THE INFLUENCE OF FORWARD-LOOKING STRATEGIES ON ENTERPRISE PERFORMANCE: THE MEDIATING ROLE OF DYNAMIC CAPABILITIES IN SOUTHWESTERN CHINA

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ABSTRACT

In recent years, sustainable entrepreneurship has emerged as a dynamic field, driving innovative solutions to environmental, social, and financial issues, as evidenced by the improvement of income systems. The purpose of this study is to explore the impact of a forward-looking strategy on enterprise performance, so as to ensure that enterprises can maintain the ability of sustainable development. Foresight can promote the enhancement of sustainable development. Therefore, the current research mainly determines that forward-looking strategies ultimately affect the performance of enterprises through the impact on their own dynamic capabilities. Through the empirical investigation of 125 enterprises in Guizhou province, China, the corresponding research data are obtained. The results show that forward looking strategy has a positive impact on enterprise performance, and enterprise dynamic capability, as an intermediary variable, has a positive impact between for-ward-looking strategy and enterprise performance. This research introduces market dynamic capability as a moderating variable to explore whether forward-looking strategies can adapt to changes in the external market environment. Using structural equation modeling (SEM) to examine the complex relationships between multiple independent and dependent variables of forward-looking strategies and dynamic capabilities, including the impact of latent variables. Under

the background of digital economy, digital technology gradually infiltrates into the operation of enterprises and plays a vital role in enterprise performance. Digital transformation has become a realistic need for enterprises to respond to changes in the market environment and seek development. The forward-looking strategy has brought new opportunities to solve this problem. The core of forward-looking strategy lies in "forward thinking" and "pioneering intention". It not only emphasizes the ability to predict and identify potential opportunity windows in uncertain environments but also pays attention to the cultivation of enterprise resilience and openness to maintain sustainable competitive advantage. Its foresight can build dynamic capabilities and ensure the sustainable development ability of enterprises through continuous insight into market information and technology resources, such as opportunity recognition perception, knowledge absorption and transformation, resource replacement and innovation, organizational change and reconstruction.

Based on the perspective of forward-looking strategy, this study analyzes the relationship between dynamic capabilities and performance of enterprises and obtains some meaningful research conclusions. These research conclusions make a certain contribution to enriching the relevant theories of management and guiding management practice. This study discusses the connotation of dynamic capabilities, analyzes the impact of forward-looking strategies on dynamic capabilities, tests the effects of different dynamic capabilities on enterprise performance, and explores the moderating effect of market dynamics on dynamic capabilities and enterprise performance.

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CHAPTER 1

INTRODUCTION

1.1 Background and Significance

In the context of the digital economy, digital technology has gradually penetrated the operation of enterprises, playing a crucial role in their performance. Digital transformation has become a practical need for enterprises to respond to changes in the market environment and seek development. Since the 21st century, as the main body of industrial transformation and upgrading, enterprises have faced increasing uncertainty and complexity in their business environment, making it difficult to improve their performance. For instance, Chinese technology-based enterprises generally have problems such as lack of independent innovation capability, low product supply quality, and low internal control efficiency（Zeng, 2019）. In addition, the frequent occurrence of 'black swan' events such as the COVID-19 has a huge impact on the external market environment of enterprises, which makes the market performance of enterprises lack vitality (Gao, 2019).

As one of the important practices in responding to changes in the business environment, digital transformation is an important engine for stimulating China's economic vitality and improving enterprise performance. Therefore, it is necessary to seize the opportunity of the digital economy era and correctly grasp the relationship between the strategic intention of digital transformation and enterprise performance. At the same time, the rapid development of digital technology is also accelerating the transformation of enterprise organizational models, business models, and human resource management models, leading to the disappearance of the previously accumulated competitive advantages with rapid and frequent market changes (Digital China Development Report, 2020). In this context, the rapid and agile response ability

to external markets has become an extremely necessary foundation for enterprises to adapt to the digital economy era (Wei et al., 2021).

Previous studies (Zhou et al., 2020) have shown that the innovation breakthroughs and performance growth of enterprises in the dynamic market environment depend on whether the enterprise strategy can lead the enterprise to quickly respond to changes in the environment, and traditional strategic models that follow the rules are no longer able to cope with the unpredictable business ecosystem. The forward-looking strategy has brought new opportunities to solve this problem. The core of forward-looking strategy lies in 'forward-looking' and 'pioneering intention', which not only emphasizes the ability to predict and identify potential opportunity windows in uncertain environments but also focuses on cultivating enterprise resilience and expansion to maintain a sustained competitive advantage. The foresight it possesses can build dynamic capabilities through continuous insight into market information and technological resources, including opportunity recognition perception, knowledge absorption and transformation, resource reset innovation, and organizational transformation and reconstruction.

This study is based on forward-looking strategy theory, dynamic theory, and performance theory, aiming to study the impact of forward-looking strategic factors on corporate performance in Chinese technology enterprises. It attempts to study the mechanism 'black box' between forward-looking strategy and corporate performance from both internal and external perspectives. This study uses 125 technology-based enterprises as research samples to construct a regression analysis model of forward-looking strategy on enterprise performance and conducts empirical testing. It mainly includes the following three aspects of work:

Firstly, study the impact of forward-looking strategies on corporate performance. Secondly, analyze whether the dynamic capability of the enterprise itself can serve as an intermediary variable to improve its innovation ability and market adaptability. Thirdly, from the perspective of the mechanism of action, analyze the moderating effect of market dynamic regulation ability on enterprise performance.

Technological enterprises focus on technological innovation, knowledge absorption, and talent introduction, which has become a research focus in the academic community. The unique development advantages of technological new enterprises determine their increasingly

important role in promoting technological innovation and promoting industrial structure adjustment. Technology oriented enterprises belong to technology intensive enterprises, therefore, in technology-oriented enterprises, technological elements are at the core position, and the application and innovation of science and technology are the foundation for their survival and long-term development. Traditional enterprises use machines as their main production method and pursue large-scale production as their production goal. Technological enterprises, on the other hand, focus on technology as their main business approach and pursue product heterogeneity as their business goal. Due to the fact that technology-based enterprises are engaged in technology intensive industries, the development of products in these industries is not driven by cheap labor and natural resources, but rather by science and technology. So, the products and services provided by technology-based enterprises, whether in the research and development stage, production stage, use and after-sales stage, all use the latest scientific and technological advancements. In traditional industries, enterprises often rely on obtaining more production resources and funding to win, but technology-based enterprises mainly rely on technological innovation and research talents to win. Compared to general products, the products of technology-based enterprises are often the result of innovation, which determines that the value of technology-based products lies not in the level of material costs, but in the innovation costs they contain. The key for technology-based enterprises to explore market areas and win market share lies in the heterogeneity of their products. The research and development of heterogeneous products is mainly attributed to the exclusive knowledge and independently developed intellectual property owned by the enterprise, which means that technology-based enterprises need more intellectual and knowledge investment than other enterprises.

The early understanding of the digital economy focused on the fields of the Internet and computers, mainly reflected in the static information published on websites. The digital economy is growing rapidly, with emerging terminal devices such as smartphones, tablets, and laptops as the medium. New automation and robotics technologies are used to connect people and things through data analysis and algorithmic decision-making, resulting in an increasing frequency of data usage. With the continuous development of digitization and intelligence, the research field of the digital economy has expanded to include production

factors, industrial development, and economic governance, reflecting more the interaction between different economic activities. Due to the wide scope of the digital economy, which includes all economic fields, there are no strict boundaries in the digital economy. The digital economy has become the main driving force for economic growth and has had a profound impact on enterprise business models.

1.1.1 Current status of forward-looking strategies and dynamic capabilities

The dynamic capability theory has become one of the most active research topics in strategic management literature, explaining how enterprises can improve their dynamic matching with the environment to quickly respond to external technological and market changes (Helfat et al., 2007). Teece (2007) defines dynamic capabilities as organizational capabilities that allow companies to establish and update resources and assets, allowing them to reconfigure and update existing resources as needed to quickly respond to changes in the market, business environment, and technological opportunities. Among them, it also includes the ability of enterprises to shape the ecosystem they occupy, develop new products and processes, design and implement feasible business models. As a unique ability, enterprises can use it to initiate competitive behavior, understand complex dynamic markets, and become motivated to respond under new conditions, which is conducive to dynamic matching between enterprises and the environment. This dynamic matching lays the foundation for enterprises to form sustainable competitive advantages in turbulent and complex environments (Chen et al., 2010; Oliver & Holzinger, 2008). Therefore, dynamic capabilities help enterprises achieve strategic updates, facilitate rapid resource integration and allocation to achieve sustainable competitive advantages in dynamic environments, and have received great attention from scholars (Teece et al., 1997; Eisenhardt & Martin, 2000; Jiao et al., 2013).

Firstly, the dynamic capability theory expands the static research perspective of the resource-based view. In the 1970s, classic strategic management theory emphasized that the purpose of implementing strategic behavior in enterprises was to adapt to the environment (Ansoff & Stewart, 1967). The foothold of the classic strategic theory formed during this period is environmental determinism, emphasizing the impact of the external environment in which the enterprise is located and the viewpoint of passive adaptation of the enterprise to the

environment. After the 1980s, scholars systematically analyzed the impact of five competitive forces in the industry on corporate profits and constructed their own competitive advantages based on the enterprise value chain analysis model (Porter, 1979). However, Porter's competitive strategy theory cannot solve the black box of why the competitive advantages of enterprises in the industry differ and lacks analysis of internal resources and capability factors of enterprises. After entering the 1990s, the resource-based view was used to explain the sustainable advantages and differences between enterprises. The resource-based view is based on two assumptions: heterogeneity and liquidity of enterprise resources. Therefore, the resource-based view attributes the sources of competitive advantages of enterprises from a static research perspective, with a strong tendency towards static analysis (Barney, 1991).

Secondly, the dynamic capability theory overcomes the shortcomings of core rigidity from an evolutionary perspective. In the 1990s, as a supplement to the unique competitiveness of enterprises, the theory of core competitiveness gradually developed and took shape. The theory of core competitiveness believes that enterprises form their core competitiveness through the accumulation and integration of internal resources, capabilities, technology, and knowledge. Although it considers the long-term growth and development of enterprises and the sustainability of competitive advantages, in the rapidly changing environment, organizations need to develop new capabilities. Due to the 'inertia trap' problem caused by past path dependence, the core competency 'rigidity' problem of enterprises based on experience behavior patterns and mental models is gradually becoming prominent (Leonard & Barton, 1992). Kodak, as a typical case of 'rigidity' in its core competencies, once thrived in the film age with its unique competitive advantage but faced a 'Waterloo of Change' in the digital age and filed for bankruptcy. However, the emergence of dynamic capability theory constructs an analytical framework based on three key elements: organizational process, position, and development path, which solves the core competency rigidity problem of the capability school from an evolutionary perspective (Teece et al., 1997). In the face of constantly changing environments, enterprises need to have the dynamic ability to integrate, construct, and restructure internal and external resources, break through existing path dependence and market position to obtain sustained competitive advantages. At present, research on dynamic capability has covered its concept, composition, and functional

boundaries, and in-depth research has been conducted on the internal and external factors that affect its construction mechanism. At the same time, research on the application of dynamic capabilities based on different organizational types and contexts is gradually deepening, gradually integrating with more research fields for inference and deduction.

The representative literature review of existing dynamic capabilities mainly focuses on the following two aspects: firstly, based on bibliometric analysis methods, a review of dynamic capability research is conducted, mainly examining the co citation analysis of scholars at different periods, and summarizing the hot research topics at each stage (Vogel & Guttel, 2013). Secondly, conduct a research review on the relationship between dynamic capabilities and other research topics, such as dynamic capabilities and entrepreneurship (Zahra et al., 2006), dynamic capabilities and strategic alliances (Mamedio et al., 2019), etc. In addition to systematically reviewing the current research status in the field of enterprise dynamic capabilities, this study also conducts in-depth analysis and discussion of representative literature, summarizes, and analyzes the relationships and internal laws between various management elements such as driving factors and effects, and proposes six factors for studying dynamic capabilities in this study.

1.1.2 Technology-based enterprises

Technology oriented small and medium-sized enterprises refer to the group of small and medium-sized enterprises engaged in the research and development, production, and service of high-tech products. They play an important role in enhancing technological innovation capabilities, supporting sustainable economic development, and expanding social employment. Technological enterprises have made significant progress. However, technology-based small and medium-sized enterprises still face problems such as the need to strengthen their innovation capabilities, optimize their entrepreneurial environment, improve their service systems, and expand their financing channels. Therefore, it is necessary to further gather various forces, cultivate and strengthen the group of technology-based small and medium-sized enterprises, drive technology-based small and medium-sized enterprises to take the path of innovative development, and provide important support for economic and social development. (Ministry of Science and Technology of the People's Republic of China, 2019)

1.1.3 Performance of financial and sustainability

Organizational performance refers to the quantity, quality, efficiency, and profitability of organizational tasks completed during a certain period of time. The realization of organizational performance should be based on the realization of individual performance, but the realization of individual performance does not necessarily guarantee that the organization has performance. If the performance of an organization is decomposed into each job position and individual according to a certain logical relationship, as long as each individual meets the requirements of the organization, the performance of the organization is achieved (Zhao, 2021). Seashore pointed out that evaluating the performance of an organization requires consideration of three different levels of issues: first, the achievement of the organization's long-term overall goals; The second is the short-term operational performance of the organization measured by several short-term indicators, which, when combined, determine the final operational situation of the organization; The third is the current business situation reflected by the low-level attribute indicator group, which can timely reflect the progress towards the ultimate goal or the likelihood of achieving success. The strategic orientation of an organization determines its business scope, the customer group it serves, and the competitive strategy it adopts. These affect the performance of the organization at the macro level, and changes in the strategic orientation of the organization affect the organizational structure at the micro level. Johnson and Michiel (2001) studied the reasons for functional organizational structure change and how these changes occurred, focusing on purchasing organizational structure. The study found that environmental pressure drives organizational change in enterprises, but it is not the only factor that leads to organizational change. Organizational structure is influenced by environment and strategy, and departmental organizations must be consistent with the company's strategy and structure.

1.2 Research Questions

The integration of forward-looking strategies and dynamic capabilities of enterprises is guiding them towards a strategic direction focused on innovation-driven, green development, and intelligent transformation. This aims to address the challenges posed by intensified

competition, accelerated technological iteration, and diversified consumer demands in the current market environment. However, forward-looking strategies encounter existing issues such as lagging corporate governance structures, uneven resource allocation, and conflicts between short-term and long-term development goals during implementation. The primary contradiction lies in balancing internal capabilities with external opportunities to achieve sustainable development and long-term competitive advantage.

The issues arising from the above background are:

RQ1. How does the level of organizational performance of a company relate to its strategy and dynamic capabilities in the context of the digital economy?

RQ2. What are the direct, indirect, and cumulative impacts of various factors on organization performance?

RQ3.How well does the proposed model for factors influencing organization performance fit the empirical data, indicating its goodness of fitness?

The 21st century is an era of great prosperity for the knowledge economy and sharing economy, and innovation, as the primary driving force for development, plays a more important role in this era. Nowadays, with the development of the economy and society, as well as the progress of science and technology, the research and production cycles of products are constantly shortening, and consumer demand is also constantly upgrading. The high cost of product research and development has put forward higher requirements for enterprises. It is difficult to meet the changing market demands solely by relying on their own resources for research and development. At the same time, the connections between enterprises are becoming increasingly close, and the boundaries between enterprises are gradually blurring. With the continuous deepening of the knowledge economy and sharing economy, the degree of global integration is deepening, and knowledge resources are being allocated within the global market. Therefore, it is necessary to improve the research and development speed of enterprises, enhance innovation vitality, maintain competitive advantages, reduce research and development costs, and enhance the openness of enterprises. Through open innovation, enterprises can enhance communication and exchange, thereby sharing resources.

1.3 Research Objectives

1.To study the direct and indirect factors and comprehensive effects of forward-looking strategies on organizational performance.

2. To verify the goodness of fit of forward-looking strategic factors in the model to factors affecting organizational performance.

3.To analyze the regulatory mechanism of market dynamic regulation ability on corporate performance.

1.4 Research Hypotheses

H1: Forward looking strategies have a positive impact on the organization's performance.

H2a: Organizational learning ability has a positive impact on organizational flexibility.

H2b: Organizational learning ability has a positive impact on organizational cognitive ability.

H3a: Innovation capability has a positive impact on organizational flexibility.

H3b: Innovation ability has a positive impact on organizational cognitive ability.

H4a: Organizational flexibility has a positive impact on organization performance.

H4b: Organizational cognitive ability has a positive impact on organization performance.

H5a: Market dynamics have a positive moderating effect on the relationship between organizational flexibility and organization performance.

H5b: Market dynamics have a positive moderating effect on the relationship between cognitive ability and organization performance.

1.5 Research Significance

1.5.1 Academic Contribution

The research significantly contributes to academic literature by integrating theories of dynamic capabilities and forward-looking strategies. By exploring the mediation mechanism of dynamic capabilities, the study advances understanding of how forward-looking strategies influence the performance of technology-based enterprises. It provides theoretical insights

into organizational adaptation to dynamic environments, offering valuable knowledge for scholars in strategic management and organizational behavior.

1.5.2 Technology-Based Enterprises

For technology-based enterprises, this research offers practical insights into enhancing organizational performance in the digital economy era. By elucidating the pathways through which forward-looking strategies impact performance, and examining the regulatory effect of market dynamics, the study provides actionable guidance for technology-based firms seeking to establish sustainable competitive advantages. This research equips enterprises with strategies to navigate complex and rapidly changing environments, fostering their growth and competitiveness.

1.5.3 Government Policy

For government entities, this research holds significant implications for fostering the growth and competitiveness of technology-based enterprises. By highlighting the importance of forward-looking strategies and dynamic capabilities, the study underscores the need for policies that support innovation, technology adoption, and market adaptation. Governments can use the findings to design policies and initiatives aimed at promoting the development of technology-based sectors, driving economic growth, and fostering innovative ecosystems.

At present, research on forward-looking strategies mainly focuses on improving corporate performance and enhancing competitive advantages. Most scholars believe that implementing forward-looking strategies can enhance a company's competitive advantage and improve its performance. The study by Teece et al. (1997) suggests that dynamic capability is the ability of a company to re integrate, restructure, and allocate resources within and outside the company in order to reverse the adverse effects of changing environments. Helfat (2015) argued in his research on complementary assets and dynamic capabilities that dynamic capabilities enable enterprises to create new products and processes and respond to changing markets. Delmas (2002), based on the theory of dynamic capabilities, regards dynamic capabilities as the ability of enterprises to reorganize and allocate internal and external resources to adapt to rapidly changing and complex environments in their research on

innovation capabilities of European enterprises. Zahra et al. (2002) argue that dynamic capability refers to the transformational ability of a company to integrate and restructure its own resources in a competitive environment due to changes in the behavior of competitors and consumers, as well as competitive activities. As a pioneer of the theory of dynamic capabilities, Teece (1994) divided dynamic capabilities into adaptability, integration, and reconstruction capabilities. After several years of research, Teece divided dynamic capabilities into integration, construction, and reconstruction capabilities. Teece (2007) has gained a new understanding of dynamic capabilities through in-depth research, dividing them into resource perception ability, mastery ability, and reconstruction ability. Perception ability affects mastery ability, and mastery ability also affects reconstruction ability. Since the early 1990s, customer needs have become increasingly personalized and diversified, and existing innovative models are no longer sufficient to meet customer needs. It is necessary to continuously develop and improve products based on customer opinions, which Hippel (1998) referred to as user innovation models. At this stage, customers are not only consumers but also involved in product design. The addition of users represents the formal formation of an innovation network composed of enterprises, research institutions, users, etc. It expands the scope of innovation and blurs the boundaries between enterprises. By the end of the 20th century, the continuous development and widespread application of information technology had expanded the scope of information sharing and made access more convenient. The most representative example is the open-source software movement, which attempted to break the monopoly or dominance of one or several companies in the software industry at that time in order to achieve greater sharing of information technology and open-source code. This model was unprecedented and completely open, and Chesbrough (2003) referred to it as an open innovation. The research on open innovation mainly focuses on two aspects: the motivation of open innovation and the results of open innovation. The research on the motivation of open innovation mainly focuses on the factors that generate open innovation. Scholars such as Katz (1982) have explored the internal motivations of open innovation and believe that increasing economic benefits or entering a target market is the reason why enterprises engage in open innovation. Lee et al. (2012) explored the external environment and believed that in order to enhance their competitive advantage, enterprises must engage in open innovation in the face

of increasingly severe competitive environments. Gassmann (2006) believes that when companies have a demand for talent, resources, technology, etc. on a global scale, they engage in open innovation. Overall, the motivation for enterprises to engage in open innovation can be divided into internal and external factors. Internal motivations include increasing economic benefits, entering target markets, and breaking through technological bottlenecks. The external factors include intensified competition and diversified customer demands. Different scholars have different opinions on the results brought by open innovation. Most scholars believe that open innovation can improve enterprise performance. Huizing (2011) believes that through open innovation, enterprises can acquire and utilize advanced existing technologies, thereby reducing research and development costs. At the same time, they can also learn advanced management methods from other enterprises to optimize their own management models, ultimately benefiting the improvement of organizational performance. Reed (2012) believes that open innovation can bring technology and knowledge supplementation to employees, thereby enhancing the competitiveness of enterprises. While it is widely believed that open innovation has a positive impact, some scholars have also raised their concerns. They believe that enterprises' increased dependence on foreign technologies and leakage of core technologies during the process of open innovation can have a negative impact on enterprise performance. But Peng and Le (2011) believe that the proposal of open innovation is conducive to promoting a balance between corporate performance and increasingly urgent ecological protection, which provides a new approach to open innovation. The changes in the external environment are factors that must be considered when studying the development of enterprises. The decision-making of enterprises is influenced by the external environment, and the environment in which enterprises operate is complex and ever-changing. Therefore, the study of environmental dynamics is becoming increasingly important. In a dynamic environment, scholars dedicated to studying corporate strategy have begun to pay attention to the flexibility and variability of resource acquisition and application.

Teece (1992) first proposed the concept of ‘dynamic capability’, believing that dynamic capability is essentially a mechanism for organizations to integrate and restructure existing resources. There is no unified standard for dividing the dimensions of dynamic capabilities, but many scholars at home and abroad agree that integration and reconstruction capabilities

are important components of dynamic capabilities. For example, Teece (1997), Eisenhardt and Martin (2000), Wang (2020), Lin and Wu (2014), and others consider integration and reconstruction capabilities as one of the dimensions of dynamic capabilities. In 1997, Teece et al. proposed a complete definition of dynamic capability based on a resource perspective, viewing enterprise resources and capabilities from a developmental perspective. They defined dynamic capability as the ability to rearrange and combine internal and external resources and use integrated resources to adapt to changing environments. They divided it into three dimensions: process, situation, and path. Dynamic capabilities may also enhance business performance and management effectiveness by influencing other factors. Zhu and Kraemer (2002) found that the interaction between enterprise information infrastructure and enterprise e-commerce capabilities significantly affects enterprise performance. Cao and Zhao (2008) proposed that dynamic capability first changes the strategic process of a company and then affects the performance of the company through the changed strategic process. By collecting empirical data from high-tech enterprises for regression analysis, the following conclusion is drawn: Although the performance of a company is influenced by dynamic capability, the impact is not direct, and the impact of external dynamic coordination capability is the most significant and becoming an important factor for enterprises to establish sustainable competitive advantages in a competitive environment.

