartlett	**Approximate chi-square**	2137.914
	df	264
	Sig.	0.000

Validity testing examines the accuracy and reliability of questionnaires by assessing whether measurement scales truly reflect the targeted variables. The analysis employs both the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity to evaluate scale validity. The established criteria require: (1) KMO values exceeding 0.7, and (2) Bartlett's test showing sufficiently large approximate chi-square values with statistical significance ($p < 0.05$).

The validity test results obtained through SPSS software are presented in Table 3.6. As shown, the questionnaire demonstrates good construct validity, with a KMO value of 0.812 and Bartlett's test of sphericity yielding a significant approximate chi-square value of 2137.914 ($p < 0.001$).

3.6 Data Collection

Wenjuanxing (Questionnaire Star) is China's leading survey sample service platform, providing professional sampling solutions for research needs. Therefore, this study distributed questionnaires to 208 employees of the target company via the Wenjuanxing platform. After data screening, 202 valid responses were obtained, yielding a questionnaire recovery rate of 97.12%.

3.7 Data Analysis

This study systematically processed and analyzed the data using the following three statistical analysis approaches:

1) Descriptive Statistic Analysis

Descriptive analysis was conducted to summarize and present the fundamental characteristics of the research variables.

2) Correlation Analysis

Correlation analysis was employed to examine the linear relationships between research variables. This study utilized Pearson's correlation coefficient (for continuous variables) to assess bivariate relationships. The analysis provided preliminary insights into statistically significant associations between variables, serving as a foundation for subsequent regression analysis.

3) Multiple Regression Analysis

Multiple regression analysis was conducted to investigate the combined effects of multiple independent variables on the dependent variable.

Chapter 4 Findings

4.1 Descriptive Statistical Analysis of Respondents

Table 4.1 Demographic Analysis Results

Items	Classification	Number of Participants	Percentage (%)
Gender	Male	71	35.1
	Female	131	64.9
Age	Below 30 years old	29	14.3
	31-40 years old	95	47.0
	41-50 years old	52	25.8
	Over 50 years old	26	12.9
Educational background	College diploma and below	22	10.9
	Bachelor degree	74	36.6
	Master degree	62	30.7
	PHD degree	44	21.8
Position	Top-level management	21	10.4
	Middle management	37	18.3
	Front-line management	62	30.7
	General staff	82	40.6

This study conducted a descriptive statistical analysis of demographic characteristics based on 202 respondents. The gender distribution showed a significantly higher proportion of female respondents at 64.9% (n=131) compared to males at 35.1% (n=71). In terms of age distribution, the 31-40 age group constituted the largest segment at 47.0% (n=95), followed by the 41-50 group at 25.8% (n=52), while those below 30 and above 50 accounted for 14.3% (n=29) and 12.9% (n=26) respectively.

Educational attainment analysis revealed that 89.1% of respondents held a bachelor's degree or higher, with specific breakdowns showing 36.6% (n=74) bachelor's degree holders, 30.7% (n=62) master's degree holders, and 21.8% (n=44) doctoral degree holders. The hierarchical position distribution exhibited a pyramid structure: general staff formed the largest group at 40.6% (n=82), followed by front-line managers at 30.7% (n=62), middle managers at 18.3% (n=37), and top-level management at 10.4% (n=21).

4.2 Correlation Analysis

Table 4.3 Correlation Analysis Results

Variable	RDT	HR	TMT	DT
RDT	1			
HR	0.382**	1		
TMT	0.357**	0.458**	1	
DT	0.364**	0.422**	0.501**	1

Notes：
Digital transformation: DT;
Regional digital infrastructure: RDI;
Human resources: HR;
Top management team: TMT

The correlation analysis (in Table 2) revealed statistically significant relationships between the key variables and digital transformation. Specifically, Regional Digital Infrastructure ($r=0.364$, $p<0.01$), Human Resources ($r=0.422$, $p<0.01$), and Top Management Team ($r=0.501$, $p<0.01$) all demonstrated significant positive correlations with Digital Transformation at the 1% significance level. These findings confirm the substantial associations between selected independent variables and the digital transformation outcome, though the precise causal effects require further examination through subsequent analyses.

