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Article

Optimizing Project Investment Decision-Making During Economic Downturns—A Reflective Inquiry into the Current State of Enterprises in Leshan, Sichuan Province

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Abstract

Traditional investment decision-making methods struggle to reconcile multiple policy objectives with systemic risk during economic downturns. Taking enterprises in Leshan, Sichuan Province as its research subject, this paper constructs an integrated framework encompassing six dimensions: decision objectives, risk assessment, financing structure, policy instrument utilization, Evaluation Completeness, and digital technology application. It further establishes a three-tier linkage mechanism of “Strategy–Execution–Support.” Drawing on literature review, case analysis, and policy text analysis, the study translates abstract strategic goals into quantifiable indicators, thereby addressing the challenge of quantifying non-financial metrics. The findings demonstrate that this framework enables a shift from a single financial objective to “optimizing strategic adaptability,” and from passive policy compliance to proactive use of policy instruments—markedly improving the precision of corporate investment decisions under uncertainty. The paper offers local enterprises in Sichuan Province an actionable theoretical basis and implementation pathway. It also provides a reference for local governments and financial institutions seeking to refine their support policies, carrying practical significance for strengthening regional economic resilience, advancing green and low-carbon transformation, and easing the financing constraints faced by small and medium-sized enterprises (SMEs).

Keywords: corporate finance; project investment; investment decision-making; economic downturn

I. Introduction

Since 2025, China’s economy has stabilized progressively, yet structural challenges persist: investment growth and consumption growth remain mismatched, and both the real estate and capital markets continue to underperform. Dai Hui (2025) notes that declines in the Consumer Price Index and the Producer Price Index point to fairly pronounced localized deflationary tendencies. Under these conditions, the role of project investment decisions in rational resource allocation has become even more critical, demanding greater prudence, foresight, and strategic focus. As a key node in the Chengdu–Chongqing city cluster, Leshan combines a traditional manufacturing base with rich tourism resources while shouldering the strategic mission of serving as a green development hub along the upper Yangtze River. The capital flows of its enterprises offer an important window into local economic resilience and structural transformation.

However, prevailing investment decision methods grounded in the Efficient Market Hypothesis—such as the Net Present Value (NPV) method and Real Options theory—exhibit clear limitations. First, their underlying assumptions are disconnected from local economic realities; they struggle to accommodate market incompleteness, unstable growth expectations, and investor irrationality. Second, their explanatory power is insufficient: they cannot adequately reconcile multiple policy objectives, including carbon emission reduction, supply chain security, and digital

transformation. Third, their adaptability is weak; they provide little guidance for investment decisions under the new objectives set out in China's Fifteenth Five-Year Plan* (hereafter "FFYP"), spanning green and low-carbon transition, regional coordinated development, and data security.

Consequently, how to rigorously reconstruct investment decision-making frameworks—building a system under the FFYP that aligns with both national strategy and enterprise operational objectives—has become a pressing concern. This paper analyzes the investment practices of Leshan enterprises and explores optimization pathways for efficient resource allocation amid the multiple constraints and uncertainties of an economic downturn. It aims to provide theoretical support and practical guidance for local enterprises while injecting fresh momentum into high-quality regional development.

II. Literature Review

Brealey et al. (2008) argue that project investment decisions are central to enterprise resource allocation and corporate strategy. Project quality exerts a significant influence on long-term competitiveness, since investment objectives ultimately determine that quality. Fisher (1930) likewise holds that investment decision theory should rest on the theory of capital value: asset valuation ought to be determined by discounting future cash flows. Drawing on this foundation, Modigliani et al. (1959) derived the capital structure irrelevance theorem under no-arbitrage conditions, laying the groundwork for the Discounted Cash Flows (DCF) method. Among DCF applications, the NPV approach remains one of the most commonly used tools for maximizing investment value.

As the economy has evolved, the traditional DCF method has been shown, under certain conditions, to overestimate investment opportunities—producing investment myopia and underinvestment. Myers (1977) and others accordingly introduced the concept of Real Options to correct this deficiency. Real Options theory treats projects as options: under uncertainty, a firm may exercise or abandon them as circumstances evolve, enhancing managerial flexibility and foresight. Nevertheless, the Real Options approach is sensitive to volatility in practice and fails to capture managerial behavior effectively. Dixit (1994) argues that under uncertainty, managers can extract strategic value through deferral, expansion, contraction, or abandonment—yet this conclusion may still produce considerable bias when complex factors interact.

In projects that must account for green and low-carbon imperatives or regional coordinated development, the Real Options model struggles to capture the interplay among non-market factors—policy guidance, social effects, and technological progress—alongside complex exogenous variables, potentially leading to errors. Beyond cash flow analysis, the Internal Rate of Return (IRR), the Payback Period (PP), and the Profitability Index (PI) also appear frequently as appraisal tools. Because these metrics rest on assumptions of perfect markets and rational expectations, they are particularly liable to yield erroneous judgments under an institutional-transformation paradigm. Smit et al. (1997) proposed Option Game Theory, integrating option pricing with game-theoretic modeling. Its advantage lies in embedding market competition and strategy within a unified framework, but its heavy data and modeling requirements have limited practical adoption.

Because traditional theories focus primarily on financial and market variables and overlook policy shifts, social impacts, and technological innovation, the academic community has developed multidimensional methods such as fuzzy membership approaches. These hybrid methods can simultaneously weigh financial indicators—return on investment, net asset value—alongside non-financial indicators such as policy alignment and environmental compliance, further enhancing decision-making rigor. Overall, hybrid methods have proven broadly applicable, though they face challenges including difficult data acquisition, model complexity, and varying comprehension among decision-makers.

In recent years, attention has increasingly turned to integrating evaluation methods with macroeconomic policy. Guo Xinxin (2026) finds that economic policy uncertainty exerts a negative impact on private enterprise development, and that managing uncertainty is the foremost consideration in investment decisions. Scholars have incorporated macroeconomic conditions and

policy signals into monitoring and early-warning systems, employing sensitivity analysis and Monte Carlo risk quantification to improve investment precision. However, prolonged economic slowdown and the constant emergence of new productive forces have exposed the limitations of enterprise-centric frameworks, which cannot fully capture the interplay among policy interventions, market fluctuations, and technological iteration.

To address these issues, some scholars have integrated behavioral finance and institutional economics into enterprise investment research. Zhang Jialin (2010) combines behavioral finance with the inherent shortcomings of Chinese SMEs, proposing that decisions be evaluated through human capital, subjective emotions, biases, and probabilistic choice. Thuy et al. (2018) demonstrate that managers do not make fully rational decisions; investment behaviors shaped by individual characteristics and psychological dispositions influence both decision quality and efficiency. Thuy et al. (2018) further note that in complex economic environments, decision-makers are influenced by numerous non-financial factors. Enterprises must therefore balance “short-term survival” against “long-term development”—a balance encompassing not only financial indicators but also regional development strategies and industry technology trends.

With the growth of the digital economy, data-driven investment decision methods have become a research hotspot. Big data and artificial intelligence can furnish managers with more accurate forecasting tools and dynamic evaluation instruments. Zou Yuming (2025) observes that AI has permeated financial investment decision-making but still faces challenges in practice, particularly poor data quality and insufficient algorithmic transparency. Building a decision framework for an economic downturn requires integrating traditional theory with information technology—preserving the rigor of classical models while incorporating the advances of technology-driven approaches.