Based on this, this study is based on the theory of dynamic capability and the theory of forward-looking strategy matching. Through the mediation mechanism of dynamic capability, it explores the path of forward-looking strategy affecting the performance of technology-based enterprises, while verifying the regulatory effect of market dynamics, in order to provide theoretical reference for promoting the high-quality development of technology-based enterprises in the context of the digital economy.

1.6 Research Scope

1.6.1 Scope of Population

This study uses nonprobability sampling method to select 125 technology focused enterprises in Guizhou Province, western China as survey samples. The management personnel of each enterprise distribute 4 questionnaires for data collection.

Based on this, this research selects technology-based enterprises in southwestern China as the survey sample for this study, propose the regulatory role of market dynamic capabilities, explore the relationship between forward-looking strategy and enterprise performance, and provide direction for enterprise strategic decision-making.

1.6.2 Variables

The study examines the regulatory role of market dynamic capabilities and their impact on enterprise performance. Key variables under investigation include forward-looking strategy, market dynamic capabilities, and various indicators of enterprise performance such as profitability, growth, and innovation.

Forward looking strategy

The forward-looking nature of strategic planning enables enterprises to prepare for the future in advance, seize opportunities, and respond to challenges. Forward looking strategy plays a crucial role in the development of enterprises. It requires enterprises to not only focus on immediate benefits when formulating strategies, but also to have a long-term vision and plan and layout for the future of the enterprise. This visionary ability can help businesses gain insights into industry trends, anticipate future opportunities, and prepare adequately for potential challenges. Through forward-looking strategies, enterprises can maintain a competitive advantage in a fiercely competitive market and achieve long-term stable development.

Market dynamic capability

Market dynamic capability refers to the ability of enterprises to respond to market demand by continuously learning and adjusting resource allocation in a rapidly changing market environment. This ability is crucial for the development of enterprises, as it endows them with the ability to quickly identify market opportunities and adapt to environmental changes. In the rapidly changing market environment, enterprises need to allocate resources

according to market demand. The ability of market dynamics enables enterprises to accurately identify the resources needed for their strategy and allocate them to the areas where they are most needed, thereby improving the efficiency of resource utilization. The market dynamic capability can also encourage enterprises to strengthen organizational collaboration, form effective teamwork and information flow, thereby better adapting to market demand and improving performance.

Enterprise performance indicators

Corporate performance is an important indicator for measuring the development status of a company. Profitability refers to the ability of an enterprise to generate profits through its business activities during a certain period of time. It is one of the important indicators for evaluating the health status and long-term development potential of enterprises. High profitability means that the enterprise has strong market competitiveness and financial stability, which can bring stable returns to investors, including market share growth, sales revenue growth, etc. Through growth, enterprises can continuously expand their scale, increase market share, and enhance competitiveness.

1.6.3 Scope of Area

Since the 1990s, the economic construction of the region has experienced rapid development. So far, the information technology in the region has been at the forefront of China's information technology, with the growth rate of the digital economy ranking first in China for seven consecutive years, and the added value accounting for about 37% of GDP. The revenue growth rate of the software and information service industry has remained the first in the country for 17 consecutive months, with a total increase of five times compared to five years ago, driving more than 25000 enterprises to carry out big data integration and transformation. Secondly, as a less developed region in China, small and medium-sized enterprises in this region generally have a mindset of overly focusing on short-term profits, emphasizing tactics, neglecting strategy, and relying on experience for decision-making, which has led to many small and medium-sized enterprises losing their direction in the

process of operation, with prominent characteristics of blindness, speculation, and arbitrariness in operation.

1.7 Definition of Terms

Forward looking strategy referred to in this study defines an organization's strategy from an internal perspective. Forward-looking strategy refers to a state of readiness for enterprises to respond to changes in various factors. It is a strategy that enables enterprises to successfully respond to fierce competition and unpredictable environments and can enhance their active or passive responsiveness and adaptability in unexpected market environments.

Dynamic capability referred to the perspective of organizational change theory, this study defines the dynamic capability of enterprises as the ability of enterprises to continuously absorb and integrate internal and external resources, improve the resource base, restructure processes and practices, and promote the continuous improvement of core competitiveness in order to respond to changes that have already occurred or may occur in the future. Its essence is a higher-order ability to change organizational conventional capabilities, which can determine the speed of change in enterprise conventional capabilities. It is a process of gradual transformation with active change as the main focus and passive adaptation as the auxiliary. It is composed of three dimensions: organizational flexibility, perception ability, and resource integration ability.

Market dynamics capability referred to research using environmental dynamics as a moderating variable, market dynamics are the most common influencing factor and have been widely applied by most organizational and strategic theory researchers. Market dynamic capability refers to the rate of change in customer composition and preferences. In markets with high dynamics, for example, the product needs of new customers in enterprises are often different from those of existing customers, and the product preferences of existing customers in enterprises often change or tend to constantly seek new products. Market dynamics represent the degree to which environmental factors change over time, the speed or magnitude of market environment changes, and the frequency of changes.

Technology based enterprises referred to an entity within high-tech industries, primarily composed of scientific and technological personnel, and supported by independent intellectual property rights. These enterprises are engaged in research, development, production, sales, and service of products in advanced fields such as electronic information, biology and new medicine, aerospace, new materials, high-tech services, new energy and energy conservation, resources and environment, advanced manufacturing, and automation. They demonstrate a high proportion of research and development expenses, a significant presence of research and technology employees, and a focus on rapid development of new products. Additionally, they allocate substantial resources towards technological innovation, exhibit high knowledge intensity, and contribute to industrial structure adjustment through their role in promoting technological innovation. Technology-based enterprises are characterized by their emphasis on technological resources, engagement in research and development, production, and technical services of technological products, and drive for technological innovation with high-tech personnel leading the way across seed, introduction, and growth stages.

Dynamic capability refers to an organization's ability to swiftly adapt to changing markets and technological landscapes. It enables companies to establish and update resources, reconfigure assets, and shape ecosystems to respond effectively to dynamic environments. Dynamic capabilities include the capacity to innovate products, processes, and business models, fostering competitive behavior and sustainable advantages. Scholars define dynamic capabilities as the higher-order ability of enterprises to acquire, integrate, and restructure resources, considering environmental dynamics and growth performance. Research directions vary, focusing on abilities or processes that enhance core competitiveness amidst environmental changes.

Performance of financial and sustainability refers to the operational efficiency and effectiveness demonstrated by an enterprise over a specific period, reflecting its management and operational capabilities. Traditionally measured by financial indicators like profit and productivity, performance can also be assessed through alternative metrics such as innovation, growth, entrepreneurship, economic outcomes, and organizational effectiveness. However, sustainable development is paramount, with a focus on long-term growth while ensuring survival and building upon existing foundations. For technology-based enterprises, innovation

significantly influences economic benefits and future prospects. Enhancing technological innovation requires creating conducive environments for innovation activities, evaluating achievements, identifying areas for improvement, and fostering a continuous cycle of innovation to drive performance enhancement.

Environmental sustainability refers to the extent to which a technology-based enterprise engages in practices that minimize its ecological footprint and promote the long-term health and resilience of natural systems. This includes the organization's ability to utilize eco-friendly technologies to reduce carbon emissions, optimize energy consumption through technological innovations, and integrate environmental sustainability features into its products.

Chapter 2

LITERATURE REVIEW

In the context of digital economy, forward-looking strategies have a significant positive impact on corporate performance by strengthening the dynamic capabilities of enterprises and markets. Forward looking strategy is based on the future, helping enterprises seize opportunities and respond to challenges by predicting market trends, developing long-term plans, and continuously adjusting. The dynamic capability of enterprises integrates and reconstructs internal and external resources, empowers and strengthens learning and innovation through digital platforms, forms competitive advantages, and improves operational efficiency and market response speed. The market dynamic capability enables enterprises to keenly perceive changes in policies, technologies, demands, etc., understand and adapt to new rules, drive innovation through strategic changes and scenarios, create favorable competitive patterns, and continuously create value. Under the synergistic effect of the three, enterprises can not only optimize internal management, improve product and service quality, but also effectively explore new markets, enhance customer stickiness, and ultimately promote comprehensive performance improvement, achieving sustainable development.

The main purpose of organizational level research is to explore the impact process of forward-looking strategies on corporate performance. In previous organizational level research, strategy performance has been widely adopted as a research paradigm. In the study of specific mechanisms of action, various paths such as ‘strategy structure performance’, strategy behavior performance, and ‘strategy culture performance’ have also been proposed by scholars (Huang, 2015). In the study of the impact of forward-looking strategy on corporate performance, this study adopts the path of ‘strategy dynamic capability performance’ by examining the research paradigm.

Firstly, the purpose of forward-looking strategy is to develop new products or expand new markets, which requires enterprises to continuously break through their dynamic capabilities. Therefore, enterprises adopting forward-looking strategy invest more resources in

their dynamic capabilities. Secondly, using a dynamic theoretical perspective to study the impact on corporate performance can help better understand other changes in the process of implementing strategies, such as changes in organizational structure and organizational flexibility. Although dynamic capability is not the latest theoretical perspective, it is the most suitable theoretical perspective for forward-looking strategies. This study uses this perspective to study the impact of forward-looking strategies on corporate performance.

In existing research, scholars have explored the establishment of theoretical models for forward-looking strategies from different research fields and perspectives. However, there is not enough empirical research to explain how to improve corporate performance through forward-looking strategies. To address this issue, this study has reviewed a large amount of relevant literature and analyzed in depth the impact mechanism of forward-looking strategy on corporate performance, aiming to explain how to improve corporate performance through forward-looking strategic management. Secondly, based on dynamic theory, this study investigate the mediating effect of enterprise dynamics between forward-looking strategy and enterprise performance, providing new management ideas for enterprise managers. Organizational learning is a necessary means for enterprises to formulate and implement forward-looking strategies. The revised school represented by Porter and Linde (1995), starting from the resource-based theory, believes that the development level of enterprises is mainly influenced by the resources and capabilities of the organization.

In order to comprehensively explore the mechanism of the relationship between forward-looking strategy and corporate performance, this study is based on forward-looking strategy theory, dynamic theory, and performance theory. Starting from the perspective of enterprise resources and capabilities, this study focuses on whether implementing forward-looking strategy can bring performance to the enterprise. A research model is established to investigate the impact of forward-looking strategy on corporate performance based on the mediating role of enterprise dynamics and the regulatory role of market dynamics. On this basis, factors such as organizational learning ability, alertness, digital innovation ability, organizational flexibility, organizational cognition and restructuring ability are introduced to explore the impact of the relationship between forward-looking strategy and dynamic

capabilities on enterprise performance; finally, introduce market environment uncertainty and explore the contingent impact of market environment uncertainty on enterprise performance.

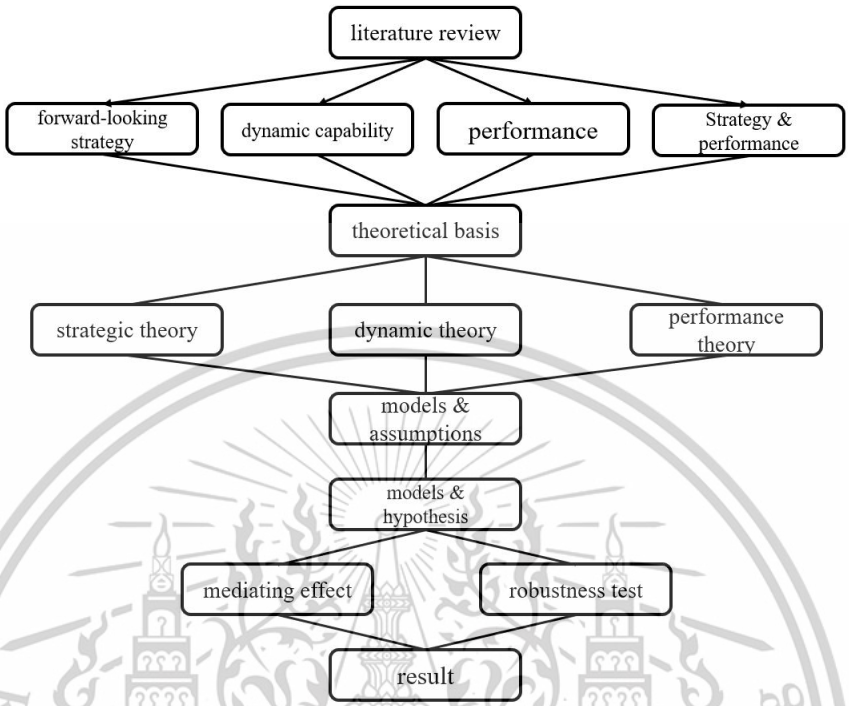


Figure 2.1 Research Process

2.1 Digital Economy Background

Under the influence of the digital economy, China's digital industry has presented new features such as software definition, data-driven, platform support, value-added services, and intelligent dominance. Yan (2017) believes that the digital economy, as an integrated economy, helps to promote the supply structure of traditional industries from 'mid to low end incremental expansion' to 'mid to high end supply optimization, and the power engine moves from 'intensive factor investment' to 'sustained innovation driven', optimizing resource allocation, and achieving transformation and upgrading. The digital economy promotes the transformation and upgrading of the manufacturing industry, which is reflected in improving the allocation efficiency of labor, capital, land, technology, management, and other factors, enhancing the supply capacity and level of the manufacturing industry, injecting new vitality and impetus into economic growth, and expanding new space for the development of the manufacturing industry.

Understand the digital economy from an industry wide perspective. In the report 'Emerging Digital Economy' released by the US Department of Commerce in 1998, the digital economy was defined as the sum of e-commerce and the information technology industries it relies on for implementation. Brent (1999) believes that the digital economy is an economic activity that includes information technology and e-commerce, interpreting information technology as information processing and related equipment such as software, semiconductors, and communication devices, and e-commerce as the use of the internet to sell goods and services.

The digital economy creates socio-economic benefits through complex relationships between people and technology (Yang, 2022). Max and Anna (2012) believes that the digital economy is the output of products and services brought about by the production and sales tools based on information and communication technology. Bukht (2017) believes that the digital economy is the portion of economic output generated solely or mainly by new generation information technology and business models based on digital goods or services. The economy of the current network era is the digital economy, where information is exchanged in the form of network binary data. Li (2017) also defined the digital economy as an economic form that is produced using a new generation of information technology.

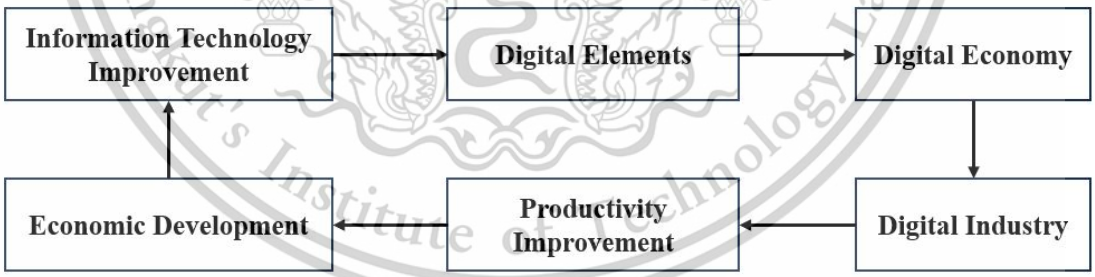


Figure 2.2 Digital Economy Cycle

The 1970s to the end of the 20th century was the introduction period of the information technology revolution, and the digital economy gradually emerged in the large-scale production paradigm. The birth of the world's first processor in 1971 marked the outbreak of the information technology revolution, followed by the commercialization of internet technology in the 1990s. The information technology revolution brought new investment and

growth potential, and human daily activities began to extend from physical space to virtual space. American economist Tapscott first used the term ‘digital economy’ to describe this ‘new economy based on the networking of human intelligence’. The digital economy has brought human society into virtual space. Data-driven knowledge and information participate in production as independent core elements, running through the entire process of the enterprise from demand analysis, research and development design, model design, production manufacturing, marketing, to after-sales service. The universality and spillover of the new generation of information technology enable it to interact and integrate with physical technology, biotechnology, and advanced manufacturing technology, forming a dominant technology group of paradigms. Digital infrastructure promotes the interconnection of interpersonal networks and the Internet of Things, connecting various industries with digital, networked, and intelligent genes, and extending market boundaries to virtual spaces.

Based on previous research, the digital economy is understood as a new economic form based on the new generation of information technology, network facilities, and data elements (James, 2001), which not only includes digital economy basic industries such as electronic information manufacturing, telecommunications, software and information technology services, and the internet industry, but also includes the increase in output obtained from the application of new generation information technology in existing industries, And the digital innovation of governance models, governance systems, and governance capabilities carried out by enterprises using the new generation of information technology.

The increasingly significant trend of globalization and the rapid advancement of technological innovation have changed the global economic development trend. The distance between different countries, regions, and markets has been greatly narrowed, and the economies of various countries are increasingly influencing each other. The degree of interdependence between each other is deepening and driving the convergence and development of economic operation methods. Under the enormous driving force of economic globalization, technological innovation is in an unprecedented stage of prosperity and activity. Emerging technologies such as the Internet, new materials, big data, cloud computing, and artificial intelligence are rapidly rising, constantly impacting the industrial structure and strategic balance of countries, and innovation has become the core competitiveness of

countries. In this context, as the basic cells of the economy and society and the main body of innovation driven economic development (Zhong et al., 2016), the business environment on which enterprises rely for survival has undergone tremendous changes, increasingly showing obvious characteristics of variability and dynamism. The persistent and unpredictable dynamic changes in the external environment have shortened the effective time of enterprise strategic layout, gradually limiting the application of linear management thinking and methods in enterprises. In other words, while globalization has created favorable conditions for enterprises from various countries to engage in cross-border and cross regional in-depth cooperation, it has also made the survival environment of enterprises extremely turbulent. The development mode without forward-looking strategic flexibility can no longer meet market demand and is gradually being phased out by the market. Especially for China's national conditions and market environment, it is in the stage of transitioning from an economic powerhouse to an economic powerhouse. The total economic output continues to increase, enterprises enter the stage of active innovation, industrial transformation and upgrading continue to accelerate, and continue to climb towards the middle and upper reaches of the global value chain. Therefore, the external economic environment facing China is more turbulent and complex, which brings greater challenges to the innovative development of Chinese enterprises, Traditional management models are no longer suitable for modern enterprise management practices, and flexible management methods have emerged.

In the current social environment, digital technology has comprehensively and deeply penetrated into all aspects of production and life and has changed and is changing the world. Economics and economic circles, as well as other fields, are hotly discussing ‘digital economy’, network economy’, data economy’, and so on. Because data has become a new factor of production, scholars studying macroeconomics naturally and quickly come up with the following ideas: it affect economic growth and how it affect it; It affect the mode of economic growth and the ways in which it be affected; It affect the income distribution structure, etc. Some scholars are now placing data as a new element in endogenous economic growth models to analyze its impact on economic growth. Representative achievements include Jones and Tonitti (2020) introducing data elements into economic growth models, emphasizing the non-competitiveness of data, treating data as a byproduct of consumption,

and comparing the utilization rate and its impact on economic growth when data property rights belong to enterprises or consumers. Faiboodi et al (2019) evaluated the value of data from a macro perspective. Farboodi (2021) attempted to use asset pricing methods to construct a growth model for a digital economy in the model.

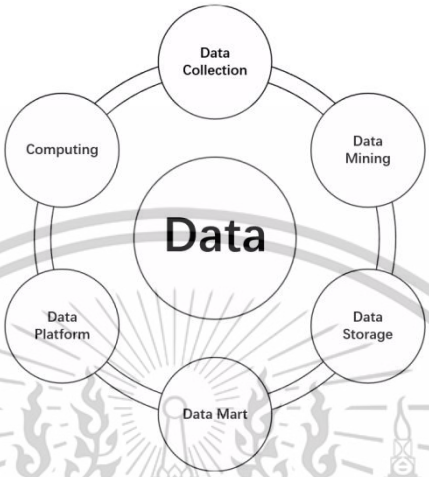


Figure 2.3 Big data model

In fact, he believed that the value of data is essentially attached to capital, and data can help predict the future value state of capital, which is nothing more than the role of capital. In the long run, the cumulative increase in data has a decreasing effect on capital, thus not supporting long-term growth. Xu and Zhao (2020) also conducted research on economic growth in the context of big data, introducing 'data capital' into endogenous economic growth models. There is also controversy about whether data can become the main driving force behind economic growth like technology, as data has a non-competitive nature and is easily replicated, resulting in economies of scale. Therefore, some studies believe that data growth, like technological growth, has a long-term impact on economic growth. At the same time, there are also studies holding different perspectives, such as Farboodi and Veldkamp (2021) who argue that data accumulation exhibits different returns in different situations, and the impact of data on economic growth is more like traditional capital rather than the role played by technology in classical economic growth models. However, there is still a close relationship between data and technology, and data accumulation can reduce uncertainty in the production process, this reduces the cost of technological innovation, and on the other

hand, stimulate enterprise innovation by increasing revenue. Overall, the research on data as a factor of production is still being innovated within the basic framework of existing macroeconomics, such as discussing how data affects economic growth or discussing how to handle new 'data' elements within the framework of endogenous economic growth theory, and then placing them in endogenous growth models; exploring whether the externalities and shared nature of data lead to a decrease in marginal costs, thereby promoting growth, or whether 'data' enhances total factor productivity, thereby promoting growth; exploring how digital technology and data based on digital technology can respectively promote economic growth and transform economic growth patterns; the impact of data as a factor on income distribution can still be explained within the framework of factor distribution theory.

2.1.1Digital Innovation Transformation

Consider the transformation and upgrading of the manufacturing industry from the perspective of influencing factors. Zhu (2018) believes that technological innovation and supply and demand structure are the most important factors affecting industrial transformation and upgrading. E-commerce has promoted technological innovation progress and supply and demand structure optimization from five aspects: expanding market radiation, solving information asymmetry, promoting industrial agglomeration development, changing competition patterns, and improving social resource allocation efficiency, thereby promoting industrial transformation, and upgrading. The process of informatization itself contains characteristics such as the rapid growth mechanism of high-tech industries, efficient allocation of industrial resources, and improvement of industrial added value. Informatization can directly transform and upgrade traditional industries. From the perspective of technological efficiency, it is proposed that the integration of information technology and industry can effectively achieve cost minimization and revenue increase. Zuo (2017) believes that the mechanism of informatization promoting the transformation and upgrading of industrial structure includes two aspects: industrial transformation and industrial integration. In terms of industrial transformation, according to innovation theory, informatization utilizes new technologies, models, and markets to transform the production efficiency, internal vitality, and innovation ability of traditional industries; In terms of industrial integration, according to the

theory of industrial integration, informatization has influenced the efficiency, cycle, and content of industrial integration with new engines, platforms, and formats.