4.3 Multiple Regression Analysis

Table 4.3 Multiple Regression Analysis Results

Variable	**Standardized coefficient Beta**	**t - value**	**p - value**	**VIF**
RDI	0.274	4.325	0.001**	1.82
HR	0.361	3.447	0.001**	2.11
TMT	0.214	3.874	0.001**	1.89
R^2	0.522	**Adjusting R^2**	0.517	
F	43.266**			

Notes：
Regional digital infrastructure: RDI;
Human resources: HR;
Top management team: TMT

This study examined the impacts of regional digital infrastructure, human resources, and top management team on corporate digital transformation through multiple regression analysis. As presented in Table 4.3, all three independent variables demonstrated statistically significant positive effects on digital transformation ($p<0.01$). Among them, human resources showed the strongest influence ($\beta=0.361$), followed by regional digital infrastructure ($\beta=0.274$) and top management team ($\beta=0.214$). The variance inflation factors (VIF) for all predictors were below 3 (RDI=1.82, HR=2.11, TMT=1.89), indicating no substantial multicollinearity concerns in the model.

The regression model exhibited good explanatory power with an adjusted R^2 of 0.517, suggesting that these variables collectively account for 51.7% of the variance in digital transformation. The overall model significance was confirmed by the F-test result ($F=43.266$, $p<0.01$).

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

5.1.1 Regional Digital Infrastructure Has a Significant Effect on Digital Transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

Regional digital infrastructure plays a significantly positive role in the digital transformation of enterprises. This demonstrates that the maturity of regional digital infrastructure directly impacts the progress and outcomes of enterprise digital transformation. A robust digital foundation not only provides essential technical support and resource guarantees for businesses, but also significantly reduces transformation costs and enhances efficiency, serving as a crucial external driver for corporate digital development.

These findings indicate that enterprises must carefully evaluate local digital infrastructure conditions when advancing their transformation initiatives. Concurrently, municipal governments should prioritize digital infrastructure development as a strategic lever for fostering regional digital ecosystems. By optimizing infrastructure deployment and service capabilities, policymakers can create more favorable external conditions for corporate digital transformation, ultimately establishing a virtuous cycle where regional digital advancement and enterprise transformation outcomes mutually reinforce each other.

5.1.2 Human Resources Have a Significant Effect on Digital Transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

Human resources play a significantly positive role in the digital transformation of enterprises. This demonstrates that enhancing human resources helps enterprises cultivate innovative thinking, foster technological innovation, and thereby advance digital transformation to a more substantial stage. Therefore, companies should prioritize the development and management of human resources, regarding it as one of the key driving factors for digital transformation.

Enterprises should accelerate the development of "digital talents" by establishing joint training bases with research institutes, innovating cultivation models, and leveraging digital technologies' advantages in resource allocation and human capital enhancement to actively nurture digital professionals.

5.1.3 Top Management Team Has a Significant Effect on Digital Transformation in Zhejiang Donghua Planning, Architecture & Landscape Design Co., Ltd.

Top management team plays a significantly positive role in the digital transformation of enterprises. This indicates that proactive engagement from the top management team serves as one of the key driving forces for enterprise digital transformation.

The success of enterprise digital transformation hinges on the deep engagement and strategic leadership of the senior management team. Executives must first develop a digital mindset and construct a transformation vision with forward-looking perspective, while consistently energizing the organization throughout the change process. In driving implementation, they need to demonstrate acute insight into industry technology trends and make precise judgments in complex environments, coupled with the discernment to select high-quality partners that can accelerate transformation progress. Most critically, management must conduct thorough analysis of existing business models and processes to accurately identify value-creation opportunities and innovation potential enabled by digital transformation. This enables setting clear transformation objectives, optimizing resource allocation, and concentrating finite investments in the most promising areas. Such systematic strategic thinking and execution capability constitutes the fundamental determinant for achieving tangible digital transformation outcomes.

5.2 Recommendation

5.2.1 Increasing Investment in Digital Human Capital

To enhance the specialization and digital capabilities of top management teams (TMTs), enterprises may establish dedicated digital transformation units within their executive leadership. These digitally-focused management teams should comprise professionals with diverse digital competencies, ensuring the TMT possesses both strategic digital leadership and technical proficiency. Such cross-functional teams can holistically drive digital strategy implementation - from organizational vision to construction production, and from internal controls to external market expansion.

5.2.2 Enhancing the Digital Capabilities of the Corporate Top Management Team

For a successful digital transformation, enterprises must efficiently allocate and

restructure internal resources while making substantial investments in personnel, capital, and infrastructure. Therefore, when implementing digital transformation initiatives, organizations must thoroughly understand the critical competencies required of their senior leadership team.