In sum, at the macro level, economic downward pressure, policy uncertainty, and national strategic direction all influence project investment decisions. At the micro level, decision-maker psychology and technological penetration also play a role. Yet current scholarship rarely integrates the two, producing theoretical bias and limiting practical policy guidance. This paper therefore focuses on constructing a decision framework that combines macro-level policy orientation with enterprise behavior, moving companies beyond “fighting alone” toward effective government–enterprise collaboration. Moreover, traditional decision-making overemphasizes profitability and risk control while neglecting social responsibility and environmental cost; multi-objective optimization is needed to close this gap. Government policies on investment projects must also account for local realities—regional resources, industrial profiles, and the like—and coordinate accordingly.

III. Research Methods and Steps

(i) Research Methods

This study follows a “theory construction–framework analysis–indicator development” research pathway, employing systematic analytical methods to ensure scientific rigor and practical value. The first method is *literature review*. The paper systematically surveys project investment decision theories—including NPV, Real Options, and behavioral finance—together with relevant policy documents, identifying the limitations of traditional methods under the multiple constraints of an economic downturn. This provides the theoretical foundation for the subsequent “six-dimensional” integrated framework.

The second method is *case analysis*. Typical industries in Leshan, such as photovoltaic manufacturing and cultural tourism, are selected as research subjects. Their decision-making logic and pain points under policy uncertainty and financing constraints are examined in depth.

The third method involves constructing a “six-dimensional” indicator system. Through the Analytic Hierarchy Process (AHP), the study achieves a scientific assessment of its outputs, resolving the challenge of quantifying non-financial indicators. Additionally, the paper conducts *policy text*

analysis, extracting and analyzing keywords from documents such as China's FFYP and local industrial policies. This process quantifies the strength and fit of policy support, providing a foundation for the policy instrument utilization dimension.

(ii) Research Steps

The first step is problem diagnosis and theoretical framework construction. Building on existing literature and the current state of investment decision-making in Leshan, the study identifies shortcomings in prevailing frameworks. Drawing on classical literature, it proposes the "six-dimensional" integrated framework and the "Strategy–Execution–Support" three-tier linkage model. The second step is indicator integration: consolidating existing literature indicators, selecting those with strong contextual relevance based on local economic structural characteristics, and reducing assessment complexity. The third step involves simulation and optimization recommendations. Based on model outputs, the study simulates investment decision outcomes under different policy scenarios and identifies targeted collaborative optimization pathways for enterprises, government agencies, and financial institutions.

IV. Analysis of the Applicability of Existing Research

Classical literature and policy documents indicate that project investment decision-making, as the core mechanism for enterprise resource allocation, has evolved from static financial evaluation to dynamic strategic management. Although existing theories have established a well-developed foundation, they exhibit considerable inadequacy under current conditions of sustained downturn, pronounced structural imbalances, and the multiple strategic constraints of the FFYP. This paper argues that such inadequacy does not stem from simple application errors but rather from a fundamental misalignment between theoretical premises and the real-world environment. This misalignment manifests along three dimensions.

(i) Failure of Assumptions: From "Efficient Markets" to "Multiple Frictions"

Both the traditional NPV method and Real Options theory rest on the Efficient Market Hypothesis (EMH) and rational agent assumptions. During an economic downturn, however, market failures intensify, liquidity dries up, and expectations become highly unstable. Existing models cannot endogenize frictions such as strict credit rationing, elevated financing costs, and sharp asset price swings. Field research in Leshan reveals that the financing constraints faced by SMEs do not hinge on whether a project's NPV is positive; they stem from a systematic decline in financial institutions' risk appetite, rendering the "optimal investment timing" from traditional models infeasible due to capital chain disruptions.

Meanwhile, although behavioral finance has identified psychological biases among decision-makers, existing models typically treat these as exogenous disturbances. They lack a mechanism for quantifying the impact of collective irrationality on project valuation during a downward "panic spiral." When the market slides into localized deflation, managers may become excessively conservative or follow the herd, producing substantial divergence from rational-expectation Real Options valuations.

(ii) Singularity of the Objective Function: From "Financial Net Value" to "Strategic Survival"

Existing literature overwhelmingly treats "maximizing financial net value" as the sole objective function. This may be adequate during expansion, but it proves unduly narrow during downturns and national strategic transitions. Investment decisions must now reconcile carbon emission reduction, supply chain security, regional coordinated development, and digital transformation—multiple non-market objectives that traditional models lack the mechanism to internalize.

When enterprises face national strategies such as the construction of a "Green Silicon Valley" or Chengdu–Chongqing Twin-City Economic Circle coordination, they cannot accurately assess a

project's comprehensive value. Projects that align with strategic priorities but yield modest short-term financial returns risk being erroneously rejected. Furthermore, during a downturn, many enterprises' core concern has shifted from "profit maximization" to "cash flow security" and "strategic adaptability." Existing theory does not dynamically account for "survival thresholds," nor does it incorporate capital chain disruption risk as a hard constraint, causing some highly leveraged projects that are theoretically viable but practically fatal to be advanced.

(iii) Limitations of Risk Dimensions: From "Market Fluctuations" to "Systemic Coupling"

Traditional risk assessment focuses on market price volatility, interest rate changes, and operational risk—typical "first-order" risks. The nature of risk today, however, has undergone a qualitative shift. Existing literature lacks effective quantitative tools for "second-order" systemic risks: abrupt policy changes such as environmental production caps, disruptive technological iteration, geopolitical conflicts, and supply chain disruptions.

In regions like Leshan with concentrated industrial structures, the systemic fragility arising from single-industry dependence cannot be effectively revealed through traditional analytical methods. Moreover, existing models predominantly employ static or semi-static analysis, making it difficult to capture the nonlinear coupling effects among macroeconomic policy, micro-level behavior, and technological change. A sudden carbon tax, for instance, could instantly alter the cost structure of an entire industrial chain. Traditional Real Options models, because of parameter-setting lags, cannot reflect such structural breaks in a timely manner.

V. Analysis of Current Enterprise Project Investment in Leshan

Except for a limited number of industrial sectors, the development of Leshan City relies heavily on two major pillar industries: agriculture and cultural tourism. Given this industrial structure, enterprises are highly susceptible to policy changes, unexpected events, and human factors during project development. For instance, the cultural tourism sector is significantly influenced by seasonal fluctuations and sudden external events. According to data released by the Leshan Municipal Bureau of Statistics (2024), the number of ticketed visitors to Mount Emei Scenic Area reached 4.6722 million in 2024, representing a slight decline of 1.6% compared with 2023, mainly due to the slower recovery of the domestic tourism market and the diversion of tourists to emerging nearby destinations. In addition, most local enterprises are small and medium-sized with relatively weak risk-bearing capacity. When making investment decisions, they tend to prefer projects with short-term and highly certain returns and relatively low risk, which objectively leads to conservative investment behavior and the potential loss of valuable growth opportunities.

Furthermore, while maintaining some traditional industries such as chemicals and tourism, Leshan has also cultivated and developed advanced manufacturing sectors, including Yongxiang polysilicon photovoltaic materials and rare-earth new materials. Meanwhile, industries related to artificial intelligence and big data are gradually being established. Among them, Yongxiang polysilicon reached a production volume of 338,500 tons in 2024, representing a 25.2% increase.