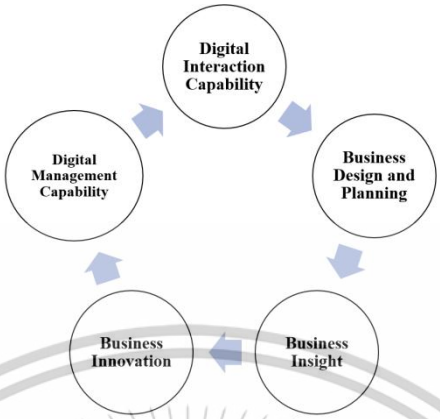


Figure 2.4 Data innovation model

Technological innovation is a channel that encompasses the entire process from research to market realization, namely the commercialization of technological achievements (Hu, 2020). Technological innovation is the core driving factor for the transformation and upgrading of the manufacturing industry, and there is an inevitable causal relationship between technological innovation, industrial upgrading, and economic growth (Ren, 2016). Humphrey (2002) believes that by acquiring and mastering new technologies, enterprises can enhance the technological content and market competitiveness of their products, helping them enter the high-end position of the industrial chain. Albert (2005) found that the interaction between internal RandD and technology transfer within a company can significantly improve manufacturing production efficiency when studying the impact on the manufacturing industry. The digital economy, as a technology economy paradigm triggered by data input, information and communication technology innovation, and information network construction (China Academy of Information and Communication Technology, 2017), has changed the dominant technological structure, ideal production organization, and optimal social system of the entire economy and society, pushing human society into a new era. The development stage of the digital economy is determined by the lifecycle of the information technology revolution, and the spreading countries of the information technology revolution may be decades behind the initiating countries in terms of development time.

2.1.2 Market Resource Elements of the Digital Economy

The main component of the market is exchangeable goods. The goods here include tangible physical products, intangible services, and various commercialized resource elements, such as capital, technology, information, land, labor, etc. The basic activity of the market is commodity exchange, and the economic connections that occur are also based on the buying and selling of goods. Therefore, having a certain amount of exchangeable goods is the material foundation and fundamental element of the market. If there are no exchangeable goods, the market no longer exists.

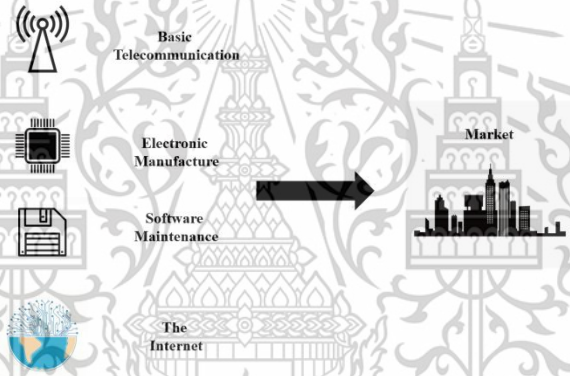


Figure 2.5 Elements of the digital economy market

In order to seek more efficient growth, enterprises conducted research and evaluation on 11 countries and 13 industrial sectors using the latest data statistical model (Essence, 2023) and found that the contribution of digital technology to the output value of mature economies was 28%, while under traditional methods, this ratio was only 5.2%. In addition, the contribution of digital technology to productivity and economic growth is expected to further expand.

The digital economy not only depends on its scale, but also on the penetration of digital practical capabilities into the world economy. For most countries, the proportion of GDP in the digital economy increased by about 3% between 2015 and 2020, equivalent to a 12.5% increase in global economic output. In some industries, the trend towards digitalization is

more pronounced, such as the US financial services industry, which has reached 57% digitalization, ranking first among various industries, followed closely by 54% in business services and 47% in telecommunications. Calculating investment quotas in fields such as information, communication, and technology, as well as examining the number of digital positions, is of great significance for measuring the overall economy. However, accumulating digital assets and skills alone is not enough. In the market of digital products, the center of economic activities is gradually shifting from production to trading, and economic entities are also shifting from production entities to trading entities. Low intelligence achievements such as personal big data also be capitalized.

Market demand is manifested by the nature and size of the market, which determines the production activities and technological capital investment of enterprises. It is not only a prerequisite for innovation activities, but also a prelude to achieving technological progress, and also an endogenous driving force for upgrading (Scherer, 1965; Mazzkleni, 1997). The demand for digital markets stimulates enterprises to innovate their own products and services. By analyzing the characteristics of market demand, innovative activities can meet market demand, form a competitive advantage for enterprises, and achieve the goal of manufacturing transformation and upgrading. Therefore, enterprise transformation and upgrading not only need to catch up with technology but also break through the limitations of market demand (Chen, 2008; Ren, 2012). The higher the level of market openness and marketization, the more it can promote the transformation and upgrading of the manufacturing industry (An, 2016). Market demand is mainly reflected in the personal needs of consumers and the public needs of the government. Consumer demand upgrades with economic development, therefore, the manufacturing industry should also upgrade according to demand. Changes in the total demand and demand structure cause the expansion and contraction of the manufacturing industry, which have an impact on the industrial structure (Zeng, 2014).

Taking Guizhou Province (located in the southwest of China) as an example, vigorously developing the digital economy is the core concept of development implemented by Guizhou Province, and it is a new driving force for cultivating economic and social development. From the ‘Guizhou Province Digital Economy Development Plan’, it can be seen that ‘developing a service-oriented digital economy and releasing new value of data resources, developing a

technology-based digital economy, creating a new highland for the information industry, and cultivating new forms of digital application have become the focus of digital economy development in Guizhou Province.

2.1.2 Technology Based Enterprises

Technological enterprises, as the market entities with the strongest innovation capabilities, have gradually occupied an important position in the international economic market. But currently, the academic community and governments of various countries have not yet formed an authoritative and unified definition of technology-based enterprises. By comparing the definitions of technology-based enterprises by different organizations and learners, it was found that although the focus of each definition is different, there are still some commonalities, as detailed in Table 2.1. The table defines technology-based enterprises based on China's 'National Key Supported High-tech Fields'. Technology oriented enterprises are knowledge-based economic entities that are mainly composed of scientific and technological personnel and supported by independent intellectual property rights, engaged in the research and development, production, sales, and service of products in high-tech fields (electronic information, biology and new medicine, aerospace, new materials, high-tech services, new energy and energy conservation, resources and environment, advanced manufacturing and automation, etc.).

Table 2.1 Concept definition of technology-based firms

Author	Definition
Butchart （1987）	Technology oriented enterprises are those that have a higher proportion of research and development expenses and a larger proportion of research and technology employees compared to other enterprises.
Shearman and Burrell （1988）	Technological enterprises are production and operation enterprises within the scope of high-tech industries.
Storey and Tether （1998）	Technology oriented enterprises are high-tech enterprises that develop new products quickly, have strong survival capabilities, and grow rapidly.

Table 2 （Continue）

Zhang（2002）	Technology-based enterprises are enterprises founded by scientific and technological personnel engaged in the development and production of high-tech products; On the other hand, it is an industrial academic research consortium formed by schools and other research institutions investing in intellectual property or technology.
Duan et.al（2019）	Technology oriented enterprises are small and medium-sized enterprises engaged in the research, development, and production of high-tech products. They are enterprises with high knowledge intensity and high product added value.
Jiang（2021）	Technological enterprises are a type of enterprise that primarily allocates technological resources and engages in the research and development, production, and technical services of technological products.
Liu (2022）	Enterprises engaged in the research and development, production, and operation of high-tech products driven by technological innovation, with high-tech personnel as the main body, and in the seed, introduction, and growth stages.

Technological enterprises focus on technological innovation, knowledge absorption, and talent introduction. The unique development advantages of technological new enterprises determine their increasingly important role in promoting technological innovation and promoting industrial structure adjustment. They have the characteristics of high technology, high knowledge, high growth, high risk, and high profitability.

2.2 Forward-Looking Strategy and Dynamic Capabilities

A forward-looking strategy focuses on exploring future events and activities, bringing new changes in innovation momentum and organizational capabilities to enterprises. A forward-looking strategy helps enterprises drive organizational innovation from a strategic perspective and is considered a long-term process of cultivating sustained and breakthrough innovation (Kuwada, 1998). A forward-looking strategy has important guiding significance

for Chinese enterprises that are gradually implementing internationalization strategies in the context of a global digital economy (Lin,2005; Lan, 2006).

Forward-looking strategy reflects a perspective from the inside out, focusing on strategic choices that match the market environment. Dynamic capability is an inward-looking perspective that focuses on how to integrate and activate organizational resources to achieve continuous innovation. Strategy can drive organizations to acquire, allocate, and utilize resource areas to enhance and build their own innovative capabilities and performance. Dynamic capability not only emphasizes the core competencies formed by the organization's unique resources and knowledge but also emphasizes the need for organizations to constantly self-update and build dynamic capabilities, Organizations need to choose an outgoing and forward-looking strategic orientation to guide their own behavior and activities.

Figure 2.6 Forward-looking strategies and dynamic capabilities on performance

2.2.1 Forward-Looking Strategy

According to previous research, organizations have three basic types of strategies: defensive strategy, forward-looking strategy, and analytical strategy (Shoham & Lev, 2015).

1. Defensive strategies refer to the intentional development and maintenance of an environment by senior management to maintain an appropriate and stable state of the organization. Defensive strategies attempt to actively prevent competitors from entering their own ‘territory'. Some defensive strategies can maximize technological efficiency, but there is a risk of insufficient innovation and difficulty adapting to market changes.

2. Forward looking strategies (prospectors). The success of defensive strategies mainly comes from effective service to specific markets, while the main characteristic of forward-looking strategies is to discover and develop new market opportunities. In order to identify opportunities in new fields, forward-looking strategies must maintain the ability to conduct extensive investigations and accurate predictions of the market environment, making their

entrepreneurial activities dominant. Of course, forward-looking strategies also have costs and face risks of low profits and excessive resource expansion.

3. Analytical strategies. Defensive strategy and forward-looking strategy seem to stand at both ends of the strategic type of continuum, between which is analytical strategy, a special combination of forward-looking and defensive strategies. Analytical strategies attempt to minimize risks and maximize profits, hoping to combine the advantages of foresight and defense, with the characteristic of 'balance'. Analytical strategies, while pursuing a balance between stability and flexibility, also limit the ability to fully develop in both directions.

Figure 2.7 Strategy and Structure

Source: Alfred D. Chandler,1969

In addition, there is another strategy called reactive strategy, which has been phased out by the market due to its obvious contradictions in the modules of modern management strategies, technologies, structures, and processes. For specific markets, different types of strategies have specific configuration techniques, structures, and processes that align with market strategies. Although organizational behavior encompasses multiple types of strategies, when combined with the external market environment, it can be seen as a process of integrating resources, strategies, and technology.

Compared to other types of strategic models, forward-looking strategies believe that the environment is dynamic, and their main function is to discover and develop market opportunities. Foresight is usually in a very broad and sustainable state, so it is necessary to

continuously develop and maintain the ability to conduct extensive market environment research, collect information, and develop predictions.

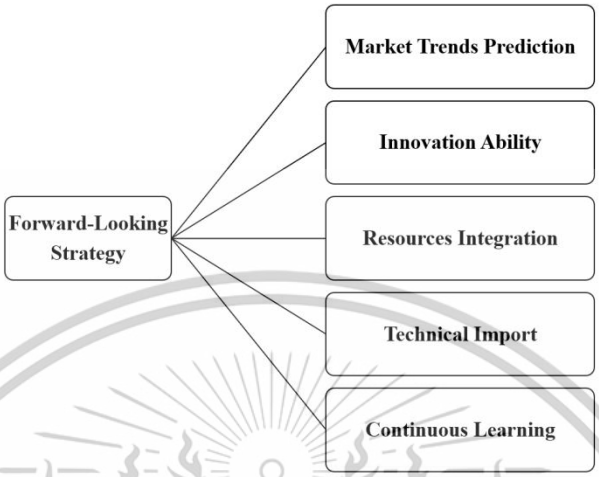


Figure 2.8 Forward looking strategic factors

The emergence and development of forward-looking strategic thinking is due to the fact that traditional strategic management theories are no longer able to effectively guide modern management practices in enterprises, helping them timely grasp development trends in complex and ever-changing environments. The research on forward-looking strategic flexibility in the academic community can be traced back to the 1960s. Strategic management master Ansoff (1965) was one of the authoritative scholars who initially proposed the concept of strategic flexibility. He believed that in a rapidly changing market, organizations can no longer maintain a stable and unchanging state but continue to seek flexible management methods and organizational change. In this trend, the ability of organizations to quickly respond and adapt to environmental uncertainty and complexity is called strategic flexibility, and forward-looking strategic flexibility is the best method for organizations to carry out 'mutation management'. Afterwards, many scholars at home and abroad further enriched and extended the concept of forward-looking strategic flexibility and achieved more systematic research results. Eplink (1978) pointed out that forward-looking strategic flexibility is an important reason for organizations to minimize losses in potential environmental and strategic changes in the future. The application of flexibility characteristics in organizational operations is an important basic condition for enterprises to achieve sustainable development, and the

construction and maintenance of strategic flexibility should run through the entire development of enterprises; Aaker (1984) viewed strategic flexibility as an elastic ability that can help organizations cope with major and sudden environmental turbulence, and pointed out that strategic flexibility can have a certain impact on organizational performance; Sanchez (1997) and Hitt (1998) view strategic flexibility as a key ability for organizations to gain and maintain competitive advantage in uncertain environments; Teece (1998) pointed out that strategic flexibility is the dynamic ability of enterprises to quickly adjust, restructure, and even innovate their strategies in response to turbulent environments. Enterprises can use strategic flexibility to flexibly manage their important internal and external resource information and network relationships, reduce unnecessary costs, losses, and risks in the operation process, and thus enhance their core competitiveness level. Ansoff (1965) believes that strategic management is a continuous and dynamic process for enterprises to achieve good future development. The strategies adopted by enterprises exhibit a certain level of adaptability when matched with the external environment, and this level of adaptability can be seen as strategic flexibility. In the 1980s, Aaker et al. (1984) extended Ansoff's research, emphasizing that companies should consider the dimensions of strategic flexibility based on the external environment. Evans (1991) divided strategic flexibility into two dimensions based on contingency theory: forward-looking strategic flexibility and reactive strategic flexibility. Among them, forward-looking strategic flexibility refers to the elastic ability of enterprises to proactively predict external environmental changes, be prepared, and constantly seek opportunities to integrate and even create a favorable environment for their own development; Reactive strategic flexibility refers to the ability of enterprises to adjust, optimize, and implement relevant strategic measures in a timely manner in response to unexpected changes, in order to maintain their survival and development needs. Karri (2001) further explored forward looking strategic flexibility and reactive strategic flexibility based on Evans (1991) and attempted to develop a strategic flexibility measurement scale consisting of 11 items. Forward looking strategic flexibility was measured with 5 items, while reactive strategic flexibility was measured with 6 items. This scale was later widely used in empirical research in the field of strategic management. Another classic classification method is Sanchez (1995), which divides strategic flexibility into two dimensions based on resource-based theory:

resource flexibility and coordination flexibility and proposes corresponding measurement scales. Sanchez's dimension division and measurement methods have a profound impact on subsequent research on strategic flexibility, and many scholars have adopted this method to examine the strategic flexibility of enterprises.

In addition to the commonly used qualitative methods in academia, some scholars also choose to use quantitative methods to classify and measure the strategic flexibility of enterprises. Lee et al. (2002) believe that strategic flexibility can be reflected through the versatility of enterprise resources and use the ratio of enterprise cash flow to sales revenue to measure strategic flexibility. Nadkami and Narayanan (2007) selected three indicators: RandD intensity, capital intensity, and marketing intensity to measure a company's strategic flexibility.

From an organizational perspective, early research had a relatively broad scope. Das et al. (1995) believed that the factors affecting strategic flexibility of enterprises can be divided into internal and external levels. Scholars mainly focused on the organizational and strategic behavior of enterprises themselves. In the field of organizational behavior, scholars have confirmed that enterprises' absorptive capacity, organizational learning, organizational forgetting, organizational empowerment Factors such as failed learning are important sources of strategic flexibility. In the field of strategic behavior, scholars have confirmed that factors such as market orientation, export orientation, entrepreneurial orientation, strategic alliance partner search, and political network strategy of enterprises can all have a certain impact on strategic flexibility in different contexts.

A forward-looking strategy is a strategy that actively incorporates internal and external factors into the formulation of a company's strategy and takes various measures to achieve its strategic goals; Reactive strategy refers to a strategy that is passively implemented only when the government imposes policy pressure or when enterprises face problems directly. For enterprises, it is absolutely impossible without any strategy. Strategy reflects the mission and the goals of the enterprise. It enables enterprises to better concentrate and operate in an orderly manner, avoiding short-sighted behavior, and is conducive to the long-term development of the enterprise. However, having a strategy does not necessarily mean that a company can continue to exist (Fang, 2022). Some companies are not very clear about what strategy is, what its essence is, and the role of strategy in the healthy development of

enterprises. They lack strategic awareness, strategic thinking, and strategic management capabilities, which inevitably affect the healthy development of the enterprise (Deng & Wang, 2022). Strategy plays a crucial role in the overall decision-making and behavioral choices of an organization, and different scholars have conducted in-depth discussions on the classification of enterprise strategy types. Tan and Litschert (1994) proposed two types of strategies: kinetic strategy and reactive strategy; Miles and Snow (2003) classified organizational strategy into four types: forward-looking strategy, defensive strategy, analytical strategy, and responsive strategy from the perspective of an organization's attitude towards responding to changes in the market environment; Herbert (1984) summarized the types of strategies based on market evolution cycles from four aspects: developers, stabilizers, turners, and harvesters. The ‘proactive strategy’, forward-looking strategy’, and ‘developer’ proposed by the three scholars all contain proactive and pioneering characteristics. Forward-looking strategy has the characteristics of ‘forward-looking thinking’ and ‘pioneering intention’ and is one of the strategic choices for enterprises to cope with the turbulent business ecological environment. Strategic management (including strategic planning) is the foundation of scientific leadership, decision-making, and coordination tools used by business leaders, rather than the main tool for various functional departments (Deng & Wang, 2022). On the one hand, forward-looking strategies pay more attention to the demand side, focusing on potential market changes and trends, mainly reflected in the foresight of potential market threats. Enterprises advocating forward-looking strategies have the attribute of being proactive and focusing on the future, as well as a sense of foresight, making them more confident in responding to tomorrow's changes and market demands; on the other hand, forward-looking strategies have a pioneering tendency, which can break free from the shackles and constraints of traditional practices and actively explore new fields, explore, and develop new technologies and products. The strategic intention of forward-looking strategy is to pursue ‘change’ in a turbulent market environment, make bold decisions with a proactive mindset, and continuously experiment with new markets. Strategic management should study strategic objectives and consider the development planning system of the enterprise considering future environmental changes. Enterprises should conduct investigations into ongoing changes and anticipate potential new changes that may occur simultaneously. Understanding market

development trends and formulating corresponding measures can help enterprises improve their ability to cope with risks.

Many scholars believe that the initiative of enterprises is closely related to their performance. Atuahene's (1995) study found that continuously meeting customer needs and providing products that are easily accepted by customers are beneficial for improving corporate performance. Xue and Wang (2013) believe that both forward-looking and reactive customer orientation have a positive impact on corporate performance. Therefore, enterprises should continue to pay attention to market demand and provide products that meet customer needs. Chowdhury et al. (2017), based on social capital theory and knowledge-based theory, studied Australian companies, and found that the results of supplier socialization play a crucial role in the success of buyer company performance. Through case studies, they further found that both supplier socialization and absorptive capacity can have a positive impact on company performance. Based on the theory of self-interest behavior and contingency theory, it is believed that the transformation and upgrading of enterprises are beneficial for improving their operational and economic performance. When the external environment changes, it is necessary to consider adjusting the enterprise strategy and actively or passively transforming and upgrading (Liu & Li, 2018). However, while actively pursuing environmental strategies, enterprises are also influenced by environmental regulations. Abdul et al. (2018) studied the impact of government subsidies on non-technical innovation and corporate performance. Research shows that companies that receive government subsidies perform better than other companies. Government subsidies have an impact on the investment of enterprises in research and development and have an impact on enterprise performance. That is, the higher the government subsidies to enterprises, the higher the enterprise performance. However, some studies have found that government subsidies have a negative impact on enterprise research and development investment. That is, the higher the government subsidies, the lower the enterprise research and development investment. Therefore, in addition to increasing enterprise research and development investment, enterprises are encouraged to engage in independent research and development (Zhuang et al., 2018). Market orientation can improve the operational performance of enterprises, and it has a positive impact on enterprise performance through organizational learning and technological innovation (Lin, 2001).

Scholars have studied the impact of environmental conditions on enterprises, and research has shown that market vitality has a positive impact on enterprise performance (market performance, operational performance) through positive environmental conditions and enterprise innovation (Zehir & Balak, 2018).

2.2.2 The Antecedent Variables of Forward-Looking Strategies

Strategic flexibility is an attribute or capability within an enterprise, and theoretically, various antecedent variables of enterprise strategy also affect the strategic flexibility within the enterprise to a certain extent. A comprehensive review and analysis of existing literature reveals that academic research on the antecedents of strategic flexibility mainly focuses on organizational, individual, and information technology levels. Starting from the organizational level, the early research scope was relatively broad. Das et al. (1995) believed that the factors that affect the strategic flexibility of enterprises can be divided into two levels: internal and external. Internal factors mainly include four dimensions of the enterprise's organizational structure, product design, manufacturing flexibility, and employee flexibility, while external factors mainly include dimensions such as the company's cooperation partners, strategic alliances, and internationalization level. Later, Harrigan (1980) found through research that the level of exit barriers for enterprises also has an impact on strategic flexibility to a certain extent.

Scholars have mainly focused on the organizational and strategic behavior of enterprises themselves. In the field of organizational behavior, scholars have confirmed that factors such as absorptive capacity, organizational learning, organizational forgetting, organizational authorization, and failure learning are important sources of strategic flexibility; In the field of strategic behavior, scholars have confirmed that factors such as market orientation, export orientation, entrepreneurial orientation, strategic alliance partner search, and political network strategy of enterprises can all have a certain impact on strategic flexibility in different contexts.

2.2.3 Result Variables of Forward-Looking Strategies

There are conflicting research conclusions regarding the impact of forward-looking strategies on corporate performance. Shoham et al. (2006) confirmed that the export

performance of enterprises implementing forward-looking strategies is positively correlated with their market orientation and new product development strategies. The small and medium-sized enterprises implementing forward-looking strategies have higher innovation and technological capabilities than those implementing analytical and defensive strategies; at the same time, small and medium-sized enterprises that implement forward-looking strategies have higher practical flexibility, organizational structure development, organizational consistency, and better human resource management systems. Son (2020) believes that companies implementing forward-looking strategies have the strongest technological capabilities, innovation capabilities, and weak market linkage capabilities; on the contrary, companies implementing defensive strategies have the weakest technological and innovative capabilities, while their market linkage capabilities are the strongest. Pleshko (2019) believes that companies implementing forward-looking strategies have higher performance.