In the digital era, executive leaders need to develop sharper market trend awareness, continuously acquire and apply digital knowledge, maintain a customer-centric approach, proactively embrace technological advancements, and effectively drive the integration of digital solutions with core business operations.

This version maintains a professional, cohesive flow while improving upon the original translation with more natural business English phrasing and stronger verb choices. The structure presents the key ideas in logical progression without bullet points while preserving all essential concepts.

5.2.3 Establishing a Digital Transformation Exchange Platform

At present, one of the major challenges in the digital transformation of construction enterprises is the insufficient understanding of this transformation and the lack of mature practices and experiences to reference. Therefore, it is necessary for government departments to establish platforms for sharing digital transformation experiences within the construction industry.

On one hand, government departments can extensively implement pilot programs for digital transformation among construction enterprises, create exemplary digital construction projects, and actively promote the transformation experiences of these model enterprises and demonstration projects. This will help drive and facilitate the digital transformation process of other construction enterprises.

On the other hand, government departments may authorize industry associations to regularly organize experience-sharing sessions or expert lectures on digital transformation for local construction enterprises. This will provide them with a platform and opportunities for mutual learning and exchange.

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Appendix

Dear Respondent,

Thank you for taking the time to participate in this survey during your busy schedule. This anonymous questionnaire is designed for academic research purposes only, and we strictly adhere to principles of data privacy and confidentiality to ensure the security of your responses.

This study investigates the current status and challenges of digital transformation among Chinese enterprises. Your valuable input will provide critical insights to support corporate digital transformation strategies and offer theoretical guidance for future development. Please answer each question carefully based on your company's actual situation and your professional perspective, as your complete and accurate responses are essential to the validity of this research.

We sincerely appreciate your cooperation and contribution to this important study.

Part I: Basic Information

1. Your gender:
   - ☐ Male
   - ☐ Female
2. Your age:
   - ☐ Under 30 years old
   - ☐ 31-40
   - ☐ 41-50
   - ☐ Over 50 years old
3. Your educational background:
   - ☐ College diploma and below
   - ☐ Bachelor degree
   - ☐ Master degree
   - ☐ PHD degree
   - ☐ High school or below
   - ☐ Undergraduate degree
   - ☐ Graduate degree or above
4. Your position:
   - ☐ Top-level management
   - ☐ Middle management

☐ Front-line management

☐ General staff

Section 2: Questionnaire

This section measures variables related to your company's digital transformation. Please rate each item based on your organization's actual situation and your professional judgment using the following scale:

1 - Strongly Disagree

2 - Disagree

3 - Neutral

4 - Agree

5 - Strongly Agree

Items	**5**	**4**	**3**	**2**	**1**
Regional Digital Infrastructure Scale					
1. Hangzhou has established a high-performance computing cloud platform specifically for architecture and design enterprises.					
2. Our company's local area provides dedicated bandwidth guarantees for BIM collaborative design in architectural landscaping projects.					
3. The regional planning and construction industry digital twin technology support platform has been implemented in our company's vicinity.					
4. The local construction project approval system achieves seamless data integration with design software in our company's area.					
5. The regional architectural design industry big data center provides real-time updates of design standards in our company's location.					
Human Resources Scale					
6. The company's recruitment system can automatically match BIM skill requirements for design positions.					
7. The company provides planning and design skills training supported by AR/VR technologies.					
8. The training system intelligently recommends learning content based on project types.					

9. The company utilizes digital tools to quantify the creative output of design staff.					
10. The knowledge management system enables intelligent push notifications of architectural design expertise.					
Top Management Team Scale					
11. The company's five-year development plan includes clearly defined R&D investment plans for smart city design technologies.					
12. Major design project review meetings utilize big data analytics platforms to support decision-making.					
13. Executives can leverage City Information Modeling (CIM) data for market opportunity analysis.					
14. Management performance evaluation indicators incorporate digital transformation outcomes.					
15. Digital competencies are incorporated into promotion criteria.					
Digital Transformation Scale					
16. The company has established a standardized digital asset library for design materials.					
17. Construction drawing reviews now feature automated intelligent verification.					
18. Design modifications are automatically synchronized with all relevant stakeholders.					
19. The company utilizes big data analytics to guide regional business deployment.					
20. A digital-sharing culture for design deliverables has been institutionalized within the company.					