Leshan has already become one of the world's important photovoltaic industry bases, yet its development also faces cyclical challenges. According to data released by the China Photovoltaic Industry Association (2025), global photovoltaic module prices have declined by more than 60% from their peak in 2022 due to falling global component prices and the impact of trade barriers. Consequently, once an economic downturn occurs, enterprises in this sector will face substantial operational and environmental pressures. Under the combined pressures of economic slowdown and industrial transformation, enterprises are generally confronted with severe challenges. Although fixed-asset investment in Leshan increased by 3.4% in 2024, private investment declined by 5.2%, reflecting insufficient endogenous investment motivation among market entities. At the same time, the total profits of above-designated-size industrial enterprises decreased by 94.0%, which significantly intensified internal cash-flow pressure for firms and further tightened the external financing environment. As a result, enterprises have become more cautious and conservative when

undertaking long-term and strategic investments, showing a stronger preference for projects with short-term and certain returns, which may lead to missed growth opportunities.

In addition, except for Chengdu, bank loans remain the primary external financing channel for enterprises in many regions across the province due to the characteristics of regional economic structures. However, the loan approval procedures of banking institutions are often complicated, with high entry thresholds and strict risk-control requirements. Financial institutions typically impose stringent requirements regarding collateral and credit records, which further intensifies the financing difficulties faced by asset-light technology firms and start-ups. To address this issue, the Leshan municipal government has actively established a government–bank–enterprise cooperation platform. According to Leshan Release (2025), during the industry-finance cooperation matchmaking event held in July 2025, the government released a financing demand list containing 106 projects with a total value of 23.59 billion RMB, of which 3.39 billion RMB were successfully signed between banks and enterprises. These figures reflect both the strong capital demand of local enterprises—especially those in advanced manufacturing—and the proactive response of financial institutions. In terms of outcomes, the loan balance of the manufacturing sector in Leshan reached 27.5 billion RMB in 2024, representing a year-on-year increase of 23.3%, ranking among the highest growth rates in the province and indicating that financial resources are increasingly flowing toward the real economy. Nevertheless, despite the establishment of government matchmaking mechanisms and the growth of bank lending, many enterprises still report relying on internal funds or high-cost non-bank financial institutions to meet their financing needs. This increases project capital thresholds and operational risks, potentially distorting investment decision-making. Moreover, due to Leshan’s abundant tourism resources, the continuous expansion of cultural tourism investment has gradually led to market saturation in tourism projects, which imposes additional pressure on local enterprises seeking to invest in this sector.

From the perspective of regional coordinated development, enterprises in Leshan must also explore effective strategies for integrating into the Chengdu–Chongqing Economic Circle, which presents both new opportunities and challenges under national development strategies and places higher demands on project investment decisions. For example, when undertaking industrial transfer, it is necessary to properly manage industrial positioning and regional division of labor to avoid blind expansion and duplicated construction. In cross-regional cooperation, it is also important to overcome administrative boundaries and conflicts of interest while emphasizing the efficient integration of resources. Meanwhile, the Sichuan Province “14th Five-Year Plan” clearly proposes the construction of the “China Green Silicon Valley” and the development of a world-class tourism destination. Therefore, projects aligned with these strategic orientations are more likely to obtain provincial or national policy support and financial incentives, thereby creating “strategic resonance.” Such strategic characteristics should be incorporated as evaluation dimensions in project investment decisions rather than being passively considered only after favorable conditions emerge.

Finally, beyond basic information constraints, enterprises in Leshan still face problems such as information asymmetry and insufficient decision-making tools in project investment. Although big data analytics and artificial intelligence have been applied to some extent, their practical implementation remains at a relatively low level. Insufficient data-analysis capabilities and mismatched algorithmic models also restrict the deeper integration of emerging technologies into investment decision-making. Moreover, in many cases, investment decisions still rely heavily on managerial experience rather than systematic analytical tools, which limits the effective role that new technologies could play in supporting decision-making processes.

VI. Optimization Approach and Discussion for the Project Investment Decision Framework

(i) Optimization Approach

Drawing on the foregoing literature review and case analysis, it is evident that local enterprises in Sichuan should, in addition to their own traditional decision indicators, integrate the current economic and policy context. They should coordinate around four dimensions—"objectives, risk, resources, and methodology"—while according high importance to the influence of people and technology. From the objective dimension, enterprises should abandon the legacy mindset of investing purely for financial returns, acting in isolation, and responding after the fact. Instead, they should adopt a multi-objective balancing orientation that accords equal weight to economic, social, and environmental benefits. From the risk dimension, investment decisions need to account for non-traditional risks including abrupt policy changes, technological obsolescence, and supply chain disruptions. From the resource dimension, local governments should explore diversified financing instrument systems. For capable large and medium enterprises, the establishment of data middle platforms is advisable, aggregating internal and external data resources to improve data quality and empower decision-making. Building on this reasoning, the author constructs a "six-dimensional" project investment framework, supplementing the existing literature by introducing two new dimensions: the Decision Objective dimension and the Risk Assessment dimension.

1. Decision Objective Dimension: From "Maximizing Financial Net Value" to "Optimizing Strategic Adaptability"

Firms need to redefine the criteria for investment appraisal; they cannot rely solely on the pursuit of short-term returns. Success in the FFYP hinges on whether a project can elevate the firm's operating position—or "ecological niche"—within the national and regional strategic landscape. Considerations should include financial prudence (whether stable cash inflows sustain the project), strategic alignment (whether the project is consistent with the firm's core business and dovetails with FFYP industrial development direction and Leshan's local plans), and resilience (whether the project strengthens the firm's capacity to withstand systemic risks such as economic fluctuations and supply chain disruptions). Projects with a high degree of strategic alignment are better positioned to attract non-financial resource support.

Decision objectives should also encompass multiple stakeholders: shareholders expect stable returns, and customers wish to receive novel services and products. Failing to integrate these considerations will render decisions unlikely to serve as robust investment guides. Policy guidance for cultural tourism investment, for example, can leverage the rural revitalization strategy, capitalize on local cultural resources, and develop tourism projects to drive local economic growth. As societal attention to corporate ESG governance intensifies, sustainable development capacity will also be factored in—reflected not only in environmental compliance and resource efficiency but also in the ability to balance social and economic returns at the investment decision level.

2. Risk Assessment Dimension: From "Market-Financial Risk" to a Panoramic Scan of "Systemic-Policy Risk"

Risk assessment models are indispensable for investment decision-making, serving primarily to identify and quantify business risks. Traditional market and financial risk models can no longer meet evaluation requirements in today's volatile environment; the scope of assessment must be broadened. At the macro level, systemic risk assessment encompasses macroeconomic fluctuations, industry cycles, and regional economic policy adjustments. Global economic uncertainty may be transmitted to local firms through exchange rate volatility or trade barriers; a homogeneous local industrial structure amplifies regional economic instability. In the FFYP context, particular attention must be paid to policy risk: a significant shift in local policy direction can materially affect a project's feasibility and profitability.

At the micro level, enterprises should build risk assessment models integrating dynamic monitoring with scenario simulation. Big data and AI can forecast the potential impacts of various

policy combinations, directing attention to non-traditional risks such as equipment obsolescence and production stoppages from supply chain disruptions. Cross-departmental risk management teams can generate coordinated synergistic effects, enabling firms to better identify latent hazards and strengthen risk-defense capabilities. The assessment system must also incorporate industrial chain security evaluation—analyzing vulnerabilities among upstream suppliers of critical raw materials, core technologies, and key equipment, and gauging the probability of supply disruptions and “black swan” events.

Government agencies should also establish mechanisms for tracking shifts in monetary policy, fiscal policy, industrial regulation, and international trade friction risks. For Leshan’s export-oriented enterprises, early preparation for potential technology blockades and trade barriers is essential. A tiered management approach should be adopted, with policies communicated promptly and a policy information-sharing platform established to facilitate experience exchange and resource integration.