The outcome variables of strategic flexibility are mostly concentrated in aspects such as enterprise performance, innovation strength, competitive strength, and international performance. From the perspective of the impact process, forward-looking strategic flexibility helps enterprises adapt to complex environmental changes, flexibly allocate resources, improve action sensitivity, overcome organizational inertia, etc., which in turn have a positive impact on enterprise operations, innovation, competition, and other activities. However, some studies have also confirmed that excessive strategic flexibility can actually reduce the efficiency of resource utilization and sensitivity to environmental changes, thereby weakening the innovation strength of enterprises. It can be seen that the role of strategic flexibility varies in different scenarios and requires specific analysis.

2.2.4 Dynamic Ability

The dynamic capability theory explains how enterprises can improve their match with market dynamics to quickly respond to external technological and market changes (Helfat et al., 2007). Teece (2007) defines dynamic capabilities as organizational capabilities that allow companies to establish and update resources and assets, allowing them to reconfigure and update existing resources as needed to quickly respond to changes in the market, business environment, and technological opportunities. Among them, it also includes the ability of

enterprises to shape the ecosystem they occupy, develop new products and processes, design and implement feasible business models. As a unique ability, enterprises can use it to initiate competitive behavior, understand complex dynamic markets, and become motivated to respond under new conditions, which is conducive to dynamic matching between enterprises and the environment. This dynamic matching lays the foundation for enterprises to form sustainable competitive advantages in turbulent and complex environments (Chen et al., 2010; Oliver & Holzinger, 2008).

In the theoretical and empirical research on dynamic capabilities by scholars, dynamic capabilities are defined as 'a higher-order ability of enterprises to acquire, integrate, and reconstruct internal and external resources and capabilities. They are divided into four dimensions: learning ability, integration ability, reconstruction ability, and innovation ability. Environmental dynamics are measured from three aspects: technological dynamics, market dynamics, and competitive dynamics, and corporate performance is measured by growth performance. Many scholars both domestically and internationally have conducted research on the connotation of dynamic capabilities, with some of their research based on a resource-based perspective. However, in current research, there is no consensus on the connotation of dynamic capabilities. The current research directions on connotation can be summarized into two categories, one is to explore dynamic abilities from the perspective of abilities. The study by Teece et al. (1997) suggests that dynamic capability is the ability of a company to re integrate, restructure, and allocate resources within and outside the company in order to reverse the adverse effects of changing environments. Another type is to study dynamic capabilities from a process perspective, such as Kathleen (1998), who defined dynamic capabilities as a routine or process that is easily recognizable. It includes various aspects of enterprise production and operation and is also due to the existence of these processes, helping enterprises develop strategies to respond to environmental changes. Nambisan et al. (2019) argue that the process of resource management in enterprises is the essence of dynamic capabilities, especially the organic combination of resources within the enterprise. It is the behavior of enterprises to enhance their core competitiveness based on environmental changes.

Dynamic capability is essentially a concept closely related to the dynamic mechanism of the environment, which shows different functions in different market scenarios. Therefore, the

relationship between dynamic capabilities and technological innovation also be affected by environmental uncertainty. Many scholars regard the external environment as an important factor affecting the formation and development of dynamic capabilities. In the general dynamic and highly dynamic environment, the dynamic ability has different forms, which means that the dynamic ability can change with the dynamic degree of the external environment. In fact, it implies that the dynamic environment is the premise of the formation of dynamic ability. Not only that, but there are also differences in the effectiveness of dynamic capabilities in different environments. The uncertainty, complexity and inclusiveness of the environment can affect the configuration of dynamic capabilities. When the environment is relatively stable, the effect of dynamic capabilities may not be obvious. But in a highly volatile environment, opportunities are fleeting, and threats may follow. Enterprises need to quickly adapt to the changing environment, and dynamic capabilities are particularly valuable currently. The existence of dynamic ability is to adapt to the rapidly changing environment. The potential value of dynamic ability is disturbed by environmental uncertainty. Dynamic ability and the environment also show the characteristics of collaborative evolution. In addition, Wu (2010) also suggested that environmental uncertainty can be taken as the interference variable of dynamic ability in the subsequent research. The impact of environmental uncertainty on companies is persistent, only in the degree of impact. Previous empirical studies in China also show that the higher the uncertainty of the environment, the higher the positive effect of dynamic capabilities on the organization.

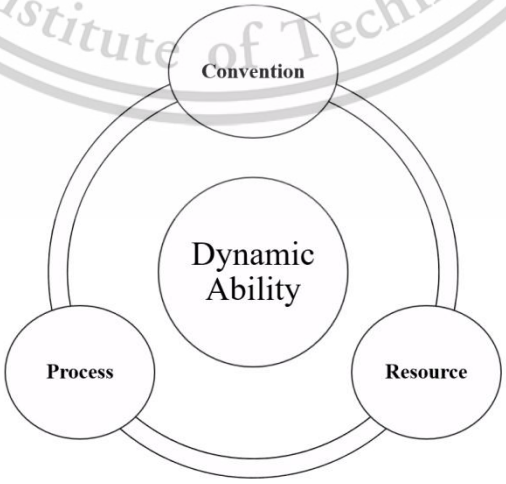


Figure 2.9 Dynamic Capability Source: Author's compilation

At present, the representative dynamic ability research framework includes three types: integration framework (Teece, 1997; Wang, 2007), learning framework (Winter, 2002) and process framework (Martin, 2000). According to the integration framework, dynamic ability consists of three aspects: process, potential and path. The learning framework believes that cognitive learning, dynamic ability, and operational ability be affected by external factors (technology updates, market competition, social development) and internal factors (organizational structure, enterprise cognition) of enterprises. The process framework considers that the evolution process of dynamic capabilities be affected by the dynamic nature of the external environment, that is, under the influence of different external environments, the development of dynamic capabilities is linear into stable and leaping development.

The dynamic capability is an extension of the resource-based view. The difference is that the resource-based view focuses on the existing resources of enterprises, while the dynamic capability theory focuses on the real location of resources. The resources held by the enterprise affect the ability of the enterprise. According to traditional economic theory, under normal circumstances, if the market is perfect, the excess economic cost be intensified due to the continuous participation of new competitors. The enterprise resource view believes that if the enterprise has extraordinary resources and prevents resource dilution through a certain form of isolation mechanism, then it is possible for the enterprise to earn sustainable extraordinary returns.

There may be a kind of heterogeneity or differences in the open market environment. These differences enable some companies to maintain a competitive advantage. Therefore, the resource-based view theory emphasizes strategic choice, and believes that the strategic task of corporate management is to find, develop and allocate this part of unique key resources to maximize business returns (Barney, 1991), which is the most used theoretical framework in the strategic human resource management literature. In 1984, the publication of Werner Filter's ‘resource-based theory of enterprises means the birth of resource-based theory, which provides a theoretical method to analyze the success or failure of enterprises in the market competition from the perspective of ‘from the inside out’. According to the resource-based theory, an enterprise is a collection of various resources. Due to its own reasons and external factors, each enterprise has different resources, that is, resources are heterogeneous. It is the

heterogeneity of resources that leads to differences in competitiveness among enterprises and then affects the profitability of enterprises. Only such heterogeneous resources can bring excess economic benefits to some of them. Barney (1991) believed that a resource must meet the 'VRIN' standard to provide competitive advantages for enterprises.

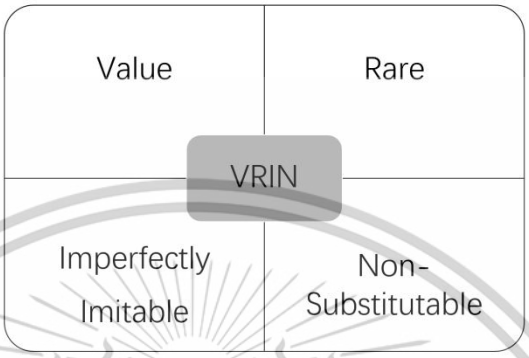


Figure 2.10 VRIN Framework

Source: J. Barney,1991

VRIN is Valuable, Rare, Imperfect Imitability and Non-Substitutability resources that enable enterprises to develop and maintain their competitive advantages and use these resources and competitive advantages to achieve outstanding performance (Collis & Montgomery, 1995; Grant, 1991; Wernerfelt, 1984). Although the valuable, rare, non-imitative and irreplaceable resources owned by enterprises can make them develop competitive strategies that are not easily copied by competitive enterprises (Barney, 1991; Conner & Prahalad, 1996; Peteraf, 1993; Wernerfelt, 1984). However, with the continuous changes and development of the market economy, more and more scholars emphasize the importance of the enterprise's own ability for sustainable competitive advantage, which derived from the dynamic ability theory of resource-based theory.

Teece et al. (1992) first proposed the term 'dynamic ability'. They believe that dynamic ability is essentially a mechanism for organizations to integrate and reconstruct existing resources. Dynamic ability is a kind of knowledge and stable collective activity mode. In this way, organizations systematically generate and modify their operation routines to improve efficiency. In this perspective, an enterprise is regarded as an entity that creates, stores, configures, and utilizes knowledge. Dynamic capability is an organizational behavior that is

committed to process improvement to adapt to its operation process through a relatively stable activity.

Teece (1997) showed that dynamic ability is a kind of management ability to respond to the market in a timely manner, carry out product innovation quickly and flexibly, and have effective coordination and reallocation of internal and external competitiveness. The cause of dynamic ability is the rapid change of the external environment, and the dynamic ability is divided into three dimensions: opportunity perception ability, opportunity capture ability and reconfiguration ability (Teece, 2007). The concept of dynamic capability is defined as responding to market changes. In dynamic capability, 'dynamic' refers to enterprises constantly updating their own competitiveness, so as to keep consistent with the changing business environment (Teece, 1997). In a highly dynamic environment, the competitive advantage of an enterprise is temporary, so it is necessary to use dynamic capabilities to constantly create new competitive advantages to maintain its competitive position. The essence of enterprise dynamic capability is change and innovation (Zahra & George, 2002). Dynamic capability is the integration, reallocation and release of the existing resources and capabilities of enterprises, and the creation of new resources and capabilities. This is the consistent view of the academic community on the concept of dynamic capability. Winter (2003) pointed out that dynamic capabilities pay more attention to innovation than conventional capabilities of enterprises.

The dynamic ability of an enterprise is also regarded as an organizational ability (Teece, 2007), such as the ability of an enterprise to integrate, build and reconfigure internal and external competitiveness (Teece, 1997), or the ability of an enterprise to perceive opportunities and threats, capture opportunities and restructure (Teece, 2007), and the ability of an enterprise to constantly integrate, restructure, update and create its resources. On the other hand, dynamic capabilities are also regarded as a process (Wang, 2000), a specific and recognizable process of enterprise strategic organization management, which is used to expand, modify, or create conventional capabilities.

Table 2.2 Dynamic Capability Framework

	Dynamic Capability
1	Discovering, explaining, and seeking opportunities for internal and external stimuli through perceptual abilities.
2	Using learning abilities to determine which organizational abilities must be modified, rebuilt, or reconfigured to generate new knowledge.
3	Utilize integration capabilities to comprehensively understand and make necessary changes to its operational capabilities.
4	Utilize coordination skills to achieve and utilize reconfigured operational capabilities.
5	Detailed investigation of external and internal influencing factors.

Source: Pavlou and Sawy (2011)

In a dynamic environment, scholars who study enterprise strategy begin to pay attention to the flexibility and variability of resource acquisition and application. Teece (1997), as a representative of the theory of dynamic capacity, proposed the view of dynamic capacity and took it as an extension of resource-based view. In 1997, Teece first proposed a complete definition of dynamic capacity based on the perspective of resources. It looked at enterprise resources and capabilities from the perspective of development. It defined dynamic capacity as the ability to rearrange and combine internal and external resources and use the integrated resources to adapt to the changing environment. It is divided into three dimensions: process, potential and path. Among them, process refers to the way of dealing with things, the mode of management and learning within the enterprise; the potential refers to the resource endowment of the enterprise itself, the strategic model it adopts, and the relationship with partners or upstream and downstream enterprises; path refers to the way of enterprise development in the future. Because of its path dependence, it is affected by the past path. Wang and Ahmed (2007) definition of dynamic capability is similar to that of Teece. Teece believes that enterprises continue to integrate and restructure resources, upgrade, and transform their core capabilities to adapt to the changing environment. Zott (2003) thought that dynamic ability is a kind of ability embedded in the organizational process, through the integration and reconstruction of resources to gain competitive advantage. Eisenhardt and Martin (2000) defined dynamic ability from the perspective of process, and thought it was a set of recognizable and specific processes through the integration of resources to match or even create market changes. Zollo

and Winter (2002) defined dynamic ability from the perspective of convention. They believe that dynamic ability is a mode that is not easy to change formed in the long-term development process of the organization. Through this mode, the organization can reset or modify its operation process as a whole, so as to improve efficiency. Newbert (2008) thinks that dynamic capability is also an organization and strategic convention for enterprises to obtain new resource portfolio. Winter (2003) divided enterprise capabilities into general capabilities and high-level capabilities based on the perspective of capabilities. He believed that dynamic capabilities are high-level capabilities that can modify, expand, innovate general capabilities, and are capabilities that are above capabilities. From a comprehensive point of view, the definition of dynamic ability has not been unified in the academic community. It is a kind of ability, a process, or a convention. This study believes that dynamic ability is a process through the arrangement of internal and external resources to change the existing resource structure of the enterprise and make the enterprise development more responsive to the changes in the external environment and make the two more compatible.

Teece believes that dynamic ability is 'the ability of an enterprise to integrate, establish and reallocate internal and external resources to cope with a rapidly changing environment'. Teece (1997), Bharadwaj (2000) and other scholars believe that the ability is generated when different resources are effectively combined, so it reflects how enterprises manage their resources. After a period of development, capabilities are embedded in the enterprise as regular activities. Due to the occasional fuzziness, they become difficult to copy, resulting in a sustainable competitive advantage. The ability of enterprises enables them to continuously develop and innovate and finally gain competitive advantages through the management and integration of their own resources. Under the theory of dynamic capabilities, if an enterprise wants to obtain sustainable competitive advantages, it needs to actively respond to external demands and adjust internal resource allocation in a timely manner and constantly improve its own capabilities to adapt to changing market conditions. Eisenhardt and Martin (2000) pointed out that in the changing market environment, the dynamic ability of enterprises is the fundamental of their sustainable competitive advantage. Bharadwaj (2000) followed Grant (1991) definition and division of resources and capabilities, constructed three types of enterprise resources: IT infrastructure, IT human resources and intangible resources promoted

by IT, and analyzed the promotion effect of the above resources on the improvement of enterprise's information technology capabilities. The results show that the stronger the enterprise's information technology capabilities, the higher the income and performance. Hitt et al. (2012) believed that the ability is reflected in the efficiency of resource allocation of enterprises. In the process of allocation, resources can be effectively integrated and achieve the expected state, thus providing a competitive advantage for enterprises. Stefanoelia (2021) believes that the key to improving the competitiveness of enterprises is not the quantity of resources but the quality. The core of the differences in competitive advantages is the technology and ability of enterprises.

2.3 Organizational Learning Ability

Organizational learning is to adapt to the constantly changing external and complex internal environment. Enterprises constantly search for knowledge, improve themselves, and strive to adapt their behavior to environmental changes. Agryris (1978) conducted in-depth research on organizational learning, defining it as the process of discovering errors, applying theories to correct errors, and promoting successful experiences.

Organizational learning is the process by which an organization passively adapts to changes in the external environment through continuous interaction with the external environment, or transforms knowledge absorbed from the outside into usable knowledge, in order to adapt to changes in the external environment (Hedberg, 1981). Organizational learning is the learning of organizational members and can have an impact on the interaction between the organization and the environment, which in turn affects the learning of organizational members. Therefore, organizational learning is a cyclic process (Lee et al., 1992). Argyris and Seho (1997) argue that organizational learning is a process of discovering, analyzing, and solving problems. Organizational learning is a complex process that involves the interaction of organizational members, organizational behavior, and organizational processes (Schwandt & Marquardt, 2000). Organizational learning is the process by which organizational members at all levels gather information from both the internal and external environment of the enterprise to reflect and continuously improve the behavior and theory of

the organization (Fisher & White, 2000). Organizational learning is a dynamic process in which enterprises research and develop new knowledge, which is disseminated within the enterprise (Cepeda & Vera, 2007). Chen and Ma (2000) believe that organizational members can be viewed as a whole, and through the transformation and application of knowledge absorbed from the outside, as well as the creation of knowledge to improve one's own behavior, this is a harmonious and healthy innovation process.

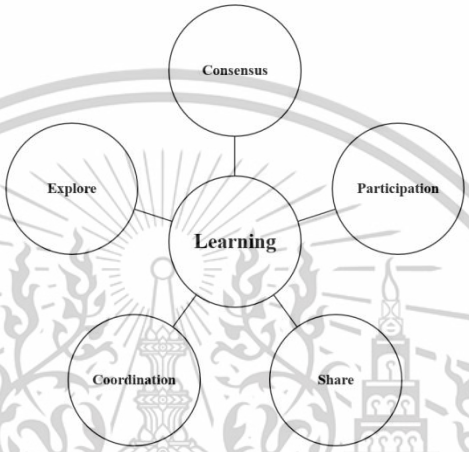


Figure 2.11 Learning Extension Element Model

Source: Peter M. Senge,1990

Under the constraints of bounded rationality, an organization undergoes a cyclic process from environmental cognition to environmental uncertainty, through information sharing, and adjusting plans, known as organizational learning (March & Simon, 1958). Organizational learning is different from individual learning. Organizational learning is a process in which an organization, based on experience, continuously attempts to acquire external information and knowledge to improve its organizational culture, regulations, and processes, in order to quickly adapt to the constantly changing external environment. During this process, organizational members are able to re understand organizational issues (Cyert, 1963). Shrivastava (1983) believes that organizational learning is a process of information processing based on experience. Stata (1989) defined organizational learning as learning together based on existing knowledge and experience, through sharing knowledge, long-term goals, and mental state. Organizational learning is the process by which organizations utilize acquired knowledge for improvement (Fiol & Lyles, 1985). Huber (1991) believes that organizational

learning is the sharing of externally acquired knowledge by an organization, promoting the understanding of existing knowledge, generating new knowledge, changing the potential behavior of the organization, and retaining successful experiences for subsequent learning. Dixon (1994) believes that organizational learning is a cyclical process of creating knowledge, interpreting knowledge, integrating knowledge, and implementing actions. The organization integrates the new knowledge created into existing knowledge, interprets it, and finally takes action to execute this learning process. Buchle and Probest (1997) believed that organizational learning is a process of discovering and solving problems, in which problem-solving and innovation abilities are developed as knowledge accumulates. Lane and Lubatkin (1998) believes that organizational learning is the process of knowledge flow, sharing, and interaction among organizational members, groups, and organizations. Zhang (2008) believes that organizational learning is the ability to acquire knowledge, share and utilize knowledge, and continuously improve organizational efficiency based on past experience. Xie et al. (2017) believe that organizational learning is the creation, acquisition, dissemination, and transformation of knowledge by enterprises, utilizing this knowledge to improve organizational behavior and enhance organizational performance.

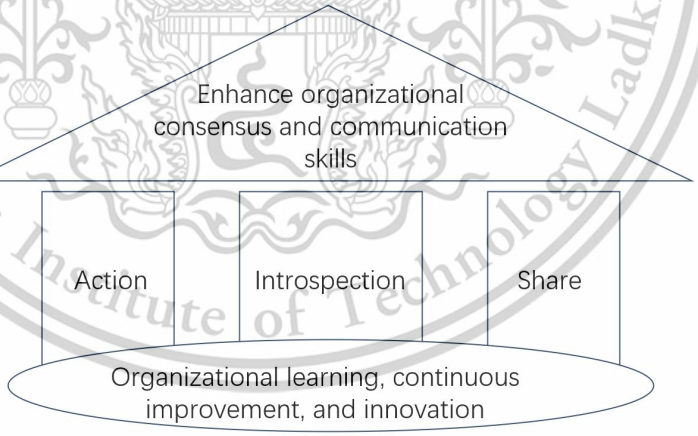


Figure 2.12 The purpose of organizational learning

Organizational learning is the process in which organizational members interact with the internal and external environment of the organization through shared cognition. Daft and Weick (1984) believed that organizational learning is a knowledge problem involved in the interaction between an organization and the external environment. Levinthal and Mareh (1993) emphasized that organizational learning is a balance between new knowledge and abilities and

existing knowledge and abilities. Narver and Slat (1995) pointed out that organizational learning is a new idea and knowledge that affects the development of potential abilities. Pilar et al. (2005) argue that organizational learning refers to the creation, acquisition, transformation, and integration of knowledge within an organization, which is then applied internally to enhance its ability to manage knowledge and achieve corporate performance. Rahimi et al. (2012) argue that organizational learning is the process and application of acquired knowledge and technology to improve one's own corporate performance.

The existing research on measuring organizational learning is very rich. March (1991) divided organizational learning into two dimensions: exploratory learning and exploratory learning. Utilitarian learning is the refinement and in-depth exploration of existing capabilities, technologies, and norms, in order to achieve short-term, predictable, and positive profits for enterprises. Exploratory learning is the research and development of new abilities, technologies, and norms, which provide enterprises with long-term, unpredictable, and mostly negative profits. Measurement of exploitative learning, including companies improving existing knowledge and skills based on information and knowledge obtained from external sources (Su et al., 2011). The measurement of exploratory learning, including the company's acquisition of new information, knowledge, and technology from both internal and external sources (Zhu, 2008). Peng (2011), Baum et al. (2000), Yang (2010), Pu (2014), Yannopoluos et al. (2012), Wang et al. (2014) refer to this scale. McGill (1992) divided organizational learning into adaptive learning and creative learning. Adaptive learning is the use of existing knowledge and skills by organizations to solve existing problems. Creative learning is the knowledge and skills that an organization possesses to adapt to future changes and improve its ability to judge problems. The above classifications are also known as single loop learning, double loop learning, low-level learning or high-level learning. Many scholars believe that organizational learning should be measured from a multidimensional perspective. Huber (1991) divided organizational learning into four dimensions: knowledge acquisition, knowledge understanding, knowledge distribution, and organizational memory. The measurement of knowledge acquisition includes encouraging interactive activities between organizations and customers, understanding customer needs, engaging with government departments, and motivating employees to acquire external knowledge. The measurement of

knowledge understanding includes employees' consistent pursuit of the corporate strategy proposed by the management, encouraging employees to have a common understanding of new information and knowledge, and the ability of each department to understand new information and knowledge. The measurement of knowledge distribution includes frequent information exchange among various departments of the company, and the company's corporate culture that encourages interaction and communication among employees. Organizational memory includes 20 questions, including the management advocating for archiving the obtained information, the company providing knowledge retrieval tools, and the company having a comprehensive information processing system. Schein (1993) divided organizational learning into four dimensions, including experimentation, risk-taking tendencies, interaction with external environments, and dialogue. Schein (1993) measured organizational learning, including encouraging interaction among employees, the possibility that management may consider the ideas of grassroots employees when making strategic decisions, the ability for employees to have their own conversations, receiving support from management, and the potential impact of grassroots employee suggestions on management decisions, totaling 14 questions. Amabile et al. (1996), Chiva et al. (2007), Camps et al. (2011), and Mekic (2017) refer to this scale. Alegre and Chiva (2008), based on Schein (1993), divided organizational learning into five dimensions, including experimentation, adventure, interaction with the external environment, dialogue, and participation in decision-making.