3. Financing Structure Dimension: From “Single Debt Dependence” to “Multi-Instrument Alignment”

First, enterprises should design project-tailored investment plans, leveraging policy instruments effectively. By earmarking readily monetizable project components as anchor assets, firms can target policy-oriented funding—striving to obtain preferential lending for green and low-carbon development, technological innovation, and rural revitalization. They should utilize preferential loans through the People’s Bank of China’s (PBOC) structural monetary policy tools and policy bank special-purpose loans. Enterprises can also explore “investment-lending linkage” models: for emerging industry projects with high growth potential but elevated risk, local industrial guidance funds, venture capital, and private equity can be introduced as equity capital, reducing debt leverage while harnessing investors’ industry resources.

Second, enterprises should dynamically adjust their financing structures. As market conditions evolve and project construction progresses, timely adjustments are essential to prevent rigid arrangements from engendering capital chain risks. Building a multi-channel financing system is a prerequisite for enhancing risk resilience and ensuring smooth project advancement.

Finally, the government can introduce policies to promote regional financing service platforms, consolidating information from financial institutions, enterprises, and third-party agencies to enhance financing-matching efficiency. Strengthening financing structure alignment also requires enterprises to improve their financial management capabilities, raise their credit ratings, refine financial information disclosure, optimize asset-liability structures, and build stable, long-term relationships with financial institutions. With government support, enterprises can maintain dynamic equilibrium in their financing structures amid a complex market environment.

4. Policy Instrument Utilization Dimension: Enabling Enterprises as Genuine Policy Participants

Governments, financial institutions, and enterprises can jointly establish a policy tracking and decoding mechanism. Along the institutional chain running from the national FFYP outline through provincial and municipal implementation plans, it is necessary to identify relevant funding support, tax incentives, market access conditions, and standard-setting processes. All affected units should participate in thorough policy research. Enterprises should actively communicate industry-specific concerns to relevant local government agencies and take an active role in local industrial development planning.

The “connector” function of local financial institutions should be leveraged to forge a “Bank–Government–Enterprise” strategic cooperation ecosystem. Local financial institutions ought to design bespoke financial products based on a thorough understanding of government policy directives, market conditions, and enterprise development needs—treating enterprises’ financing difficulties as ecosystem-wide pain points. Full-lifecycle financing services can fill gaps in the chain and shore up risk identification. Government agencies can capitalize on their advantage in policy interpretation, conducting timely tracking and analysis to further upgrade the “Bank–Government–Enterprise” cooperation model. Relevant departments should jointly explore extended policy

guarantee schemes, lowering financing thresholds and costs. This enables enterprises to leverage the cooperative bridge, opening up collaborative market space with upstream and downstream partners and transitioning from “going it alone” to a community of shared interests. As reported by Leshan Release (2025), among the financing demand projects totaling RMB 23.59 billion, only RMB 3.39 billion were successfully signed, accounting for approximately 14.4% of the total financing demand. This evidence indicates that enterprises cannot passively wait for financing opportunities. Instead, they must actively interpret policy signals and engage in the “government–bank–enterprise” collaborative ecosystem in order to improve the success rate of financing.

5. Evaluation Completeness Dimension: From Traditional Quantitative Assessment to a “Qualitative + Quantitative” Dual-Criterion System

Every project investment demands a corresponding evaluation. Current systems predominantly rely on financial indicators, but purely financial evaluation can no longer meet enterprise requirements. In addition to traditional financial metrics, enterprises can incorporate non-financial indicators—such as technological innovation contribution, supply chain synergy effects, and policy alignment indices—to better gauge value-creation potential. Constructing the dual-criterion system requires continuous methodological refinement. Fuzzy comprehensive evaluation or the AHP can transform difficult-to-quantify qualitative indicators into measurable standards. Big data and AI can facilitate multi-source heterogeneous data integration, further enhancing accuracy and reliability.

The evaluation system must also feature a dynamic adjustment function, adapting to environmental changes. Because third-party organizations possess evaluation capabilities far exceeding those of enterprises, it is advisable to commission independent professional institutions for assessment. Cooperative mechanisms should be established among internal departments, forming a collaborative structure integrating financial, strategic, and operational perspectives. Evaluation must be linked to actual decision-making, functioning as a closed loop that improves the likelihood of sound investment decisions.

The selection of evaluation methods is itself important. Innovative or technologically intensive projects may suit qualitative methods such as expert review and scenario analysis; traditional industries or mature markets typically call for financial models and statistical approaches. Through pilot projects, firms can accumulate experience, progressively refine processes and standards, and cultivate internal expertise—only through persistent experimentation can a genuinely effective evaluation system be built.

6. Digital Technology Application Dimension: From Simple Digital Empowerment to AI-Driven Application

The emergence of new quality productive forces means that enterprises can harness AI innovation. Business operators must migrate beyond rudimentary information technology tools toward AI-centered, deep digital transformation—supported across the entire process of data collection, analysis, and decision-making. Machine learning can mine historical investment data to uncover latent risk factors and opportunities. Natural Language Processing (NLP) and intelligent agent technologies can rapidly parse policy documents and trending events. Digital twin technology can construct virtualized scenarios for project implementation, anticipating problems and generating solutions for real-world application.

In project investment, AI assists enterprises in transitioning from “experience-driven” to “data-driven” approaches. Li Lan et al. (2025)¹² applied AI to power project investment decision-making, significantly improving management precision. Following large-scale AI deployment, complex problems can be processed automatically and more accurate decisions made proactively. AI also enables whole-lifecycle project management: from feasibility study through operations management, each step can be executed with precision afforded by intelligent algorithms. Computer vision enables real-time monitoring of project sites, mitigating safety risks while precisely controlling progress. AI-powered dynamic early-warning systems can monitor and respond to problems in real time. AI application not only helps enterprises navigate the current downturn but also furnishes a vital safeguard for long-term, stable development.

Figure 1, through its ring-linked structure and layered empowerment design, breaks with the static nature of traditional decision models, highlighting the dynamic coupling between policy and risk. It parameterizes macro-level uncertainty across enterprise production and development, combining the six dimensions into a new composite framework. To articulate the logical connections more clearly, the author integrates the six dimensions into a linked model comprising strategic, execution, and support tiers.

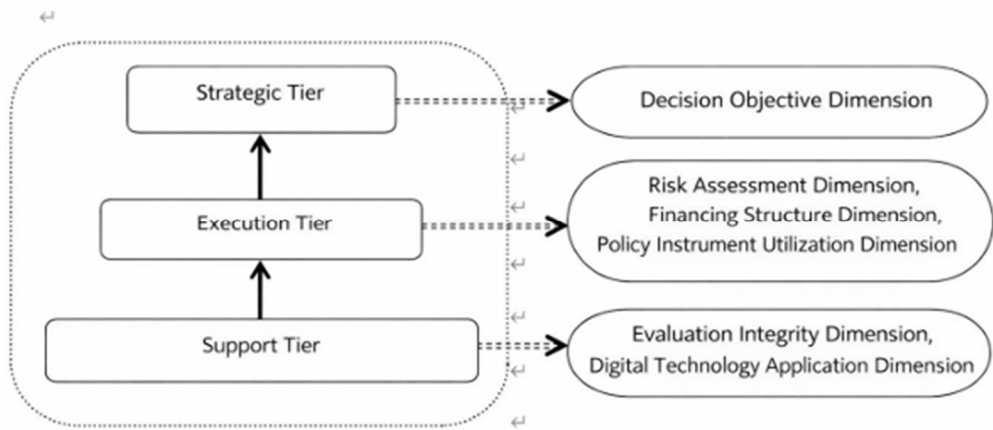


Figure 1. Schematic Diagram of the Optimized Framework for Project Investment Decisions.

The strategic tier centers on the Decision Objective dimension, providing the top-level design and ultimate direction for the framework. Investment decision guidance shifts from pursuing short-term financial returns to long-term “optimization of strategic adaptability,” with numerical bases used to formulate relevant functions and assign weights—financial return, strategic alignment, risk resilience, and ESG contribution. Yu Tianyi et al. (2022)¹³ maintain that a scientifically sound top-level design can reduce uncertainty and enhance the success rate of investment decisions. In implementation, the strategic tier should strengthen its grasp of industry trends and policy directions through strategic backtracking and scenario hypothesizing, anticipating risks or opportunities during project construction.

The execution tier encompasses the Risk Assessment, Financing Structure, and Policy Instrument Utilization dimensions. These three form an interconnected closed-loop chain. Risk Assessment focuses on “identifying constraints”: scanning for systemic and policy risks and quantifying their potential impact on strategic objectives. Financing Structure emphasizes “providing impetus”: setting the optimal diversified financing structure while managing financial risk. Policy Instrument Utilization is the key link for “creating opportunities”: leveraging policies to secure resources, reduce compliance costs, and promptly transmit policy signals. Logically, risk assessment determines financing structure design; policy application may alter risk attributes; a given financing arrangement may necessitate certain policy tools.

The support tier encompasses the Evaluation Completeness and Digital Technology Application dimensions, woven throughout both the strategic and execution tiers. Evaluation Completeness serves as the “measuring standard,” establishing an integrated evaluation system with both qualitative and quantitative elements. Over the project lifecycle, it continually measures and adjusts objective attainment through qualitative methods (expert review, policy alignment assessment) and quantitative methods (financial modeling, Value at Risk). Digital Technology Application is the “performance engine,” harnessing AI and big data to enhance risk quantification, precision-match financing services, track and decode policy information in real time, and drive data-led evaluation refinement. The effective combination of evaluation, technology, and systemic design can substantially enhance an enterprise’s capacity to respond to environmental change. Table 1, building

on this foundation, illustrates the multi-dimensional synergy contributing to an enterprise’s project investment decision-support system.

Table 1. Hierarchical Relationships Among the Dimensions.

Tier	Dimension	Scope	Secondary Indicators
Strategic Tier	Decision Objective	Top-level design and ultimate direction	See Table 2
Execution Tier	Risk Assessment, Financing Structure, Policy Instrument Utilization	Principal measures for realizing strategic objectives	See Table 2
Support Tier	Evaluation Completeness, Digital Technology Application	Integrated throughout strategic and execution tiers	See Table 2

Beyond the primary dimensions, the selection of corresponding secondary indicators determines whether investment decisions can be made with precision. In the Decision Objective dimension, for example, financial prudence and strategic alignment can serve as key secondary indicators, each assigned different weights based on industry characteristics and policy direction. Similarly, in the Risk Assessment dimension, risk indicators can be refined into categories such as traditional and non-traditional risks. This multi-level, multi-dimensional design improves scientific rigor while enhancing decision-makers’ flexibility and adaptability, ultimately achieving optimal resource allocation.

By decomposing the six primary dimensions in Table 2, the framework breaks down the strategic-layer Decision Objective dimension through to the support-layer Digital Technology Application dimension into nearly 30 secondary indicators. Indicator sources are clear and highly targeted, ensuring regional applicability. The hybrid approach—quantitative analysis combined with multi-source data validation—reduces the risk of single-source bias. Indicator selection follows a principle combining classical literature with practical experience; for example, the Digital Technology Application decomposition closely references assessment standards issued by the MIIT in 2024.¹⁴ Table 2 does not fully specify indicator weights, primarily because regional economic structures differ. Evaluation teams can set weight proportions flexibly based on local economic characteristics.

Table 2. Description of Secondary Indicators.

Primary Indicator	Secondary Indicator	Indicator Decomposition	Indicator Description	Data Sources
Decision Objective Dimension	Financial Soundness	Project cash flow coverage ratio; static investment payback period; net profit margin volatility; debt-to-asset ratio control level	Measures the short-term viability of a project, ensuring stable cash flows and preventing cash-flow disruption during economic downturns	1. Project feasibility reports, enterprise financial statements; 2. Cash flow coverage ratio = net cash flow from operating activities / debt service (principal and interest) due; 3. Net profit margin volatility = standard deviation of projected net profit margin over the most recent 3 years / mean value
	Strategic Alignment	Degree of alignment with the enterprise’s core business; compatibility with local industrial planning; degree of adherence to “Fifteenth Five-Year Plan” strategic priorities (green / innovation / regional coordination)	Measures the extent to which a project dovetails with the enterprise’s long-term development and regional/national strategies, enhancing the capacity to secure policy resources	1. Leshan “Fifteenth Five-Year Plan” industrial plan, Sichuan Provincial Development and Reform Commission industry directory, national strategic documents; 2. Expert scoring method (5-point scale): joint scoring by enterprise management and industry experts, with the mean taken; 3. Alignment degree = overlap ratio between the project’s core business and policy-supported domains
	Stakeholder Synergy	Shareholder return satisfaction; customer demand matching degree; upstream and downstream industrial chain synergy value	Balances the interests of multiple parties including shareholders, customers, and the industrial chain, ensuring that project decisions serve as robust investment guides	1. Shareholder return satisfaction = achievement rate of expected return on equity; 2. Customer demand matching degree = number of overlapping items between project products/services and target customer core demands / total demand items; 3. Industrial chain synergy value = cost savings generated by upstream and downstream enterprises attributable to the project / total project investment
	Sustainable Development Capacity	Environmental compliance; resource utilization efficiency; social responsibility	Responds to ESG governance trends by incorporating environmental and social value	1. Environmental authority pollution discharge permits, Environmental Impact Assessment (EIA) reports; 2. Resource utilization efficiency = energy

		contribution; ESG rating improvement potential	into decision-making, achieving a balance between economic and social/environmental benefits	consumption per unit of output / industry average energy consumption per unit of output; 3. ESG rating improvement potential = third-party rating agency (e.g., CSI ESG) projected rating for the project – enterprise’s current rating; 4. Social responsibility contribution = number of jobs created by the project / total project investment
Risk Assessment Dimension	Macro Systemic Risk	Macroeconomic fluctuation risk; industry cycle risk; regional economic stability risk; exchange rate / trade barrier risk	Measures the impact of macro-environmental changes on projects, with particular attention to systemic pressures during economic downturns	1. National Bureau of Statistics macroeconomic data, industry association cycle reports, customs trade data; 2. Risk quantification: Monte Carlo simulation, forecasting the impact magnitude of macroeconomic indicator fluctuations on project returns based on historical data; 3. Regional economic stability risk = Leshan’s GDP growth volatility over the most recent 3 years / Sichuan Province average growth volatility
	Policy Risk	Industrial policy change risk; fiscal/financial policy adjustment risk; environmental/carbon constraint policy tightening risk	Measures the potential impact of abrupt policy changes or adjustments on a project’s feasibility and profitability; a core risk concern for local enterprises	1. Policy documents from all levels of government, State Taxation Administration / central bank policy announcements, Ministry of Ecology and Environment carbon reduction policies; 2. Policy change probability = number of relevant policy adjustments over the past 5 years / 5; 3. Carbon constraint cost escalation = projected carbon tax / carbon quota cost / original projected project profit
	Non-Traditional Risk	Technological iteration risk; supply chain disruption risk; contingency event (epidemic / natural disaster) risk	Addresses the heightened frequency of non-traditional risks during economic downturns, measuring a project’s resilience	1. Industry technology iteration reports, core supply chain enterprise operating data, emergency management department contingency event statistics; 2. Technology iteration risk = project core equipment renewal cycle / industry average