2.3.1 Information collection

The theory of organizational change suggests that an organization's adaptation to environmental changes begins with information search. Strategic decision-makers provide decision-making information for the selection of organizational change actions by identifying important events and trends both inside and outside the organization, matching and adapting the organization to its environment, and thereby improving organizational performance. In the view of information processing theory, the initial stage of crisis perception is information search. Entrepreneurs collect various crisis related information, then interpret, encode, and assign meaning to the information, ultimately forming crisis judgment (Farh et al., 2007;

Simon et al., 2002). It can be seen that information search is an important antecedent of crisis perception.

Organizations with higher levels of information search and utilization are more likely to understand problems as potential controllable benefits. This means that the more thorough information search, the lower the threat perception of decision-makers, and information collection has a negative impact on crisis perception. Anderson and Nichols (2007) distinguished information collection into two dimensions: search time and information diversity and found that decision-makers who spend more time collecting information are more likely to view vague issues as threats, while increasing information diversity reduces threat perception.

2.3.2 Integration

Knowledge integration ability is the ability of enterprises to identify, evaluate, digest, and commercialize new external knowledge. It reflects a dynamic ability of enterprises to absorb external knowledge and adapt to the external environment. How to properly allocate and apply new knowledge absorbed by enterprises within the organization requires the cultivation of dual capabilities. Dual competence reflects an organization's ability to integrate conflicting tasks, and organizations that can handle conflicts properly are often better able to adapt to dynamic changes in the environment. Exploratory and exploitative technological innovation, as a contradiction and paradox within an organization, can promote rational competition of resources within the organization. Organizations with high dual capabilities can properly handle the contradiction between the two and not neglect each other. Therefore, in such an organization, resources can be allocated reasonably, conflicts can be handled properly, and innovation can balance development.

Barne (2002) believes that a company's competitive advantage depends not only on the heterogeneous resources it possesses or controls, but also on the ability to effectively organize and coordinate this resource information, known as organization. That is to say, resource-based theory also acknowledges that the ability to effectively organize or combine resources is the key to obtaining a competitive advantage for a company.

Based on the ‘dynamic capability’ framework proposed by Teece (1997), it is believed that the dynamic capability of the technology service industry refers to the ability to continuously update its own capabilities to adapt to the constantly changing market environment, that is, the ability to integrate, establish, and reconfigure internal and external resources and capabilities. The connotation of technology service institutions in integrating service resources refers to a complex dynamic process of identifying, selecting, and optimizing the allocation of service resources from different sources, levels, structures, and contents, and creating new service resources. In this process, the impact of service resources on dynamic capabilities mainly includes three aspects: the quantity, quality, and structure of resources. Firstly, the exchange of knowledge products has the characteristics of uncertainty and information asymmetry, coupled with the heterogeneity and complexity of tasks within the industry, resulting in a higher breadth and depth of technological foundations. The abundance of service resources in terms of quantity can allow entities to have great room and space for resource acquisition and selection; secondly, the quality-of-service resources directly affects the operational efficiency of dynamic capabilities. Numerous studies have shown that due to the dynamic nature of information infrastructure and information technology, coupled with close communication between supply and demand, services have significant flexibility. Therefore, the quality of basic resources in service institutions plays a key role in resource utilization efficiency and other aspects (Consoli, 2010; Hortelano & Gonzalez, 2010).

2.3.3 Organizational Alertness

The theory of organizational change points out that the adaptation of enterprises to external environmental changes begins with the collection of information. Managers of enterprises judge the importance and development trends of events by identifying this information from both internal and external sources, providing necessary information for decision-making (Farh et al., 2007). The initial stage of threat perception is the collection of information, which is interpreted, encoded, and assigned meanings to various threat related information, ultimately forming a judgment of potential threats (Simon et al., 2002).

Threat perception can be divided into two dimensions: threat detection and threat expression. Threat detection mainly studies the sensitivity of individuals to threat signals, while threat expression mainly examines the individual's desire to express perceived threats in the organization. The study of threat sensitivity in the cognitive context is based on the theory of cognitive style, which defines the sensitivity of individuals to analyze threat signals by investing more cognitive resources in the processing of received information as threat alertness (Lissek & Grilton, 2011). Before the specific appearance of a threat, individuals interpret potential threats in the environment, and this interpretation ability and bias vary due to individual differences. In other words, there are differences in the judgment of threats. After the threat appears, individuals exhibit unique detection sensitivity to the threat, and they may choose different key points to interpret the threat factors, which is the difference in threat sensitivity. The results of threat perception are usually concentrated at the individual level, and employees' perception of threat directly affects their work enthusiasm and generates a strong sense of instability, leading to an impact on performance (Hawkins, 2010).

In a dynamic and changing environment, if a company wants to develop in the long term, it must not only be sensitive enough to new opportunities but also have sufficient awareness of the different threats faced in various changing environments. Previous scholars have given sufficient attention and research to the opportunities that enterprises can access, but there is insufficient research on the cognitive threat of enterprises in dynamic environments.

Threats can be defined as situations beyond the control of the enterprise (Jackson & Dutton, 1988). In the context of rapid technological development, many large enterprises are in crisis due to their lack of awareness of threats. To achieve long-term development, enterprises need to continuously monitor the dynamic environment in order to timely receive potential factors that may pose a threat to enterprise development (Stachowski, 2010). Failure to timely identify threats is likely to have catastrophic consequences for the enterprise, therefore, the timeliness and accuracy of identifying potential threats are crucial for the survival and development of the enterprise. From current literature research, it can be seen that previous researchers have focused on the factors that affect threat perception, but there has been less research on the impact of threat perception on enterprises.

2.4 Digital Innovation

The innovation of enterprises is a digital business transformation led by the transformation strategy. It promotes the bidirectional integration of business and systems, with digitalization as the core and the use of networked means to achieve intelligent empowerment, ensure efficient and high-quality delivery of products and services, and continuously enhances the core competitiveness of enterprises. Of course, digital transformation has also brought corresponding challenges to enterprises. There are certain difficulties in integrating and inheriting the innovation system in the transformation with the original system of the enterprise. It is necessary to make corresponding adjustments to better adapt to the changes brought about by digital transformation, while also doing a good job in connecting and developing. These processes are often accompanied by many problems. Therefore, this study provides theoretical guidance and practical reference for enterprises on how to cultivate core competitiveness through digital transformation by studying relevant topics, especially exploring the impact mechanism of digital innovation on enterprise performance. The digital transformation capability is a key capability that utilizes digitalization as a tool and means to enhance the level of digital technology, deepen the transformation of organizational structure, and assist enterprises in successfully transforming to gain competitive advantages by introducing digital concepts. This study draws inspiration from Guo's classification method for digital transformation capabilities, dividing them into digital transformation technology capabilities and digital transformation management capabilities. Digital transformation technology capability refers to the ability of enterprises to improve their overall efficiency, effectiveness, or flexibility based on business needs, and to mobilize and deploy basic resources such as information technology by combining their own resources and capabilities. It mainly emphasizes the use of information technologies such as big data, cloud computing, the Internet of Things, and artificial intelligence to enhance enterprise flexibility and provide technical support and strategic guidance for enterprise upgrading and transformation. The digital transformation management capability is based on modern management theory as the core, with systems theory, information theory, and control theory as the management methods, and digitalization as the means to achieve the efficient operation of enterprises in planning,

organization, leadership, and control. With the update of digital technology, new management ideas and methods that are more suitable for enterprises to develop in the digital economy market have also emerged.

Customer Centricity				
Value Drivers	Customer Touchpoints and Experience	Digital Business Model	Process Improvement and Innovation	
Functions	Digital Marketing			
	Digital Factory			
	Digital Science			
Focus on Digital Enables	People	Process	Platforms	Partnership

Figure 2.13 Digitalization Approach

Source: Bayer,2021

In a report released by the United Nations Conference on Trade and Development (UNCTAD) in October 2017, the advanced manufacturing industry and new generation information technologies such as the 'Great Intelligence Mobile Cloud Network' were collectively referred to as the 'New Digital Economy (NDE)', believing that it has triggered open platform innovation, changed the organizational form and geographical distribution of research and development and manufacturing, and brought new opportunities to small and medium-sized enterprises in developing countries. Raul (2017) divided digital transformation into the first stage of computer, broadband, and mobile phone popularization, the second stage of internet dissemination, and the third stage of the emergence of the 'Big Smart Mobile Cloud Network'. They summarized their development characteristics and proposed policy recommendations that can maximize the technological dividends of the third stage. Helena and Enno (2019) studied the leading role of 'lighthouse enterprises' in the manufacturing industry during the Fourth Industrial Revolution, and believed that 'lighthouse enterprises, as a model of digital manufacturing and Global Industry 4.0, showcased all the basic features of the Fourth Industrial Revolution and had the potential to create new economic value. They were the driving factors for manufacturing value production, namely resource production

efficiency, agility, and responsiveness. The personalized customization and market response speed that meet customer needs have a comprehensive improvement effect. Another group of scholars focuses on studying the characteristics of digital transformation in manufacturing industries in different countries. Karishma and Dirk (2018) studied the impact of the digital economy on the manufacturing industry of developing countries in Africa. Through empirical testing, they proposed that due to the digital divide, outdated infrastructure construction, and slower skilled talent cultivation than technological progress, Kenya's labor costs not be lower than industrial robots until 2034, marking a turning point in the digital transformation of the manufacturing industry, which is exactly ten years later than the United States However, countries such as Ethiopia are fifteen years behind and require policy support in education, finance, investment environment, corporate capabilities, overall national innovation capabilities, digital infrastructure construction, and participation in global value chains. Regarding the impact of factors such as technological innovation, resource factors, and market demand on the transformation and upgrading of the manufacturing industry: many scholars (Zhao, 2008; Ji, 2016; Zhang, 2019; Yan, 2019) have specifically studied the impact of technological innovation on the transformation and upgrading of the manufacturing industry. Design an evaluation index system from the perspective of technological innovation input and output and use correlation models to explore the relationship between technological innovation and industrial structure upgrading in manufacturing industries at different technological levels. It is proposed that the impact of technological innovation input indicators on industrial structure upgrading varies among manufacturing enterprises at different technological levels, and attention should be paid to the role of technological innovation in industries at different technological levels in industrial structure upgrading. The characteristic of this type of research is to view manufacturing technology innovation as a combination of multiple capabilities such as research and development investment, patent application, new product sales, and labor improvement. By constructing a multi-level indicator system, a comprehensive index of technology innovation is obtained, followed by regression analysis of manufacturing transformation and upgrading, and paths and strategies are provided. The evaluation of technology innovation is relatively comprehensive. Other scholars have combined various influencing factors to study their impact on the transformation and

upgrading of the manufacturing industry. Scholars also consider the transformation and upgrading of the manufacturing industry from the perspective of influencing factors. Zhu (2018) believes that technological innovation and supply and demand structure are the most important factors affecting industrial transformation and upgrading. E-commerce has promoted technological innovation progress and supply and demand structure optimization from five aspects: expanding market radiation, solving information asymmetry, promoting industrial agglomeration development, changing competition patterns, and improving social resource allocation efficiency, thereby promoting industrial transformation and upgrading. Fu (2016) believes that e-commerce has promoted the transformation and upgrading of China's technology manufacturing industry from three aspects: expanding the scale of the local market, improving the independent innovation ability of China's equipment manufacturing industry, and promoting the networked development of the equipment manufacturing industry organizational model. Su (2018) selected 'intelligent manufacturing efficiency' and 'intelligent manufacturing efficiency' as measurement indicators for the intelligent transformation and upgrading of the manufacturing industry. Six influencing factors, including market demand, technological innovation, equipment resources, intelligent interaction ability, digital integration ability, intelligent service platform, and market competition intensity, were selected as variables, and questionnaires were distributed to manufacturing enterprises for data collection. Empirical analysis was conducted on the direction and degree of the impact of various influencing factors on the intelligent transformation and upgrading of the manufacturing industry.

There are also studies on the transformation and upgrading of the manufacturing industry in the context of the digital economy from an efficient perspective. Liu (2002) and Du (2003), starting from the characteristics of informatization itself, believe that the informatization process itself contains characteristics such as the rapid growth mechanism of high-tech industries, efficient industrial resource allocation efficiency, and increased industrial added value. Informatization can directly transform and upgrade traditional industries. Han (2014) empirically found that informatization has a significant promoting effect on the efficiency of technological innovation in the industrial sector. Xie (2009) proposed from the perspective of technological efficiency that the integration of informatization and industry can effectively

achieve cost minimization and revenue increase. Zuo (2017) believes that the mechanism of informatization promoting the transformation and upgrading of industrial structure includes two aspects: industrial transformation and industrial integration. In terms of industrial transformation, according to innovation theory, informatization utilizes new technologies, models, and markets to transform production efficiency, internal vitality, and innovation ability of traditional industries. In terms of industrial integration, according to the theory of industrial integration, informatization has influenced the efficiency, cycle, and content of industrial integration with new engines, platforms, and formats.

There is also a study on the transformation and upgrading of the manufacturing industry in the context of the digital economy from the perspectives of the global value chain and industrial integration. These two perspectives are both very popular topics and have formed relatively fixed calculation methods. The upgrading of the global value chain is mainly evaluated by establishing a multinational input-output model to calculate the proportion of intermediate and final products in total exports (Li, 2018; Huang, 2018). The level of industrial integration is often measured by the ratio of investment in electronic information manufacturing to the total output of the manufacturing industry (Hu, 2007; Zheng, 2010; Liu, 2019).

Overall, this type of research takes the impact of information and communication technology on the manufacturing industry as a starting point, striving to reflect the characteristics of the times in evaluation indicators, measurement methods, and path recommendations, laying a solid foundation for the transformation and upgrading of technology-based enterprises in the context of the digital economy.

2.4.1 Slack Innovation

Enterprises not only need to think about how to survive in fierce market competition but also understand how to use established redundant resources to create greater growth space for the enterprise and promote high-quality development. The theory of corporate behavior suggests that when a company establishes a large number of redundant resources, it can stimulate the vitality of innovation. This is because innovation activities themselves require a large amount of resource support, and idle resources can be directly invested in innovative

activities to achieve value recreation, after that, innovation investment has drawbacks such as long cycles, high risks, and unclear output effects. Therefore, enterprises are very cautious in the process of innovation strategy decision-making, and the abundant redundant resources boost their confidence in implementing innovation strategies, afterwards, innovation activities produce heterogeneous knowledge, technology, products, and services, which can help enterprises stand out in fierce market competition.

Organizational slack is not only one of the core concepts of organizational theory, but also a focus of research in the field of enterprise strategic management. Scholars' definition of organizational slack indirectly reflects the essence of low efficiency and waste in slack. With the continuous deepening of research, Bourgeois (1981) found that redundant resources can alleviate the dual pressure caused by active adjustments within organizations or passive adjustments to adapt to external environmental changes and began to pay attention to the positive aspects of redundant resources. Nohria et al. (1996) further refined the concept of Bourgeois, defining organizational slack as resources that exceed the established production needs of the enterprise and can be reused by the organization. This concept not only pays attention to the inefficient nature of redundant resource waste but also focuses on its positive impact on the enterprise as a resource buffer that can be reused and developed.

There are currently three main categories of organizational slack. One is Sing (1986), which divides redundant resources into unabsorbed slack and absorbed slack based on their state in the organization. Unabsorbed slack refers to temporarily idle resources that can be utilized (Zhou et al., 2022), which have strong liquidity and can be directly applied to new targets (Jie, 2016). Absorbed slack refers to resources that have already been invested in specific goals (Tan et al., 2003), which have been solidified in specific programs and need to be identified and redeveloped before they can be applied again to other goals (Liu et al., 2018). Secondly, Bourgeois (1981) classified redundant resources into available, recovered, and potential ones based on the difficulty of resource recovery. Available redundant resources refer to resources that have not been invested in the organization or organizational processes and can be directly utilized (Xu et al., 2020). Developable slack refers to resources that have already been invested in an organization or organizational program that need to be identified and redeveloped before they can be utilized (Xu, 2020). Potential resources refer to additional

resources that can be obtained in the environment (Xu et al., 2020). The third is Sharfman (1998), which divides resources into easily identifiable slack based on their ease of identification and utilization by managers, which refers to resources that managers can easily identify and develop. On the one hand, low differentiation is a buffer for organizational structure and strategic adjustment, and on the other hand, it is also a catalyst for innovative activities. Zhou et al. (2022) pointed out organizational slack is a collection of resources beyond the normal production and operation of an enterprise. This part of the resources can be remined and used for other strategic decision-making schemes of the organization. Liu (2022) pointed out that organizational slack is composed of two parts: surplus resources exceeding production demand and unused resources of enterprises, which can alleviate resource snatch among different projects and provide resource support for innovation activities. Zhen et al. (2022) pointed out that on the one hand, organizational slack can play a role of cushion in dealing with changes in the external environment, on the other hand, it can also play a role of strategic driver, which can promote the development of enterprise innovation activities, that is, the resources that managers need to spend a lot of time, energy and resources to be identified and utilized.

Although redundant resources have an important positive impact on innovation activities, there are different opinions on redundant resources. Redundant resources refer to the internal resources that an enterprise can control except for the resources needed for necessary production and business activities. On the one hand, these resources can be directly or indirectly used for the internal strategic adjustment of the company, on the other hand, they can also provide resources for enterprises to adapt to external changes (Zhou et al., 2019). According to organization theory, organizational slack is conducive to the development of enterprises. This is because when an enterprise is faced with internal strategic adjustments and sudden changes in the external environment, it can play a role of resource buffer (Deng et al., 2020), providing flexibility for enterprise strategic decisions (Zhou, 2022). On the other hand, agency theory believes that organizational slack is not conducive to the development of enterprises. This is because slack is the product of the entrusted agent's pursuit of excess remuneration (Xu, 2020). It is only beneficial to the agent, but for the whole enterprise, it means waste and low efficiency of resources (Liu, 2018). Organizational slack is a double-

edged sword. It represents buffering and flexibility when improving the dynamic ability of enterprises and coping with environmental conflicts. In daily production, it represents waste and low efficiency. In the context of enterprise transformation, enterprises must reasonably use organizational redundant resources to carry out effective innovation activities to obtain core competitiveness.

2.4.2 Ambidextrous Innovation (Exploratory and Exploitative)

The difference of ambidextrous innovation is that it takes both into consideration. As for the classification of innovation, innovation can be generally divided into progressive and radical innovation, imitation innovation and independent innovation, or mining innovation and exploratory innovation. These different types of innovation are often relative and conflicting, such as imitation or independence; Either progressive or radical. Dual innovation emphasizes that because of the needs of environmental changes, enterprises combine and coexist innovation activities: one is the gradual and relatively small risk innovation activities using existing knowledge and resources, which is important for the short-term survival of enterprises. The other is a breakthrough and risky innovation activity to explore new knowledge and resources, which is crucial for the long-term development of enterprises. For enterprises, in order to successfully carry out competition and realize sustainable competitive advantages, they need to have the above two aspects of innovation at the same time.

For the ambidextrous innovation, it can be chosen five perspectives: the structure perspective, the behavior perspective, the contradictory thinking perspective, the ability perspective and the social network and strategic alliance perspective.

Firstly, corresponding to the concept of duality based on the perspective of structure, there is a way to realize structural duality. Through the division of the internal structure of the organization to achieve organizational dualism, that is to say, let one part of the business unit of the organization specialized in development activities, meet the needs of existing customers, and deal with the existing market competition, and let another part of the business unit dedicated to exploratory activities, focusing on the long-term development of the organization, and exploring new resources and sources of long-term competitive advantages.

Secondly, in response to the concept of dualism based on the perspective of behavior, organizations should strive to build a dualistic situation that allows their members to choose by themselves. This includes two dimensions: alignment and adaptability. Matching refers to the internal coordination between the activities of an organization to achieve the common goals of the organization. And adaptability refers to the ability of organizations to rapidly reconfigure activities to meet changes in external demand. At the same time, the organization should establish an organizational context that emphasizes management performance and relationship support, and influence employees through systems, process design and beliefs, so that employees can choose between the two activities.

Third, corresponding to the dualistic concept based on the perspective of contradictory thinking, there is a dualistic implementation method of leadership. This point of view emphasizes the important role of leadership or top management team composition, behavior integration and the recognition of dualistic contradictions in the creation of dual organizations. Smith and Tushman (2005) built a dualistic production model based on the leadership perception process and believed that only when leaders clearly perceive the existence of dualistic contradictions, rather than ignore or deny them, can organizations better manage and use dualistic contradictions, and bring competitive advantages to organizations.

2.5 Organizational Flexibility

Since the early 1980s, experts in the field of production operations have begun to think and study the concept, classification, and value role of manufacturing flexibility, resulting in many classifications of manufacturing flexibility. Overall, flexibility is based on the ability of an enterprise's management system to better respond to environmental changes or instability caused by the environment (Gupta & Goyal, 1989). Subsequently, scholars began with other functional departments of the organization and further classified flexibility. Some scholars have divided the dimensions of organizational flexibility based on the systematicity and integrity of the organization. From the perspective of strategic management, with organizational systems as the research object, Ansoff (1965) first divided flexibility into internal flexibility and external flexibility. External flexibility refers to the adaptability of a

company's strategy to the external environment, which can minimize the consequences of a company's failure through diversified product market trends. Internal flexibility refers to the ability of a company to implement its strategy and find a buffer zone for the company's response to failure through the flow of internal resources.

There are currently diverse interpretations of the connotation of strategic flexibility in the academic community. Due to the different research contexts and starting points of scholars, there is currently no unified definition standard for strategic flexibility. Scholars from the resource perspective view strategic flexibility as a company's resource management ability, which refers to the ability of a company to actively adapt to external environmental changes, fully search for and explore new resources, and restructure and utilize existing resources to promote the creation of greater value for the company. Scholars related to the concept of capability believe that strategic flexibility is a dynamic capability within an enterprise, which can help the enterprise overcome organizational inertia to a certain extent, quickly perceive and adapt to external environmental changes, and seize new business opportunities.

Since the early 80s of the last centuries, experts in the field of production and operation began to think about the concept, classification, and value role of manufacturing flexibility, and derived many classifications of manufacturing flexibility. In general, flexibility is proposed based on the management system of an enterprise, in order to better cope with changes in the environment or instability caused by the environment (Gupta & Goyal, 1989). After that, scholars further classified flexibility from other functional departments. Some scholars have divided the dimensions of organizational flexibility from the perspective of organizational system and integrity. From the perspective of strategic management, taking the organizational system as the research object, Ansoff (1965) took the lead in dividing flexibility into internal flexibility and external flexibility. External flexibility refers to the adaptability of enterprise strategy to the external environment. The consequences of enterprise failure can be minimized through the market situation of diversified products. Internal flexibility refers to the ability of enterprises to implement strategies, and the flow of internal resources finds a buffer zone for enterprises to respond to failure.