			against technological, supply chain, and contingency shocks	technology renewal cycle; 3. Supply chain disruption risk = probability of supply interruption by core raw material suppliers (based on supplier credit rating + industry concentration)
	Industrial Chain Security Risk	Degree of external dependence for core raw materials/equipment; controllability of critical industrial chain links; “Black Swan” event impact exposure	Focuses on vulnerable links in the industrial chain, measuring the project’s capacity to cope with supply chain disruptions and contingent risks; tailored to the demands of Leshan’s advanced manufacturing sectors such as photovoltaics and new materials	1. Enterprise supply chain ledgers, customs import/export data, industry chain analysis reports; 2. Core raw material external dependence = imported raw material volume / total demand volume; 3. Critical link controllability = number of core links autonomously controlled by the enterprise / total number of core industrial chain links; 4. Expert scoring method to quantify “Black Swan” event impact exposure (5-point scale)
	Market Risk	Market demand volatility; product price fluctuation risk; project financing cost risk; accounts receivable turnover ratio	Retains traditional risk assessment as the foundation for a full-spectrum scan, adapted to the characteristics of weak market demand and slow capital recovery during economic downturns	1. Market research data, historical product price data, financial institution financing quotes, enterprise financial statements; 2. Accounts receivable turnover ratio = operating revenue / average accounts receivable balance; 3. Price fluctuation risk = standard deviation of product prices over the most recent 3 years / mean value
Financing Structure Dimension	Policy-Oriented Fund Acquisition Capacity	Approval rate for green / tech-innovation / rural revitalization loans; subsidy disbursement rate; industrial guidance fund participation level	Measures the project’s ability to access policy-oriented financial instruments, securing low-cost capital and reducing financing costs	1. PBOC structural monetary policy instrument directory, Leshan Municipal Finance Bureau subsidy documents, local industrial guidance fund announcements; 2. Approval rate = actual approved policy-oriented loan amount / application amount; 3. Subsidy disbursement rate = actual received subsidy amount / policy-approved subsidy amount; 4.

				Industrial guidance fund participation = fund investment amount / total project investment
	Financing Instrument Diversification	Equity financing share; bond financing volume; investment-lending linkage cooperation depth; supply chain finance utilization rate	Reduces reliance on debt financing, optimizes capital structure, and mitigates leverage risk during economic downturns	1. Enterprise financing plans, capital market issuance announcements, financial institution investment-lending linkage agreements; 2. Equity financing share = (industrial fund + venture capital/private equity + equity financing) / total project financing; 3. Supply chain finance utilization rate = supply chain finance financing volume / total upstream and downstream cooperative capital volume
	Dynamic Financing Structure Adaptability	Maturity matching between financing tenure and project construction cycle; financing cost-to-project return matching degree; timeliness of financing structure adjustments	Ensures that financing structures are dynamically adjusted in response to market conditions and project progress, preventing rigid financing arrangements from creating capital chain risks	1. Project construction progress plans, financial institution financing cost variation data, enterprise financing adjustment records; 2. Maturity matching = project construction period / financing tenure (ideal value 1:1); 3. Cost-return matching = projected internal rate of return / weighted average cost of financing; 4. Adjustment timeliness = time required for financing structure adjustment / market environment change cycle
	Financing Efficiency and Credit Standing	Financing approval cycle; financing matching success rate; enterprise credit rating; completeness of financial information disclosure	Enhances financing matching efficiency, strengthens the enterprise's credit standing, and bolsters financial institutions' willingness to cooperate; tailored to Leshan's MSME financing difficulties	1. Financial institution financing approval records, enterprise credit reports, CSRC / tax authority financial information disclosure documents; 2. Financing matching success rate = number of successfully partnered financial institutions / total institutions approached; 3. Financial disclosure completeness = number of financial indicators actually disclosed / number required by regulators; 4. Enterprise credit rating references PBOC Credit

				Reference Center / third-party rating agency results (e.g., AAA/AA grade)
Policy Instrument Utilization Dimension	Policy Tracking and Interpretation Capability	Timeliness of policy information acquisition; efficiency of policy-project matching identification; accuracy of policy implementation rule interpretation	Ensures that enterprises obtain policy information at the earliest opportunity, precisely identify the nexus between policy benefits and projects	1. Government websites at all levels, policy interpretation platforms, enterprise policy research department ledgers; 2. Information acquisition timeliness = interval between policy release date and enterprise acquisition date (unit: hours); 3. Interpretation accuracy = expert-reviewed policy interpretation accuracy rate (5-point scale)
	Policy Dividend Conversion Efficiency	Tax incentive realization amount; policy-guaranteed financing volume; degree of policy-facilitated market access	Converts policy resources into tangible capital, cost savings, and market advantages, quantifying the actual support that policies provide to the project	1. Tax authority tax incentive filings, government-backed financing guarantee agency cooperation agreements, market regulatory authority market access documents; 2. Policy dividend conversion efficiency = (tax incentives + subsidies + financing cost savings from guarantees) / total project investment; 3. Market access facilitation = policy-supported access approval cycle / standard access approval cycle
	Government-Enterprise Collaborative Participation	Number of participations in local industrial planning; success rate of upward transmission of industry-specific concerns; success rate of government project matching	Enables enterprises to proactively participate in local industrial planning, communicate industry-specific concerns, and enhance project-level resonance with local development priorities	1. Leshan Municipal Development and Reform Commission / Economic and Information Technology Commission planning participation records, enterprise industry concern feedback ledgers; 2. Concern transmission success rate = number of industry concerns adopted by the government / number submitted; 3. Government project matching success rate = number of government cooperation projects won / number of bids submitted

	Bank–Government–Enterprise Ecosystem Synergy	“Bank–Government–Enterprise” cooperation platform participation level; number of customized financial products obtained; depth of risk-sharing mechanism participation	Leverages the ecosystem constructed by local financial institutions to obtain customized financial services, realize risk-sharing, and alleviate financing difficulties	1. Local Bank–Government–Enterprise cooperation platform records, customized financial product agreements, risk-sharing mechanism documentation; 2. Synergy level = (number of customized products + risk-sharing financing volume) / total enterprise financial services; 3. Platform participation level = enterprise financing matching instances via the platform / total financing matching instances
Evaluation Completeness Dimension	Completeness of Quantitative Evaluation Indicators	Financial indicator coverage rate; number of risk quantification indicators; number of financing efficiency indicators; number of strategy quantification indicators	Ensures that quantitative evaluation covers all dimensions—financial, risk, financing, and strategic—avoiding the limitations of relying solely on financial indicators	1. Enterprise evaluation system documentation, assessment chapters of project feasibility reports; 2. Indicator coverage rate = number of quantitative indicators actually included / number theoretically required; 3. Quantification ratio = number of indicators calculable from data / total number of evaluation indicators
	Rigor of Qualitative Evaluation Methods	Effectiveness of expert review; comprehensiveness of scenario analysis; qualitative scoring for policy alignment; qualitative assessment of industrial chain value	For dimensions that are difficult to quantify—such as strategy, policy, and industrial chain—supplements the evaluation through rigorous qualitative methods	1. Expert review records, scenario analysis reports, industry expert scoring sheets; 2. Expert review effectiveness = number of review opinions incorporated into decisions / total number of review opinions; 3. Scenario analysis comprehensiveness = number of simulated risk/opportunity scenarios / number of scenarios commonly observed in the industry; 4. Joint expert scoring method (5-point scale) to determine qualitative indicator results
	Professionalism of Third-Party Evaluation	Third-party evaluation agency qualifications; degree of consistency between third-party results and enterprise self-	Introduces independent third-party professional evaluation to mitigate the subjectivity of enterprise self-assessment,	1. Third-party evaluation agency qualification certificates, evaluation reports, enterprise decision reference records; 2. Consistency degree = number of indicators on which third-party and enterprise self-