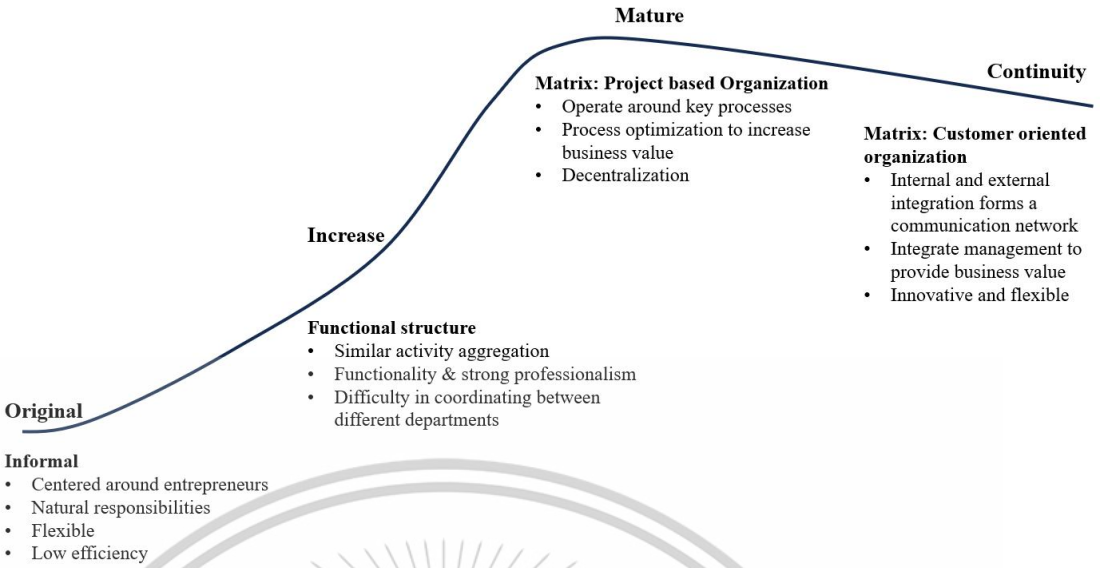


Figure 2.14 From a lifecycle perspective, the process of organizational evolution is a process of flexibility

Abbott and Banerji (2003) selected 263 multinational corporations from the Fortune Global 500 as samples and measured financial performance using their ROS (Return on Sales), ROA (Return on Assets), and EBIT (Earnings Before Interest and Taxes) indicators to verify the positive impact of organizational strategic flexibility on financial performance. Taking the organizational system as the research object, the researchers also made a further dimension division of organizational flexibility from the perspective of the relationship between organizational flexibility and enterprise performance, the relationship between organizational flexibility and innovation, and the relationship between organizational flexibility and the way of coping with environmental changes. It involves structural flexibility, technical flexibility, personnel flexibility, process flexibility, resource flexibility, innovation flexibility and cultural flexibility (Jiang, 2014); production flexibility, human resources flexibility, financial flexibility, organizational structure flexibility (Zhao, 2012), as well as forward-looking flexibility and response flexibility; first dynamic flexibility, second flexible (Celuch, 2007) and other dimensions. Among them, forward-looking flexibility mainly focuses on the active and pre-capacity training and application of the organization in order to maintain its competitive advantage in the changing environment. Response flexibility is the ability of enterprises to respond and adjust according to the environmental changes that have occurred. The role in the environment organization relationship, the dynamic contingency theory points

out that the organization has the initiative and the right to choose in the relationship with the environment, and the organization and the environment can interact and dynamically alternate (Child, 1972). Therefore, organizational flexibility is used to maintain the dynamic matching between the organization and the environment, which represents the dynamic and reactive organizational potential in the relationship between the organization and the environment. Flexible enterprises have obvious efficiency advantages in the creation of innovative ways and the reorganization of enterprise resources, which can actively promote the improvement of enterprise product innovation ability (Shao & Zhou, 2016). Organizational flexibility significantly improves the response of enterprises to environmental changes and the speed of strategic decision-making, actively promotes the efficiency of enterprise research and development and new products entering the market and plays a crucial role in the use and development of innovation. Das (1995) also pointed out in his research that flexibility is the key for enterprises to achieve high performance. Das believed that organizational flexibility could enable enterprises to gain competitive advantages through efficient investment behavior and rapid response time to market changes, to achieve high performance. Das also proposed that flexibility can effectively reduce the risk of organizational investment and improve the performance of enterprises.

2.5.1 Reconstruction

Restructuring ability, as one of the low-level capabilities of dynamic capabilities, refers to the ability of enterprises to carefully arrange resource bases, transform resources and processes into new valuable combinations, and build new capabilities through learning. The ability of enterprises to restructure resources means that they can recombine, restructure, and optimize the allocation of resources, thereby enabling business model innovation. Because resources are the foundation of business models, and the elements of business models such as value proposition, value creation, value transmission, and value acquisition cannot be separated from resources. Correspondingly, the change and reconstruction of resources means the change and innovation of business models. There is no unified standard for dividing the dimensions of dynamic capabilities, but many scholars agree that integration and reconstruction capabilities are important components of dynamic capabilities. Eisenhardt and

Martin (2000), Huang (2010), Lin and Wu (2014), and others have identified integration and reconstruction capabilities as one of the dimensions of dynamic capabilities. Enterprises rely on their own knowledge to develop to a certain extent, which is path dependent and is affected by previous investments in relevant knowledge or resources. The restructuring ability of an organization is an evolutionary process of organizational form, which enables enterprises to allocate resources more in accordance with their actual needs. Integration ability is the continuation of learning ability, the ability to evaluate the value of existing resources and integrate them into new knowledge. Enterprises need to integrate existing resources and learn new knowledge, and in addition, they also need to communicate frequently with the industry. In addition, the implementation of the basic functions of integration depends on the effective coordination of various tasks, resources, and activities, and the different coordination processes can also affect the position of the enterprise in the competitive market. Refactoring ability is an extension of integration ability, which focuses more on structural changes in knowledge and resources, enabling enterprises to freely transform resources to respond to threats.

The efficiency and effectiveness of enterprise resource integration are crucial for the development of enterprises (Teece, 1997). Under the influence of integration capabilities, enterprises can update their existing strategies and basic resources to cope with the constantly changing external environment. Enterprises with strong integration capabilities can form various processes to improve efficiency, which can reduce time and financial costs while enhancing competitiveness. If the integration ability of the enterprise is weak, even in the face of small external changes, it may be difficult to cope. In the research of the intelligent digital industry, it was found that many large mature enterprises are destroyed by the technological innovation brought by small and medium-sized enterprises. So, enterprises need to develop different processes to integrate different internal and external resources for technological upgrading, otherwise they are eliminated by competitors.

The integration ability can help enterprises extract suitable resources from both internal and external sources and recombine them to find the most suitable and maximize resource utilization ways to improve performance (Lin, 2014). Teece (1997) also pointed out the importance of integrating external technological resources of enterprises. Lin (2014) found

that through the integration of external technologies, enterprises can carry out effective technological innovation to gain competitiveness.

2.5.2 Technological Flexibility

Technology is a special resource for enterprises and one of the most critical strategic resources. The essence of dynamic capability is a complex combination of assets, employee, and organizational input-output processes, which directly determines the effectiveness of company activities and reflects the efficiency and effectiveness of organizational activities.

The production and manufacturing department, as an important core department of the organization, was also the first functional department to introduce the concept of technological flexibility. Since the early 80s, experts in the field of production operations have begun to think and study the concept, classification, and value of manufacturing flexibility, resulting in various classifications of technological flexibility. Overall, technological flexibility is based on the ability of a company's production and manufacturing system to better respond to environmental changes or instability caused by the environment (Gupta & Goyal, 1989), that the relationship between the stock of resources owned by a company and its technological resources determines the accumulation process, direction, and speed of its core capabilities, dynamic capabilities, and distributed capabilities. Due to the rarity of technology trading markets and the fact that flexible technology is a resource that requires a combination of strategic vision, development time, and sustained investment behavior, it possesses characteristics such as scarcity, accumulation, and difficulty in imitation, making it a core element in building enterprise capabilities. Technological flexibility enables enterprises to have a wide range of universal machinery and equipment, as well as the ability to produce a variety of mixed products. The enterprise's technological resources have greater flexibility, and the operational production technology system is also broader. These can help enterprises eliminate various constraints and obstacles of rigid production technology on production capacity, product types and scope, and the speed of launching new products, greatly enhancing the ability of enterprises to adapt to changes in market demand.

2.5.3 Resource Flexibility

From a resource-based perspective, it is believed that for enterprises with high resource flexibility, the application scope of enterprise resources is wider, and the cost of resource utilization and function conversion is lower, this makes it easier for enterprises to achieve resource sharing and the construction and utilization of enterprise capabilities. The improvement of resource flexibility allows enterprises to create operational relevance by sharing their main activities or auxiliary behaviors. Wang (2010) pointed out that achieving behavior sharing among various business units can create value for enterprises. For example, research on mergers and acquisitions in the same industry has shown that the behavior and resources shared after the merger, as well as the economies of scale formed, are conducive to improving the image of the enterprise and shareholder returns. There are also studies indicating that enterprises with more relevant business units bear less risk, and resource flexibility can clearly further achieve economies of scale by sharing resources and reducing risks, thereby creating enterprise value.

Figure 2.15 Resource flexibility model

Source: Wang and Ahmed,2007

Then, enterprise resource management is the process of building resource combinations, integrating resource formation capabilities, and leveraging capabilities to improve performance. Improving resource flexibility can improve the efficiency and variety of enterprise resource combination construction, provide sufficient selection space for integrating resource formation capabilities, and facilitate the transmission of competitive advantages for enterprises. That is to say, for business related enterprises, the improvement of resource flexibility enables them to transfer the competitiveness of a certain business to other businesses at the company level, thereby creating value.

2.6 Organizational Cognition

Cognition is a widely used concept. The definition of cognition in psychology is the process of understanding things. The cognition of an organization is the sum of the cognition of all individuals within the organization. Cognition always exists in the form of collective collaboration (Walsh, 1995). When individuals gather, each individual interprets information using their own knowledge structure. The mutual fusion of information interpretation by different individuals leads to a collective knowledge structure, forming the cognitive foundation of organizational behavior.

There are currently two directions for the theoretical model of organizational cognition. One is Walsh's (1995) viewpoint that organizations are a system with social memory that can store and extract past experiences and information. Another view is that an organization is an explanatory system, a spiritual entity with thinking and analytical abilities, and its behavioral patterns reflect the organization's thoughts (Sandelands, 1987).

In existing research, scholars have defined organizational learning from the perspectives of system theory, instrumental theory, cognitive models, self-regulation, cultural society, and political systems.

System theory states that organizational learning is the process by which an organization passively adapts to changes in the external environment through continuous interaction with the environment, or transforms knowledge absorbed from the outside into usable knowledge to adapt to changes in the external environment (Hedberg, 1981). Organizational learning is the learning of organizational members and can have an impact on the interaction between the organization and the environment, which in turn affects the learning of organizational members. Therefore, organizational learning is a cyclic process (Lee et al., 1992). Argyris and Seho (1997) argue that organizational learning is a process of discovering, analyzing, and solving problems. Organizational learning is a complex process that involves the interaction of organizational members, organizational behavior, and organizational processes (Schwandt & Marquardt, 2000). Organizational learning is the process by which organizational members at all levels gather information from both the internal and external environment of the enterprise to reflect and continuously improve the behavior and theory of the organization

(Fisher & White, 2000). Organizational learning is a dynamic process in which enterprises research and develop new knowledge, which is disseminated within the enterprise (Cepeda & Vera, 2007). From the perspective of instrumental theory. Under the constraints of bounded rationality, an organization undergoes a cyclic process from environmental cognition to environmental uncertainty, through information sharing, and adjusting plans, known as organizational learning (March & Simon, 1958). Organizational learning is different from individual learning. Organizational learning is a process in which an organization, based on experience, continuously attempts to acquire external information and knowledge to improve its organizational culture, regulations, and processes, in order to quickly adapt to the constantly changing external environment. During this process, organizational members are able to reunderstand organizational issues (Cyert & March, 1963). Shrivastava (1983) believes that organizational learning is a process of information processing based on experience. Stata (1989) defined organizational learning as learning together based on existing knowledge and experience, through sharing knowledge, long-term goals, and mental state. Organizational learning is the process by which organizations utilize acquired knowledge for improvement (Fiol & Lyles, 1985). Huber (1991) believes that organizational learning is the sharing of externally acquired knowledge by an organization, promoting the understanding of existing knowledge, generating new knowledge, changing the potential behavior of the organization, and retaining successful experiences for subsequent learning. Dixon (1994) believes that organizational learning is a cyclical process of creating knowledge, interpreting knowledge, integrating knowledge, and implementing actions. The organization integrates the new knowledge created into existing knowledge, interprets it as a whole, and finally takes action to execute this learning process. Xie et al. (2017) believe that organizational learning is the creation, acquisition, dissemination, and transformation of knowledge by enterprises, utilizing this knowledge to improve organizational behavior and enhance organizational performance.

Define from the perspective of Cognitive Style, organizational learning is the process of correcting errors or anomalies that an organization is aware of, as well as the cognitive process by which members of the organization develop new perspectives on the organization. March and Olsen (1975) believed that organizational learning is a process in which members of an organization interact with the internal and external environment of the organization

through shared cognition. Pilar et al (2005) believed that organizational learning refers to the creation, acquisition, transformation, and integration of knowledge within an organization, which is then applied internally to enhance its ability to manage knowledge and achieve enterprise performance. Rahimi et al (2012) believed that organizational learning is the process and application of acquired knowledge and technology to improve one's own corporate performance.

From the perspective of self-regulation, Churchman (1971) believes that organizational learning is a self-regulated process of discovering and correcting errors. In 1978, Agryris and Schon defined organizational learning as the process of discovering problems and errors within an organization, acquiring knowledge from the external environment, improving one's own cognitive and behavioral abilities, and adopting theories to correct problems and errors, and adjusting corporate strategies. Morgan and Ramirez (1983) defined organizational learning as the ability of an organization to self-improve and adjust its design when it has a certain degree of diversity. Members in an organization can engage in a collaborative learning process to solve organizational problems, but organizational learning is not equal to the sum of individual learning of organizational members. In 1985, Nonaka and Johansso believed that organizational learning was a capability possessed by organizations. Organizations integrated knowledge obtained from external sources with internal knowledge and used this knowledge for self-improvement, surpassing their existing knowledge reserve capabilities. Yang (2012) believes that organizational learning is a process of improving one's own behavior by sharing knowledge between external and internal stakeholders in an organization.

Define from the perspective of cultural society. Ding (2006) believes that organizational learning is group learning based on individual learning. It is not simply a sum of individual learning, but a systematic way of group thinking formed through interaction among organizational members. The ideas, knowledge, and behaviors it searches for have a guiding effect on organizational behavior and help improve organizational results. Jia and Zhao (2006) believe that in order to adapt to the constantly changing external environment and improve organizational efficiency, the process of continuously supplementing and improving organizational knowledge, technology, processes, and regulations within the existing corporate culture context is organizational learning. Cao (2016) believes that organizational

learning is a process of continuous innovation through the sharing of information and knowledge in a specific and open organizational atmosphere.

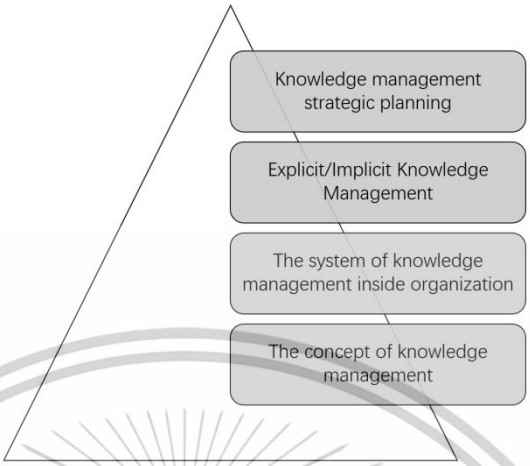


Figure 2.16 Core content of organizational knowledge cognition

Define from the perspective of the political system. Selznick (1996) believes that organizational learning is the effort made to achieve organizational profitability by adopting appropriate strategies. Crossan et al. (1999) argue that organizational learning is the main method for enhancing corporate strategy, emphasizing the integration and institutionalization of organizational learning at the organizational level. Fu et al. (2009) believe that organizational learning is the process by which enterprises internalize, share, and create knowledge absorbed from the outside to obtain sustainable competitive advantages. Shen (2010) believes that organizational learning is the process by which organizations and their members acquire information and knowledge, continuously innovate, and aim to improve their core competitiveness.

The development of organizational cognition requires a profound understanding of the process of understanding things and social development, as well as the formation process of collective knowledge structures. The knowledge structures of individuals in organizations are all different, with both interactive parts and differences. Therefore, the knowledge structure of an organization inevitably needs to be formed through communication and debate among different individuals within the organization. At the same time, the formation of an organization's knowledge structure is also influenced by external factors. After being

influenced by external factors, the organization's knowledge structure may face a process of decomposition and reconstruction.

Organizational cognition can affect the decision-making results and execution process of enterprises. Organizational cognition can not only bring positive effects such as efficiency improvement to enterprises but also have negative impacts on enterprises due to incomplete and unreasonable organizational knowledge, leading to misinterpretation of information.

2.6.1 Internal cognition

The internal control environment is the foundation of the entire internal control, the engine that drives the development of the enterprise, and the core of all other elements. It determines whether other control elements can play a role and is the basis for the role of other internal control elements. If there is no good control environment, no matter how good the internal control system is, it is just a formality, and all internal control measures are empty talk.

When the internal environment of an organization cannot undergo significant changes in the short term, the application of management techniques can generate direct economic benefits more quickly. By creating an internal environment, improving internal mechanisms, and strengthening internal management, better conditions can be created for organizational system innovation, creating good opportunities for organizational change. Control can be achieved through understanding and analysis, assigning control responsibilities to every position, individual, and link, and achieving maximum enterprise value from a strategic perspective.

For example, the impact of corporate culture factors on internal cognition. If a company has a corporate culture that is suitable for its actual situation, healthy and upward, especially emphasizing internal control, it can use values and other soft environments to enable its employees to have self-discipline and heteronomy, thereby correcting their values and goals, regulating their behavior, resolving the contradictions between the individual values, goals, and behaviors of employees and the values and goals of the organization, and making them consistent. A work atmosphere that leverages human subjective initiative to motivate employees and generate internal motivation to tingly contribute to the organization. This

approach not only benefits the scientific and rational formulation and implementation of internal control systems but also compensates for the shortcomings of the internal control system, ensuring that the internal control of the organization is always in an effective state.

In an organization, firstly, the management cognition and management ability need to be elevated throughout the organization, which is a step higher than the management level of previous organizational executives, in order to improve overall organizational and human resource efficiency, another is innovation, activating the second growth point and activating the second curve.

2.6.2 External cognition

The factors that a general organization perceives in the external environment include population, culture, economy, politics, law, technology, resources, etc. These factors in the general external environment have an indirect and long-term impact on the organization. When the external environment undergoes drastic changes, it can lead to significant changes in organizational development.

Specific external environmental factors are mainly targeted at enterprise organizations, including factors such as suppliers, customers, competitors, government, and social groups. These factors of specific external environments have a direct and rapid impact on the organization of the enterprise.

The external environment is generally difficult to control, so its impact is quite significant, sometimes even affecting changes in the entire organizational structure. The purpose of analyzing the external environment is to identify opportunities that can be seized in this environment, risks that must be avoided, seize opportunities, and promote healthy development. All factors that exist outside the boundaries of the organization and interact with the organization. As an open system, organizations must constantly exchange materials, energy, and information with the environment.

2.7 Market Dynamic Capability

The uncertainty of the external market can pose a threat to the development of enterprises, but it may also bring opportunities for innovation. In an uncertain external environment,

enterprises face many unstructured problems, and changes in the environment undermine the value potential of existing capabilities. The original knowledge value and role quickly become outdated or depreciated with this rapid change, making it difficult for enterprises to gain a competitive advantage. However, rapid changes in market demand and technological development have shortened the lifecycle of products and technologies, creating a fleeting window of opportunity. Dynamic capabilities help enterprises timely understand customer information and technological changes, better detect, or predict market demand changes and technological development directions, reconstruct resources, obtain knowledge updates, and ultimately open the window of opportunity given by market demand and technological changes, Achieve improvement in organizational performance (Lin, 2009). From this, it can be seen that the uncertain external market environment force enterprises to engage in innovative activities, which undoubtedly increases the effectiveness of enterprises' dynamic capabilities. Essentially, dynamic capabilities can be seen as strategic choices that give companies the choice to pursue new directions when opportunities arise, and the higher the environmental uncertainty, the more valuable these choices may be. Relatively speaking, when enterprises are in a stable environment, the problems they face are mostly structured problems. At this point, enterprises can use their existing knowledge to solve these problems and achieve organizational goals. Therefore, in a relatively stable environment, the impact of dynamic capabilities on organizational performance may not be significant.

Market dynamics are external environmental factors, usually divided into three levels: overall environment, industry environment, and competitor environment (Hilter, 2009). The overall environment refers to the macro demographic, economic, political, and technological environment. Industry environment refers to a series of factors that directly affect a company and its competitive behavior and response. The competitive environment refers to the situation of enterprises that have a direct competitive relationship with them. Dess and Beard (1984) divided the external environment dimension into three dimensions: abundance, dynamism, and complexity. Abundance refers to the adequacy of resources and corresponding capabilities to support growth, dynamism refers to the unpredictability and rate of environmental change, and complexity refers to the heterogeneity and range of environmental factors. Keats and Hitt (1988) cited the research conclusion of Dess and Beard (1984) and believed that dynamism

first reflects the instability of the environment. Therefore, instability was used instead of dynamism for research and analysis, and the constituent dimensions of environmental turbulence were determined as abundance, instability, and complexity. Wholley and Brittain (1989) believes that previous studies on environmental instability have not reflected all aspects of environmental change. The characteristics of environmental change can be described and measured from three aspects: frequency, amplitude, and predictability. Frequency refers to the frequency of environmental change, amplitude refers to the degree of difference in the process of environmental change, and predictability refers to the degree of irregularity in environmental change. Daft et al. (1988) divided the organizational environment into task oriented and general oriented environments and used complexity and rate of change as two dimensions to measure the characteristics of environmental volatility. Complexity refers to the heterogeneity of external environmental events in an organization, and the greater the number and diversity of external events, the stronger the complexity. The rate of change refers to the frequency of changes in the organizational environment. In cases of high environmental change rates, external environmental events and activities rapidly change, making it difficult for decision-makers to obtain relevant environmental information in a timely manner.

The external market environment is a collection of various practical factors that enterprises must consider in their management decision-making and production and operation processes. The primary characteristic of the market environment is uncertainty. Milliken (1987) proposed that environmental uncertainty refers to the difficulty for leaders of enterprises to accurately estimate the current situation or development trend of the external environment based on existing information, and decomposes environmental uncertainty into three dimensions: state, reaction, and effect uncertainty, Li et al. (2009) defined environmental uncertainty as the inability of managers to make accurate decisions or predict possible events that may occur after decision-making due to a lack of information related to their environment. Market environmental uncertainty is a consideration of the uncertainty level of a company in a turbulent and complex external environment, which is crucial for the company to consider how to maintain a stable competitive advantage.

Malik and Kotabe (2009) established a development model for dynamic capabilities in emerging market economies and believed that government support policies are important situational factors affecting the construction of dynamic capabilities. According to Deedsa et al. (2000), there is an inverted U-shaped relationship between the degree of concentration of a company's geographical location and the dynamic ability of new product development. This is because the company is located in an area where technology companies are concentrated, which is conducive to acquiring technology, talent, and knowledge, thereby improving the dynamic ability of new product development. However, on the other hand, the more concentrated the geographical location, the more intense the resource competition between enterprises, which actually weakens the dynamic ability of new product development. In addition, Jantunen et al. (2012) explored the development and heterogeneity of dynamic capabilities through case studies and believed that external industry development can promote the commonality of enterprises within the same industry. The regulatory effect of market dynamic orientation on corporate performance is direct and positive and does not require the mediating effect of innovative ability. However, it can exert indirect effects through the mediating effect of innovative ability. Innovation ability is regarded as a prerequisite factor for market orientation, which can have a direct positive impact on profitability and an indirect impact on profitability through the mediating effect of innovation success. Boso et al. (2012) argues that from the perspectives of resource-based view and dynamic capability theory, market dynamic capability and innovation orientation are two complementary market resources that help enterprises utilize existing capabilities to explore new opportunities in the export market. Their empirical research also proves that market dynamic capability plays a positive moderating role in the relationship between entrepreneurial orientation and new product export performance, At the same time, market competition and corporate financial resources enhance this regulatory effect.

Scholars now focus on exploring the indirect impact of environmental uncertainty on organizations, especially the moderating effect between dynamic capabilities and performance. Some studies have shown that in the relationship between strategy, dynamic capabilities, and performance, there is not only a causal relationship, but also an impact of organizational characteristics (Barney, 1991). Market uncertainty is an important moderate variable that

affects the relationship between organizational experience and corporate performance, and its research should be given sufficient attention. Previous studies have shown that environmental uncertainty has a significant moderating effect on the relationship between strategic capability and competitive advantage, and the degree of market uncertainty leads to differences in the relationship between the two (Stoica et al., 2003). Research has shown that environmental uncertainty not only has a positive regulatory effect but also has a negative regulatory effect or no effect. Yang Zhi et al. (2010) proposed the moderating effect of environmental uncertainty when studying the impact of market orientation on corporate performance. Empirical research results showed that environmental uncertainty has a negative moderating effect. Xie et al. (2010) theoretically studied that the impact of IT capability on competitive advantage is moderated by environmental uncertainty, but empirical research results show that environmental uncertainty does not have any effect but has a certain promotion on organizational technology. With the deepening of research, scholars have also conducted specific dimensions of environmental uncertainty research. Zeng et al. (2011) found that environmental uncertainty can have a significant impact on the relationship between strategic responsiveness and corporate performance, but the dimension of environmental complexity does not play a role. The impact of different dimensions of environmental uncertainty on the relationship between capabilities and corporate performance varies. Environmental dynamics have a significant positive impact on the relationship between strategic adaptability and competitive advantage, and the environment is an effective regulator of the relationship between strategic decision-making ability and corporate performance (Kowketal, 2018). The external environmental driving factors mainly include political environment, social environment, and economic environment. One is the political environment, where government policy guidance and subsidies promote exploratory innovation in enterprises; Cui et al. (2017) pointed out that the uncertainty of government policies not only drives enterprises to pursue exploratory innovation but also drives them to pursue exploitative innovation. The second is the social and economic environment. In a dynamic environment, to reduce risks, enterprises implement exploratory innovation and respond to threats by developing new products; In a fiercely competitive external environment, adopting balanced binary innovation is more conducive to the development of enterprises. In a relaxed environment, enterprises can

improve the efficiency of dual innovation by acquiring resources from the environment. Wang and Jing et al. (2019) found that strategic alliances deepen the exchange of different corporate cultures, promote mutual learning among enterprises, and thus enhance their dual innovation capabilities. Liu and Gao et al. (2020) found in their research that under the condition of customer participation, enterprises tend to prefer exploitative innovation due to the possibility of results not being accepted by customers.

2.7.1 Dimensional Division of Market Dynamic Environment

Early scholars mostly described environmental uncertainty from a single dimension, such as March and Simon (1958) choosing the dimension of resource diversity to describe the characteristics of the external environment of enterprises. With the deepening and enrichment of research, scholars gradually discovered that environmental uncertainty is not a single dimensional phenomenon. In the 1970s, foreign scholar Duncan (1972) decomposed environmental uncertainty into two main aspects: complexity and dynamism. Based on this, Child (1972) further conducted in-depth research, explaining the specific elements of environmental uncertainty from differences, complexity, and illiquidity, and proposing that environmental uncertainty has differences and liquidity constraints in different contexts. Other scholars, such as Dess and Beard (1984), have proposed different views, believing that environmental uncertainty needs to be analyzed from three aspects: dynamism, complexity, and richness. In recent years, scholar Tan (2005) has focused his research on the overall environment after China's economic transformation, interpreting environmental uncertainty as a collection of complexity, dynamism, and hostility. Based on previous research, scholar Yao et al. (2019) explored the specific relationship between environmental uncertainty, knowledge and coupling, and enterprise knowledge innovation capability from the perspectives of market uncertainty and technological uncertainty. Overall, environmental uncertainty may encompass multiple levels such as politics, economy, society, culture, competitors, suppliers, consumers, etc. Scholars are increasingly aware of its complexity and importance.

In the field of enterprise management, literature on environmental uncertainty is mostly closely related to factors such as performance, risk taking, resource allocation, production efficiency, and innovation effectiveness of enterprises. Johnson et al. (2003) explored the

specific relationship between forward-looking strategy, environmental uncertainty, and corporate performance, and found that environmental uncertainty has a significant moderating effect on the relationship between market-oriented strategic flexibility and corporate performance; Dai and Zhu (2020) confirmed the positive moderating effect of environmental uncertainty on the relationship between supply chain concentration and enterprise risk taking level using data from Chinese listed companies as samples; Bu and Sun (2020) confirmed through research that environmental uncertainty can to some extent inhibit the labor investment efficiency of enterprises. In recent years, the important role of market dynamic environment uncertainty has been increasingly valued by scholars, and more and more studies have incorporated market environment uncertainty into relevant research to explore the importance of external environment in enterprise development.

2.8 Performance

Enterprise owners can observe the actual operation and management efficiency of the enterprise through its performance, which reflects the operational efficiency and operator performance of the enterprise during a certain operating period. The performance of enterprises can be measured by financial indicators such as profit and productivity, so some scholars choose financial indicators when measuring enterprise performance, and the acquisition of financial parameters is also more convenient. In addition, many scholars measure corporate performance from other perspectives, such as innovation, growth performance, entrepreneurial performance, economic performance, and organizational performance (He et al., 2022). However, this study believes that enterprises should seek long-term development while maintaining survival and growing on the existing foundation.

The level of innovation of technology-based enterprises affects their economic benefits and future long-term development. Achieving good technological performance is the core element for the survival and development of technology-based enterprises and an inexhaustible driving force for improving competitiveness. Improving the technological innovation of enterprises requires efforts from two perspectives: firstly, to create a good internal and external environment for the technological innovation activities of enterprises, so that they can proceed smoothly, lay a good foundation for creating performance, and promote

performance improvement; secondly, it is necessary to evaluate the achievements achieved by enterprises through technological innovation activities. Only by understanding the degree of achievement of performance goals through evaluation, identifying deficiencies to make up for, and promoting the development of subsequent technological innovation activities, can a virtuous cycle be formed to continuously improve performance.

Performance research widely exists in fields such as management, economics, and sociology. In the field of management, enterprise performance is a multidimensional concept, an important indicator for measuring the effectiveness and efficiency of organizational operations, and a general term for the overall effectiveness achieved by enterprises in implementing production and operation activities. Generally speaking, corporate performance is mainly divided into two aspects: narrow and broad corporate performance. Narrowly defined corporate performance is mainly based on corporate accounting and financial indicators, which evaluate the economic goals and operating results of a company during a certain operating period, such as asset operation and financial benefits. It is represented by indicators such as the company's total asset profit margin, investment return rate, sales revenue growth rate, and earnings per share (Lebas, 1995). At the same time, it also includes some financial indicators that can reflect the value of the enterprise and market conditions, such as market value ratio, Tobin Q value, etc. (Venkatraman & Ramanujam, 1986). In a broad sense, enterprise performance is not only viewed from a financial perspective but also includes operational performance (non-financial performance), factors that can drive organizational benefits, internal processes, human resources, innovation factors, and growth potential within the scope of enterprise performance evaluation. It emphasizes the close relationship between enterprise performance management and strategic development, revealing the driving role of non-financial indicators such as learning and innovation on outcome based financial indicators (Wang & Zhou, 2003). The broad connotation of corporate performance has been applied to research to further reveal the drivers of performance or key factors for performance improvement, providing reference for future strategic formulation and implementation of enterprises.

From different research perspectives, the connotation of corporate performance has different focuses. From a production perspective, the results and effectiveness of production

are the main focus of enterprise performance (Drnevichet.al, 2011). From the perspective of behavior and ability, corporate performance is considered as an action, rather than the result of an organization or individual's actions and is the behavior and ability of the organization or individual that is related to organizational goals (Hu & Feng, 2005). Some scholars have proposed the social connotations contained in corporate performance from the perspective of corporate socialization, namely the value orientation and spiritual style reflected by the enterprise, including its reputation, culture, reputation, etc. (Wei, 2017). In the field of strategic management, Venkatraman and Ramanujam (1986) believed that corporate performance includes three levels of connotation: financial performance, operational performance, and organizational effectiveness. Financial performance is the most basic connotation of enterprise performance, and its core is to use simple financial indicators to reflect the achievement of enterprise economic goals, including sales growth, profits, earnings per share, etc. Compared to financial performance, business performance emphasizes more on examining the overall operational situation of the enterprise, taking into account relevant factors that may improve financial performance during the company's operation process, including market share, product quality, added manufacturing value, and so on. The scope of organizational effectiveness is the widest, and based on financial and operational performance, all stakeholders are included in the scope of enterprise performance considerations.

Schumpeter (1939) pointed out that performance is an additional reward for innovation and does not exist in static cycles. In the real market environment, if a certain enterprise achieves high performance through innovation, it led to competitors imitating and innovating, resulting in a decrease in price and a loss of performance. Schumpeter believes that the interaction between innovators and imitators can affect economic growth, and this growth pattern is nonlinear. Only when innovation is fully absorbed by the market can the economy recover.

From previous literature, the analysis of the impact of dynamic capability mainly focuses on four aspects: dynamic capability on organizational performance, competitive advantage, organizational capability, and strategic choice. Among them, dynamic capability has a more significant impact on organizational performance. Most scholars believe that dynamic capabilities have a positive impact on corporate performance, but they are not simply related,

but rather regulated or mediated by other factors. Specifically, mediating factors include ‘conventional capabilities’ and ‘resource base’, while moderating factors include ‘environmental volatility’, ‘strategic orientation’, ‘organizational learning, knowledge’, and ‘resource allocation’. It is worth noting that so far, few scholars have demonstrated whether dynamic capabilities have a negative effect on corporate performance, or under what conditions they have a negative effect. Ambrosini and Bowman (2009) also pointed out that although dynamic capabilities have a positive impact on competitive advantage, the development and maintenance of dynamic capabilities require capital investment and incur cost constraints. Therefore, enterprise performance may not necessarily be improved or improved through the application of dynamic capabilities.

In a dynamic environment, the potential gains brought by dynamic capabilities are greater, so the relationship between dynamic capabilities and corporate performance is positively regulated by environmental dynamics. In addition, the impact of dynamic capabilities on corporate performance is achieved through conventional capabilities and depends on the quality of organizational knowledge base. In other words, the quality of conventional capabilities plays a mediating role in the relationship between dynamic capabilities and corporate performance. Even if enterprises have similar dynamic capabilities, there are differences in performance between enterprises due to three factors: the cost of resource allocation, learning ability, and opportunities. Dynamic capabilities can continuously bring temporary competitive advantages to enterprises, thereby maintaining the sustainability of competitive advantages. In turbulent environments, the positive impact of dynamic capabilities on competitive advantage is particularly prominent. The highly volatile environment weakens the relationship between resources and competitive advantage, while enterprises with dynamic capabilities can still effectively enhance competitive advantage. In turbulent environments, the positive effect of dynamic capabilities on competitive advantage is greater than that of organizational resources, and the explanatory power of dynamic capability theory exceeds that of resource-based theory (Wu, 2010).

2.9 Conceptual Framework and Hypothesis Development

In the literature review section, a detailed explanation was provided on the main theories and variables involved in dynamism. Forward-looking strategy, dynamic capabilities and innovation form the foundation of the research theory in this study and help to explain the relationship between different variables in the research, providing support for the hypothesis proposed next.

The research on forward-looking strategy in this study is based on a dynamic perspective. Hypotheses are made on the impact of dynamic capabilities as organizational flexibility and organizational cognition on the performance. Then, hypotheses are made on the moderating effect of market dynamic capabilities as mediating capabilities and corporate performance.

From existing research, it can be seen that dynamic capability is a concept composed of multiple dimensions and structures, and there are different types of divisions. Different researchers also interpret the content of dynamic capability differently. This study introduces the concepts of organizational learning and digital innovation ability into the dynamic capabilities of enterprises and combines the current research theory of dynamic capabilities to divide dynamic capabilities into organizational flexibility and organizational cognition. Theoretical derivation and research hypotheses are proposed for these dynamic capabilities.

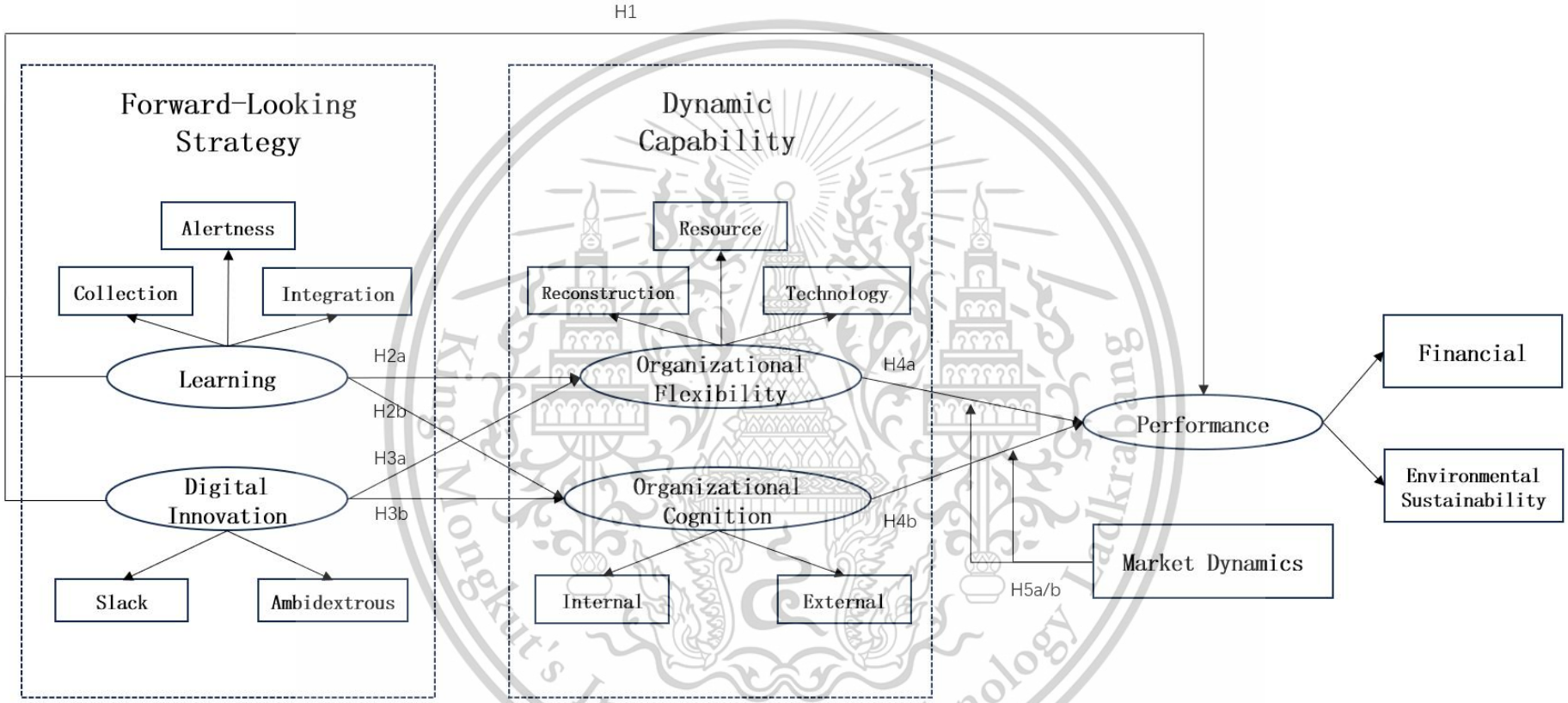


Figure 2.17 Conceptual Framework

The relationship between forward-looking strategy and corporate performance:

In the process of collecting external market and technological information, enterprises can continuously pay attention to and understand the situations that occur in their business environment through forward-looking strategies. Continuous communication with the outside world can enable enterprises to continuously obtain a large amount of information to enrich their cognitive knowledge reserves.

H1: Forward looking strategies have a positive impact on organization performance.

In the current era of big data, the information required by enterprises exists in multiple channels, and enterprises cannot focus solely on specific information channels according to traditional methods. Enterprises that cannot change their focus the greatly hindered in the process of obtaining information. Obtaining information from different perspectives can enhance a company's learning ability (Teece, 2007).

Dynamic capability is an unchangeable pattern formed during the long-term development of an organization's overall learning process. Through this pattern, an organization can reset or modify its operational processes, thereby improving efficiency. Newbert (2008) believes that dynamic capabilities are also organizational and strategic practices for enterprises to acquire new resource combinations.

Organizational learning is not only an internal activity within an organization but also involves absorbing external knowledge for organizational learning. Lin (2011) believes that organizational learning is a process of transforming learned organizational culture into usable knowledge and implementing innovation. Dong et al. (2021) believe that organizational learning is a cyclical process in which organizations analyze, transform, integrate, and standardize new knowledge and behaviors by creating and acquiring them to achieve shared vision and adapt to the constantly changing external environment. Organizational learning is a process of continuous innovation, where organizational members who are good at learning and innovation share and disseminate personal knowledge within the organization, transforming it into knowledge shared by the organization.

H2a: Organizational learning ability has a positive impact on organizational flexibility.

H2b: Organizational learning ability has a positive impact on organizational cognitive ability.

The relationship between digital innovation and dynamic capabilities of enterprises:

Organizational slack refers to the collection of resources beyond the normal production and operation of a company, which can be remined and utilized for other strategic decision-making plans of the organization. It consists of two parts: surplus resources that exceed production demand and resources that the enterprise has not yet utilized. It can alleviate resource competition between different projects and provide resource support for innovative activities. On the one hand, organizational slacks can serve as a buffer when responding to changes in the external environment, and on the other hand, it can also serve as a strategic driving force, driving the development of enterprise innovation activities. This is a resource that managers need to spend a lot of time, energy, and resources to identify and utilize. Under the theory of dynamic capabilities, for enterprises to obtain sustainable competitive advantages, they need to actively respond to external demands and adjust internal resource allocation in a timely manner, continuously improve their own capabilities, and adapt them to constantly changing market conditions. Warner (2019) proposed that in a constantly changing market environment, a company's dynamic capabilities are fundamental to its sustained competitive advantage.

Enterprises not only need to think about how to survive in fierce market competition but also understand how to use established redundant resources to create greater growth space for the enterprise and promote high-quality development. The theory of corporate behavior suggests that when a company establishes a large number of redundant resources, it can stimulate the vitality of innovation. This is because innovation activities themselves require a large amount of resource support, and idle resources can be directly invested in innovative activities to achieve value recreation; Secondly, innovation investment has drawbacks such as long cycles, high risks, and unclear output effects. Therefore, enterprises are very cautious in the process of innovation strategy decision-making, and the abundant redundant resources boost their confidence in implementing innovation strategies; Thirdly, innovation activities

produce heterogeneous knowledge, technology, products, and services, which can help enterprises stand out in fierce market competition.

H3a: Innovation capability has a positive impact on organizational flexibility.

H3b: Innovation ability has a positive impact on organization cognitive ability.

The dynamic capabilities of enterprises can explain how they create profits. Based on the resource-based view theory, dynamic capabilities can also explain the performance differences of different enterprises. Although dynamic capabilities can help businesses increase performance, they can also increase costs for businesses. If a company can reasonably utilize its dynamic capabilities to organize and restructure its internal and external resources, it can transform resources into performance (Vial, 2019).

H4a: Organizational flexibility has a positive impact on organization performance.

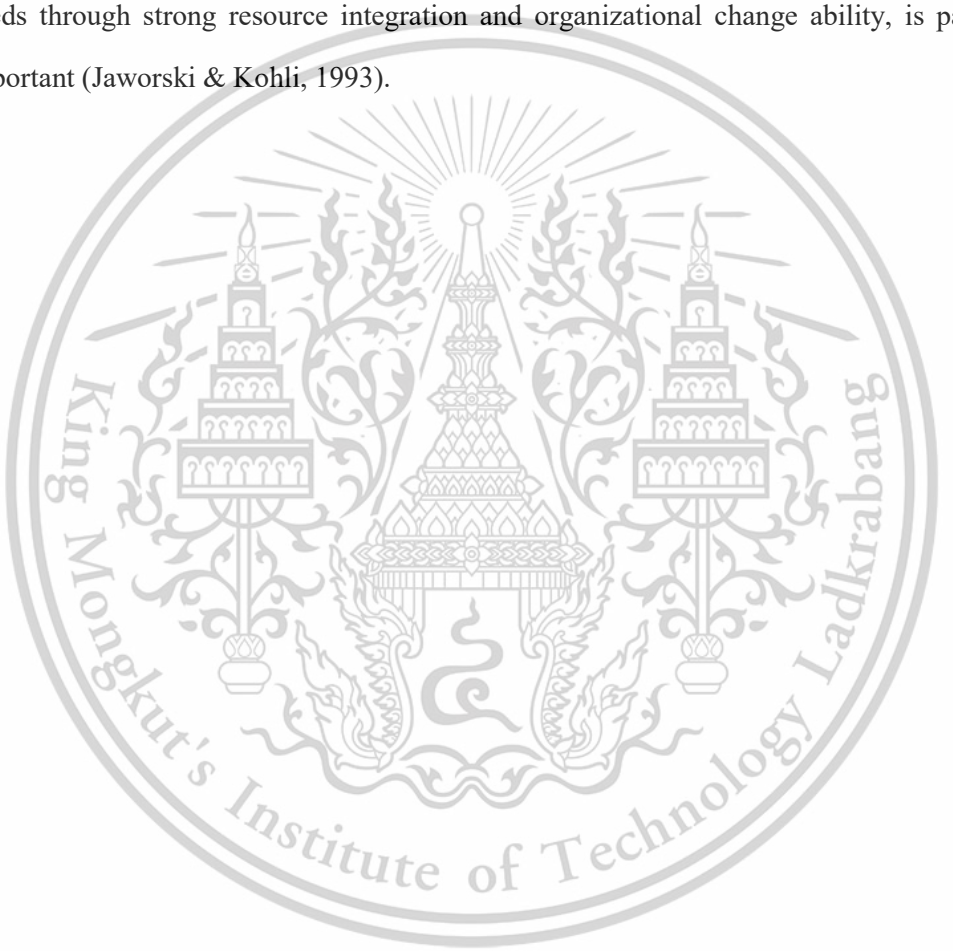
H4b: Organizational cognitive ability has a positive impact on organization performance.