		assessment; reference value of evaluation opinions	enhancing the objectivity of evaluation outcomes	assessments agree / total evaluation indicators; 3. Reference value = number of evaluation opinions adopted / total number of evaluation opinions
	Dynamic Adaptability of the Evaluation System	Indicator update frequency; adaptability adjustments of evaluation methods; linkage between evaluation results and decisions	Ensures the evaluation system dynamically adjusts in response to changes in market conditions, project progress, and policy environment, forming an “evaluation–decision–feedback” closed loop. For different project types (innovative vs. traditional), appropriate evaluation methods should be matched to avoid methodological pitfalls	1. Enterprise evaluation system update records, evaluation method adjustment ledgers across project phases; 2. Indicator update frequency = number of indicator updates per year / total evaluation indicators; 3. Decision linkage = number of instances in which evaluation results influenced decisions / total decisions. Additional: for innovative projects, proportion of qualitative methods (recommended ≥ 60%); for traditional projects, proportion of quantitative methods (recommended ≥ 70%); 4. Expert scoring method to assess the reasonableness of method combinations (5-point scale). Sources include project type classification files and evaluation method selection records
Digital Technology Application Dimension	Data Collection and Integration Capacity	Internal and external data coverage rate; data quality compliance rate; data middle platform development completeness; multi-source data integration level	Lays the foundation for digital technology application by ensuring the enterprise aggregates comprehensive internal and external data, enhancing data reliability	1. Enterprise data platform development documentation, data collection ledgers, data quality inspection reports; 2. Data coverage rate = number of internal and external data items actually collected / number theoretically required; 3. Data quality compliance rate = number of qualified data entries / total data entries (compliance rate ≥ 95% as benchmark); 4. Multi-source data integration level = effective data volume after integration / sum of raw data volumes from individual sources

	AI Technology Application	Deep machine learning risk-mining efficiency; NLP policy interpretation speed; intelligent decision model accuracy; AI whole-lifecycle management coverage rate	Leverages AI to achieve risk mining, policy interpretation, and automated, precision-enhanced decision-making, replacing traditional experience-based judgment	1. Enterprise AI technology application system records, machine learning model output reports, NLP policy interpretation results; 2. Risk-mining efficiency = number of latent risks identified by AI / number identified manually; 3. Policy interpretation speed = time for AI to interpret a single policy document / time for manual interpretation; 4. Intelligent decision model accuracy = degree of concordance between model predictions and actual outcomes; 5. AI whole-lifecycle management coverage = number of project phases in which AI participates / total project lifecycle phases
	Digital Twin and Scenario Simulation Capacity	Project virtual scenario construction completeness; simulation problem identification accuracy; simulation solution implementation rate	Constructs virtualized scenarios for project implementation, anticipating problems and formulating solutions in advance to reduce trial-and-error costs during economic downturns	1. Digital twin system construction reports, project scenario simulation records, problem resolution implementation ledgers; 2. Scenario construction completeness = number of project links replicated in virtual scenarios / total actual project links; 3. Problem identification accuracy = number of problems identified by AI simulation / number of problems actually occurring in the project; 4. Solution implementation rate = number of simulated solutions actually implemented / total number of solutions proposed in simulation
	Digital Monitoring and Early Warning Capacity	Computer vision on-site monitoring coverage; project progress intelligent monitoring accuracy; dynamic risk early warning response speed	Achieves real-time monitoring, progress control, and risk early warning after project implementation, enabling timely responses to contingent issues	1. On-site monitoring equipment deployment records, project progress monitoring system data, risk early warning system response records; 2. Monitoring coverage = number of project zones with deployed monitoring / total project zones; 3. Progress

				monitoring accuracy = intelligently monitored progress value / actual progress value; 4. Early warning response speed = elapsed time from early warning issuance to activation of countermeasures (unit: hours)
	Digital Technology Empowerment Efficiency	Cost reduction attributable to digital technology; decision-making efficiency improvement ratio; return on investment (ROI) of digital transformation	Quantifies the actual empowerment impact of digital technology on projects, ensuring that technology investment is matched by returns and preventing indiscriminate digitalization	1. Enterprise digital transformation investment ledgers, project financial statements, decision-making efficiency statistical data; 2. Cost reduction = (pre-digitalization cost – post-digitalization cost) / pre-digitalization cost; 3. Decision-making efficiency improvement ratio = (pre-digitalization decision time – post-digitalization decision time) / pre-digitalization decision time; 4. Digital ROI = benefits attributable to digitalization / total digital investment

(ii) Discussion

1. Differences from and Innovations over Existing Literature

The “six-dimensional integration” framework and its “Strategy–Execution–Support” three-tier linkage model are designed to address the failure of traditional investment decision theory during economic downturns. Table 3 presents a systematic comparison of key dimensions.

Table 3. Comparison of Key Differences.

Dimension	Prior Research	This Study	Analysis
Decision Objective	Maximize financial net value (NPV/IRR): assumes market efficiency, centers on shareholder wealth, ignores non-market constraints.	Optimize strategic adaptability: expands to “financial prudence + strategic alignment + ESG contribution + stakeholder synergy.”	Breakthrough: Prior research rests on mature-market assumptions. In a downturn, “survival” and “strategic positioning” take precedence; purely financial metrics can cause strategically aligned but low-return projects to be rejected.
Risk Identification	Market and financial risk: first-order risk; treats policy as exogenous.	Panoramic systemic-coupling risk scan: incorporates policy changes, supply chain disruptions, technological disruption, and climate risk (second-order); emphasizes nonlinear macro–micro coupling.	Deepening: Traditional models struggle to quantify “black swan” events. Policy risk and industrial chain security now surpass traditional market risk in determining project outcomes.
Financing Logic	Capital structure irrelevance / pecking order: assumes frictionless markets.	Dynamic multi-instrument alignment: “policy fund anchoring + equity de-leveraging + investment-lending linkage”; structure adjusts to policy windows.	Correction: In a downturn with strict credit rationing, pecking order often fails. Proactive use of policy instruments (e.g., green re-lending) can significantly reduce costs.
Decision Methodology	Predominantly quantitative (DCF / Real Options): relies on historical data, assumes manager rationality.	“Qualitative + Quantitative” dual-criterion system + AI: introduces fuzzy comprehensive evaluation for non-financial indicators; uses	Innovation: Resolves the challenge of quantifying non-financial indicators and uses digital technology to compensate for predictive bias in data-scarce environments.

		AI for policy decoding and scenario simulation.	
Government–Enterprise Relationship	Passive recipients: enterprises as price takers, passively adapting to policy.	Proactive co-creators: enterprises participate in policy feedback, build “Bank–Government–Enterprise” ecosystem, internalize policy dividends as competitive advantage.	Paradigm shift: From unidirectional adaptation to bidirectional interaction; government–enterprise collaboration significantly reduces investment delays from information asymmetry.

2. Findings from the Research Process: The “Double-Edged Sword” Effect and Applicability Boundaries of the Framework

Through deeper analysis, this study identifies two tendencies that require particular caution. The first is the “capability trap” of digital technologies. For many small and medium-sized enterprises in Leshan, where data governance foundations remain weak and business logic has not yet been fully clarified, blindly investing in complex AI-based decision systems may lead to a classic “garbage in, garbage out” problem. In some cases, the black-box nature of algorithmic models may even introduce additional uncertainty and confusion into the decision-making process. Therefore, digital transformation should follow a gradual progression from “business datafication” to “data-driven business operations”, advancing step by step rather than relying on premature technological overinvestment.

The second issue concerns the “dependency risk” associated with policy instruments. Although the framework emphasizes the active utilization of policy tools, such utilization must always remain under the overarching guidance of strategic objectives. In practice, some enterprises may initiate projects unrelated to their core competencies simply to obtain government subsidies or preferential policy support. Such projects may eventually fall into difficulties due to mismatches between technology capabilities and market demand. This indicates that strategic alignment must serve as a prerequisite and binding constraint for the application of policy tools, in order to prevent policy incentives from generating new forms of resource misallocation.

3. Contributions to the Existing Knowledge Base

This study breaks through the strong assumptions of “efficient markets” and “rational agents” in traditional corporate finance, constructing a strategic adaptability decision paradigm suited to environments of “multiple frictions” and “bounded rationality.” By endogenizing macroeconomic policy and regional strategic objectives as core decision variables, it fills the theoretical gap between macro policy and micro investment decisions. The paper proposes a “qualitative + quantitative” dual-criterion evaluation system, translating difficult-to-quantify soft indicators—ESG contribution, policy alignment, industrial chain security—into actionable secondary indicators (see Table 2). It identifies specific application scenarios for AI in investment decisions, providing an operational guide for digital finance theory in tangible investment. Unlike prior generalized research, this paper designs a regionally tailored indicator system based on Leshan’s industrial structure, demonstrating that investment decision frameworks must be customized to local resource endowments and policy orientations.

4. Research Implications

Several lessons emerge. First, avoid “financial-metric-only” thinking: in a downturn, cash flow security and strategic positioning matter more than short-term profit. Second, guard against “technology worship”: digital transformation must be grounded in business reality; without high-quality data governance and clear business logic, technology adds noise rather than clarity. Third, beware of “policy dependency syndrome”: while leveraging policy dividends is essential, project

feasibility should not rest entirely on sustained subsidies. Enterprises must ensure that projects remain viable after subsidies are stripped away. Finally, decision-makers must break down “departmental silos”; cross-departmental collaborative decision mechanisms are necessary to address systemic coupling risks.

5. Policy Implications for Policymakers and Local Financial Institutions

First, several implications can be drawn for local fiscal and industrial policy authorities. One key priority is to enhance the predictability and stability of policy frameworks. Authorities may consider issuing investment guidelines and negative lists for key industries in order to reduce investment hesitation caused by policy uncertainty. In addition, it is important to design incentive-compatible policy support instruments. Instead of relying heavily on upfront subsidies, governments could increasingly adopt mechanisms such as ex-post subsidies, performance-based rewards, or outcome-linked financial incentives, thereby tying fiscal support more closely to actual project performance. This approach helps avoid inefficient resource allocation and reduces the risk of enterprises becoming overly dependent on subsidies.

Another important initiative is the establishment of regional industry–finance integrated service platforms. By integrating enterprise-related data from taxation, social security, environmental protection, and public utilities such as electricity, water, and gas, local governments can collaborate with financial institutions to develop digital enterprise profiling systems. Such platforms can systematically reduce information asymmetry between banks and enterprises and constitute a fundamental institutional infrastructure for alleviating financing constraints faced by small and medium-sized enterprises.

Furthermore, policymakers may explore the creation of a “strategic tolerance pool” mechanism. For strategically important and forward-looking projects that may exhibit weak short-term financial indicators, government-guided funds or risk-compensation mechanisms could be introduced to share risks with market capital. This approach would prevent strategically valuable projects from being prematurely rejected under traditional financial evaluation frameworks.

Second, this study also provides several implications for local financial institutions. One important direction is the deep customization of financial products. For instance, in support of Leshan’s “Green Silicon Valley” strategy, financial institutions could develop financing instruments such as intellectual property pledge financing, carbon emission rights pledge financing, and future revenue pledge financing. For the cultural tourism sector, innovative financing models such as scenic-area revenue asset-backed securities (ABS) and cluster-based loans for rural tourism accommodations (e.g., homestays) could be explored.

Moreover, financial services should gradually shift from single-point credit provision to ecosystem-based financial services. By focusing on Leshan’s key industrial chains, financial institutions can provide integrated financial solutions covering settlement, financing, and risk management for core enterprises and their upstream and downstream partners. Such an approach would strengthen the coupling between financial services and industrial development, thereby improving the efficiency of resource allocation within regional industrial ecosystems.

VII. Conclusion

The “six-dimensional integrated framework” and the “three-layer linkage model” constructed in this study aim to address the multiple complexities of investment decision-making during periods of economic downturn. By incorporating strategic objectives, systemic risks, policy factors, and digital capabilities into the analytical structure, the framework shifts the logic of decision-making from “financial optimization” toward “strategic adaptability optimization.” Analysis based on the industrial structure of Leshan indicates that the proposed framework demonstrates strong regional applicability and effectively addresses the specific challenges faced by local enterprises.

In addition, this study moves beyond the strong assumptions of efficient markets and perfect rationality commonly adopted in traditional corporate finance theory. By internalizing the macro-institutional environment and industrial chain security into the decision-making framework, it

establishes a new paradigm for investment decisions under economic downturns in which strategic adaptability takes precedence over financial net value. Meanwhile, the study reveals the nonlinear coupling characteristics of investment decision risks, expanding the boundary of risk assessment from traditional market and financial risks to systemic “black swan” events such as policy shocks and technological disruptions. This contributes to the theoretical development of risk management under extreme conditions. Furthermore, the application of the “dual qualitative–quantitative methodology” effectively addresses the challenge of quantifying non-structured policy information and scarce data, providing an operational theoretical foundation for the practical application of digital finance concepts in real-sector investment decisions.

Although this study focuses on optimizing the overall architecture of investment decision-making, the empirical context is primarily based on the specific industrial clusters of Leshan in Sichuan Province. Therefore, the generalizability of the findings across regions with different resource endowments requires further verification. In addition, the indicators proposed within the framework have not yet undergone sufficient empirical testing. Future research should conduct cross-regional and cross-industry comparative analyses using heterogeneous data to further enhance the robustness of the conclusions.

Moreover, at the macro level, this study does not yet establish a comprehensive long-term framework covering the entire lifecycle of investment decision-making. Future research should incorporate longitudinal analysis by integrating regional industrial structures and policy dynamics in order to evaluate the long-term performance of the framework. At the micro level, the study has not fully explored the interaction mechanisms between managerial cognitive biases and intelligent decision-support systems. Future studies may integrate insights from behavioral economics and management science to further refine the weighting of investment decision indicators and continuously improve decision models through artificial intelligence technologies, thereby enhancing overall decision-making efficiency.

Translator’s Notes:

* The Fifteenth Five-Year Plan (“十五五”规划) refers to the People’s Republic of China’s national economic and social development plan for 2026–2030, the fifteenth in a series initiated in 1953.

** “Green Silicon Valley” (绿色硅谷) is a provincial-level planning concept in Sichuan Province referring to a high-tech green industry hub centered on Leshan’s polycrystalline silicon photovoltaic manufacturing capacity. It is not an internationally standardized term.

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