H5a: Market dynamics have a positive moderating effect on the relationship between organizational flexibility and organization performance.

H5b: Market dynamics have a positive moderating effect on the relationship between cognitive ability and organization performance.

The dynamic nature of the market environment can lead to changes in corresponding preferences or behaviors of the market, consumers, and others, which can pose challenges to the development of enterprises (Miller & Friesen, 1983; Chmielewski & Paladino, 2007). According to contingency theory, excellent organizational performance is the result of internal behavior, organizational capability variables, and external variables such as the market environment in which the organization is located being adapted and coordinated. From the static analysis perspective of contingency theory, Burns and Stalker (1961) found through tracking research on enterprises in different industries that frequent market environment changes are often accompanied by the organization's mobilization of dynamic capabilities and management behaviors, in order to help enterprises achieve a match between the organization and the external environment. However, in a dynamic market environment, due to the rapid changes in market demand and threats from competitors, more and more nonstructural problems have emerged, and even a series of new methods of creating value have emerged.

Static capabilities rapidly depreciate or fail with the dynamic changes in the environment, putting enterprises at risk of being unable to match their capabilities with changes, weakening the contribution of ordinary capabilities to enterprise performance, Enterprises cannot improve operational efficiency and maintain corporate performance in a repetitive and overlapping manner. At this point, the ability to predict and perceive potential or ongoing customer needs and market changes through the environmental perception ability in dynamic capabilities, and on this basis, the ability to meet constantly changing market and customer needs through strong resource integration and organizational change ability, is particularly important (Jaworski & Kohli, 1993).



CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

In the process of exploring the impact of forward-looking strategies on corporate performance, this study focuses on the impact of forward-looking strategies from two aspects: enterprise dynamics and market dynamics. The reason for conducting research from two levels is that the research at the organizational level of the enterprise itself is in line with traditional corporate strategies and can directly reflect the ways and results of forward-looking strategies on enterprise performance. Secondly, the impact of market dynamics on corporate performance can better reflect the significance and connotation of forward-looking strategies. Finally, a research paradigm with multiple perspectives, methods, and data sample sources is adopted to enhance the robustness of research conclusions.

The main reason why this study adopts the path of 'strategy-dynamic capability-performance' to study the impact of forward-looking strategy on corporate performance is that the connotation and purpose of forward-looking strategy lie in the rapid responsiveness of enterprises to the market, and the innovation requirements for their enterprises are relatively high. To achieve the purpose of forward-looking strategy, enterprises need to self-innovate on existing resource elements. Secondly, forward-looking strategies are committed to exploring the market and attempting to find new market opportunities in unstable environments. Enterprises that use forward-looking strategies can better grasp new market opportunities and stay ahead in market competition. The dynamic theory also points out that performance is an additional reward for a company's self-innovation and does not exist in a static cycle. Therefore, studying the impact of dynamic perspectives on company performance can better understand the changes in the company itself during the implementation of strategies, such as organizational structure and flexibility.

3.2 Questionnaire Survey

The questionnaire survey method is the most popular empirical research method in management research. Based on literature review, this study designed a scientific survey questionnaire, distributed, and collected large samples through relevant channels, and collected relevant survey data for the study. Reliability and validity tests were conducted to prepare for the next empirical research statistical analysis.

Through the theoretical analysis in the above chapters, the research framework of this study has been determined. This study designs a questionnaire measurement scale based on scientific principles to obtain first-hand research data. This study reviews previous literature and preliminarily forms a measurement scale for cost research. Then, research data is obtained through questionnaire surveys, and various measurements of management and dynamic capabilities and performance in the research model are analyzed. Finally, the preliminary scale was further revised through small sample testing.

Based on constructing a conceptual model and initially forming a variable measurement scale, it is necessary to design corresponding survey questionnaires based on the research object of this study. Given that this study focuses on technology-based enterprises, it is necessary to clearly define the scope of the object of research. The previous text, based on domestic and foreign scholars and a series of national regulations and rules, gave the definition of a technology-based enterprise, locking it as a knowledge intensive economic entity engaged in product research, development, production, sales, and services in the fields of electronic information, new material technology, high-tech services, and other fields.

To ensure the reliability and validity of the survey, this study strictly controls all aspects of the survey:

1. Given that the research questions focus on organizational level strategy, capabilities, and performance, it is necessary to review and confirm that the respondents to the questionnaire before conducting the survey are executives who have a comprehensive understanding of the company's overall situation.

2. Before filling out the questionnaire, members of our research group explained to the participants the non-commercial purpose and confidentiality principles of the questionnaire

collection, in order to eliminate the concerns of the survey subjects and ensure the authenticity and effectiveness of the questionnaire results.

3.3 Literature Research

This study is based on existing literature research results and summarizes and deduces research literature on forward-looking strategies, dynamic capabilities, and market dynamic capabilities. Literature research mainly includes concept connotation, dimension division and definition, and impact effects. Literature research lays a theoretical foundation for subsequent research such as questionnaire design, hypothesis formulation, theoretical model construction, and research conclusions and discussions.

In the second chapter of the literature review, this chapter addresses the shortcomings of previous research and proposes the main issues to be addressed in this study.

1. Can forward-looking strategies promote the improvement of dynamic capabilities in technology-based enterprises?

Forward-looking strategy has always received continuous attention from scholars, but most of the research on forward-looking strategy focuses on environmental theory. Scholars have not reached a consensus on the formation of dynamic capabilities of enterprises through forward-looking strategy, especially in the division of dimensions of dynamic capabilities. This study further explores the impact of forward-looking strategies on dynamic capabilities of enterprises from a theoretical perspective.

2. Can forward-looking strategies improve corporate performance through the formation of dynamic capabilities?

Although previous scholars have conducted sufficient theoretical discussions on the dynamic capabilities of enterprises, their research presents different perspectives. Some scholars believe that dynamic capabilities can have a positive impact on enterprise performance, while others believe that the impact of dynamic capabilities on enterprise performance is not significant. Therefore, this study further explores the relationship between dynamic capabilities and corporate performance.

3. Has the impact of forward-looking strategies on corporate performance changed in the context of high levels of market dynamics?

Existing research has studied the relationship between market dynamics and corporate performance from both theoretical and empirical perspectives, but scholars have varying perspectives. Some scholars believe that market dynamics have a positive moderating effect on corporate performance, while others believe that the impact of market dynamics on corporate performance is not significant. Therefore, this study further explores the relationship between market dynamics and corporate performance.

3.4 Questionnaire Design Principles

It is generally believed that questionnaire design should mainly use mature scales because these mature scales are developed by scholars through extensive empirical research work and have been repeatedly validated by subsequent scholars. However, continuing to use mature scales has certain limitations for new research. Therefore, for variables that are not yet mature in current research, researchers need to design relevant scales for measurement. Considering the accuracy of the measurement and the acceptance level of the measurement scale for the respondents, this study follows scholars to use Likert's 5-point scale for questionnaire design.

3.4.1 Likert's 5-point scale

The Likert scale is the most commonly used equidistant scale in the field of social sciences, commonly used to measure concepts, attitudes, or opinions. The Likert scale is the most commonly used type of rating summation scale, where items belonging to the same construct are scored using a summative approach, and individual or individual items are meaningless, also known as a cumulative scale. This scale consists of a set of statements, each of which has five responses: strongly agree, agree, disagree, strongly disagree, and are recorded as 5, 4, 3, 2, and 1 respectively. The total score of each respondent's attitude is the sum of their scores on each question, which can indicate their attitude strength or their different states on this scale.

The questionnaire in this study is designed based on the Likert scale method. This indicator adopts a 5-point scoring method, where 5 points indicate that the respondents strongly agree with the description of the project in the project. The degree of agreement decreases in order of 4, 3, and 2 points, with 1 point indicating strong disagreement. Therefore, the responses of survey respondents are mainly based on subjective evaluation, which may affect the objectivity and accuracy of the measurement.

This scale specifies the purpose of the scale:

Before starting the design, it is necessary to clarify the purpose and expected results of the scale. Ensure that the goals of the scale are consistent with actual needs and avoid designing scales that are too complex or lack specificity.

Scale content verification: after the preliminary design of the scale is completed, content verification is required to ensure that the problem is expressed clearly and accurately, and to avoid ambiguity or misunderstanding, it can invite some target audiences to participate in trial filling, collect feedback, and modify and improve the scale.

Sample representativeness: selecting representative samples is the key to ensuring the validity of the scale. To ensure that the sample source is extensive and can reflect the true attitudes and viewpoints of the target group. At the same time, the sample size should also be large enough to improve the reliability of the results.

Statistical analysis methods: after collecting data, appropriate statistical analysis methods should be used to process the results. Common statistical analysis methods include descriptive statistics, reliability analysis, validity analysis, etc. These methods can be used to evaluate the reliability, consistency, and effectiveness of the scale.

For variables that are not yet mature in existing literature, this study compiled their corresponding research scales based on the literature review. At the same time, based on the information obtained from the literature review, the mature scales were supplemented. When formulating questions, make them relevant to the research direction, express them concisely and easily understandable, avoid ambiguity to prevent poor understanding. At the same time, when designing questions, they do not involve social taboos, and the questions do not have any hints or tendencies.

3.4.2 Back translation of terms

The mature scales used in this study are mostly derived from English literature, so they are all presented in English form. The main survey subjects of this study are enterprises operating in China, and all respondents answered in Chinese. Therefore, it is necessary to accurately translate the original English measurement terms into Chinese. Back translation refers to the process and expression of translating content written in another language into the original text. There are three types of back translation: back translation for testing, back translation for research, and mechanical back translation. Accurate translation is crucial, as inaccurate translation can cause the translation to deviate from the original meaning of the terms, thereby affecting the research results. In order to improve the accuracy of translation, this study adopts a research-based back translation method, which first translates English into Chinese, and then back translates Chinese into English, and compares it with the original English terms (Lie, 2019). In the specific operation of this study, two professionals translated the original English terms into Chinese, and then another two professionals translated the Chinese terms back into English and compared them with the original English terms. The measurement terms with ambiguities and differing opinions were repeatedly discussed, and a final Chinese scale was formed after reaching an agreement.

3.5 Population and Sample Size

In research methods, sample size is a crucial step that directly affects the accuracy and reliability of research results. This study used simple random sampling and systematic sampling: $n=N/(1+N\times e^2)$, n is the sample size, N is the population capacity, and e is the sampling error.

On the basis of literature review, this study designed a scientific survey questionnaire, distributed, and collected large samples through relevant channels, and collected relevant survey data for the study.

This study designs a questionnaire measurement scale based on scientific principles to obtain first-hand research data. This study reviewed previous literature and preliminarily developed a measurement scale for cost research. Then, research data was obtained through

questionnaire surveys, and various observations of management and dynamic capabilities and performance in the research model were analyzed. Finally, the preliminary scale was further revised through small sample testing.

This study uses non-probability sampling to select 125 enterprises in Guizhou province, Western China, with a focus on technology as the survey sample.

Since the 1990s, the economic construction of the region has experienced rapid development. So far, the information technology in the region has been at the forefront of China's information technology, with the growth rate of the digital economy ranking first in China for seven consecutive years, and the added value accounting for about 37% of GDP. The revenue growth rate of the software and information service industry has remained the first in the country for 17 consecutive months, with a total increase of five times compared to five years ago, driving more than 25000 enterprises to carry out big data integration and transformation.

3.6 Acquisition of Research Data

The survey questionnaire for this study was distributed to manufacturing enterprises within various industrial clusters. In order to improve the response rate of the questionnaire and ensure its effectiveness and reliability, this study mainly collected data through the following channels:

1. Entrust relevant industry institutions (including but not limited to the Digital Economy Development and Reform Association, the Economic and Information Technology Committee, etc.) to distribute and collect survey questionnaires. The survey questionnaire here is commissioned for distribution. In order to ensure the accuracy of the survey subjects, it is required that the personnel distributing the questionnaire strictly follow the cluster enterprise classification in government related industry and park planning during the debugging process and select cluster manufacturing enterprises in their respective regions as the research objects.

2. Distribute survey questionnaires through the network of colleagues, classmates, or friends. The survey questionnaire here is commissioned for distribution. In order to ensure the accuracy of the survey subjects, the author repeatedly explained the importance of the survey

subjects belonging to cluster enterprises to the participants before distributing the questionnaire and maintaining contact with distributors throughout the distribution and collection process. When it is uncertain whether the survey object belongs to a cluster enterprise, the author actively communicates with the respondents to ensure that the survey object belongs to a cluster enterprise.

3. The researcher contacts 10 eligible cluster enterprises in advance for on-site questionnaire surveys. Require middle and senior management personnel of cluster enterprises to fill out the form. The author has a strong connection with these 10 research subjects, so the cluster enterprise attributes of these 10 research subjects are well guaranteed.

The acquisition of research data is the first step in conducting empirical research, and the quality of the data has a significant impact on the subsequent research analysis and conclusions.

This study mainly focuses on the impact of a company's dynamic capabilities and performance in a dynamically changing environment. Therefore, this study mainly considers the following four aspects when selecting sample subjects:

1. Regional factors: this study mainly focuses on the performance of technology-based enterprises, and the survey is mainly conducted in representative regions. This study selects typical region from Guizhou provinces in China for comprehensive research.

2. Industry characteristics: according to the research direction of this study, the research mainly focuses on technology-based enterprises, such as knowledge intensive economic entities engaged in product research, development, production, sales, and services in the fields of electronic information, new material technology, and high-tech services.

3. Enterprise characteristics: on the basis of meeting industry selection requirements, the selected enterprises should cover different scales and have a minimum establishment period of 5 years.

4. Characteristics of enterprise respondents: based on this study, to ensure that respondents have a good understanding of the enterprise and the ability to make objective evaluations of the enterprise, this study mainly focuses on the management of the enterprise as the research object.

3.7 Statistical Analysis

Statistical analysis is mainly used for empirical testing of research hypotheses and theoretical models. The statistical analysis methods used in this study mainly include Descriptive Statistics, Klenbach α, Cronbach's Coefficient α, Factor Analysis, Multiple Linear Regression Analysis, and Structural Equation Modeling were used using statistical analysis free statistic software.

3.7.1 Reliability Testing

The commonly used reliability indicators for reliability testing include stability, equivalence, and internal consistency (Yang et al., 2024). This study mainly focuses on the Cronbach's correlation coefficients of the project population for each variable α The coefficient is used as the evaluation criterion to test internal consistency. The minimum acceptable value for the reliability of the tested sample data is the item population correlation coefficient (CITC) greater than 0.35, Cronbach's α The coefficient is greater than 0.70.

3.7.2 Descriptive Statistics

Descriptive statistics refers to the activities of using tables and classifications, graphics, and calculation of summary data to describe the characteristics of data.

Descriptive statistical analysis belongs to the relatively basic data analysis, and common analysis methods include comparative analysis, mean analysis, cross analysis, etc. Descriptive statistical analysis requires a statistical description of all variables related to the survey population, including frequency analysis, trend analysis, dispersion analysis, distribution, and basic statistical graphs.

3.7.3 Multiple Linear Regression Analysis

In practice, there are usually two or more dependent variables that have an impact on the explanatory variable. Regression analysis of explanatory variables and multiple dependent variables that exhibit linear relationships belongs to multiple linear regression. (from this, it can also be seen that its applicable conditions are to identify the impact of multiple

explanatory variables on the dependent variable, and generally the dependent variable belongs to a fixed order or higher level.)

Before conducting multiple linear regression, it is necessary to perform Pearson correlation (univariate screening) on the explanatory variable and the dependent variable one by one. Generally, when the absolute value of the Pearson correlation is above 0.3, it can be considered that these two variables are correlated. Otherwise, regression on unrelated variables is meaningless.

3.7.4 Structural Equation Modeling

Structural Equation Modeling (SEM) is suitable for application in scientific research, mainly due to its unique advantages and characteristics. Firstly, SEM can simultaneously handle multiple variables, including direct and indirect effects, revealing complex relationships between variables in complex systems, which is difficult to achieve with traditional regression models. Secondly, it allows for measurement errors in both independent and dependent variables, providing more accurate estimates of variable relationships and enhancing the reliability of the model. In addition, SEM can perform model validation, confirming the rationality of the model through fitting tests and other steps to ensure the reliability of the analysis results. In research, SEM can verify theoretical hypotheses, explore latent variables, handle complex causal relationships, and provide powerful tools for theoretical construction and testing. Its flexibility, comprehensiveness, and ability to handle complex relationships make it the mainstream statistical technique for quantitative research in the social sciences.

Structural Equation Modeling is a model that integrates confirmatory factor analysis and path analysis, which includes both measurement and structural models; It breaks through the traditional approach of handling single factors, allowing for the simultaneous handling of multiple dependent variables and the estimation of multiple factor structures and relationships. This allows for the simultaneous consideration of the relationship between latent variables and observed variables, as well as between latent variables and latent variables.

3.8 Form Measurement Clauses

The main research variables involved in this study include organizational dynamic ability, organizational learning ability (alertness, information collection, information integration), digital innovation (ambidextrous innovation, slack innovation), organizational flexibility (organizational restructuring, resource flexibility, technology flexibility), organizational cognitive ability, market dynamics and organizational performance.

3.8.1 Initial Measurement Clause of Organizational Learning Ability

As mentioned in the literature review section of this study, the concept of organizational learning was first proposed by the scholar March and Schon in 1958, and it is believed that organizational learning is a kind of social behavior for organizations to achieve change. In order to adapt to the increasingly complex internal and external management environment, the organization realizes the improvement of the ability and knowledge required by the growth of the organization through systematic and hierarchical learning and successfully overcomes the obstacles to achieving change. A similar concept in psychology is attention shifting, which is mainly used to investigate whether individuals can quickly switch between different tasks, become interested in new topics, and pay attention to different problems at the same time.

Based on the existing literature and the definition of organizational learning ability, this study adapted the scale of attention shift at the individual level into the scale of enterprise level with reference to Derryberry and Reed (2002). In the process of adaptation, it refers to the measurement methods of relevant research in the field of management and combines the data obtained from small-scale interviews.

Among the numerous scales used to measure organizational learning, the ones developed by Sinkula et al. (1997) and Baker and Sinkula (1999) are the most comprehensive and widely cited (Zhou, 2007). Sinkula et al. (1997) divided organizational learning into three dimensions from the perspective of market information processes: Commitment to Learning (CTL), Shared Vision (SV), and Open Mindedness (OM). The commitment to learning refers to the enterprise viewing organizational learning as the highest value, measured by four items. Sharing vision refers to senior management and employees in an organization sharing their

views on the future of the company, hoping to turn them into a common understanding, measured by three items. Open mindedness refers to members of an organization not only expressing themselves in familiar ways, but also engaging in innovative thinking, measured by three items. Cao (2016) used this scale in his research on organizational learning. Baker and Sinkula (1999) expanded the measurement scale to six based on Sinkula et al.'s (1997) measurement. As seen in Table 3.1, the measurement scale used in this survey was designed based on previous research.

Table 3.1 Initial measurement terms of organizational learning ability

Variable	Item	Content
Collection	LC1	Enterprises often dispatch personnel to learn new technologies, knowledge, or participate in exchange meetings.
	LC2	Enterprises can provide appropriate training resources to help employees continuously improve their skills and knowledge.
	LC3	Various forms of activities are held in enterprises to promote the dissemination of new knowledge.
	LC4	When formulating new strategies or policies, companies can collect relevant market information in advance.
Alertness	LA1	The company remain sensitive to changes in the market and industry.
	LA2	When formulating new strategies, enterprises can timely identify potential opportunities, threats, strengths, and weaknesses.
	LA3	There is a team or mechanism within the enterprise specifically responsible for monitoring market changes.
	LA4	The company pay attention to market changes and consider their potential impact on business.
Integration	LI1	The enterprise has established an effective knowledge management system to promote information sharing and transmission.
	LI2	Internal information integration within enterprises is crucial for improving work efficiency and decision-making quality.
	LI3	The company can effectively integrate or apply existing or newly acquired knowledge to different contexts.
	LI4	The company is able to flexibly apply existing or newly acquired knowledge to cope with environmental changes.

The reliability coefficient value of the information collection clause is 0.656, which is greater than 0.6, indicating that the reliability quality of the research data is acceptable. For 'α coefficient of deleted items', the reliability coefficient does not increase significantly after any item is deleted, so it indicates that the item should not be deleted. To sum up, the research data

reliability coefficient value is higher than 0.6, which comprehensively indicates that the data reliability quality of information collection terms is acceptable.

Table 3.2 Cronbach reliability analysis of information collection terms

Item	CITC	Cronbach α if item deleted	Cronbach α
LC1	0.578	0.485	
LC2	0.402	0.614	0.656
LC3	0.316	0.663	
LC4	0.461	0.571	

The reliability coefficient of alertness is 0.681, which is greater than 0.6, indicating that the reliability quality of the research data is acceptable. For "α coefficient of deleted items", the reliability coefficient not increase significantly after any item is deleted, so it indicates that the item should not be deleted. The CITC values of the analysis items are greater than 0.4, which indicates that there is a good correlation between the analysis items and also indicates that the reliability level is good. To sum up, the reliability coefficient of the research data is higher than 0.6, which comprehensively indicates that the reliability quality of the vigilance clause is acceptable.

Table 3.3 Cronbach's Alpha Analysis of the Vigilance Clause

Item	CITC	Cronbach α if item deleted	Cronbach α
LA1	0.402	0.652	
LA2	0.404	0.653	0.681
LA3	0.436	0.636	
LA4	0.624	0.502	

The reliability coefficient for information integration ability stands at 0.701, surpassing the threshold of 0.7, thereby attesting to the excellent reliability and quality of the research data. Regarding the ‘α coefficient with deleted items’, even with the deletion of any item, there is no significant increase in the reliability coefficient, suggesting that such items should not be removed. In conclusion, with reliability coefficient values above 0.7, the data demonstrates high quality and is suitable for further analysis.

Table 3.4 Cronbach reliability analysis of information integration capability clause

Item	CITC	Cronbach α if item deleted	Cronbach α
LI1	0.492	0.634	
LI2	0.418	0.678	0.701
LI3	0.382	0.698	
LI4	0.667	0.510	

3.8.2 Initial measurement terms of digital innovation capability

The importance of enterprise diversification strategy has increased with the emergence of industrial digitalization (Dragan et al., 2016). The competition among enterprises is fierce. In order to maximize profits, the company should use the strategy to integrate and form the optimal market structure. Diversified companies may use Internet technology to realize the integration of different channels and expand the advantages of market structure. According to the theory of enterprise behavior, when an enterprise establishes a large number of slack resources, it can stimulate the vitality of enterprise innovation. This is because the innovation activity itself needs the support of a large number of resources, and the idle resources can be directly invested in the innovation activity to realize the recreation of value. Second, innovation investment has the disadvantages of long cycle, high risk and unobvious output effect, so enterprises be very cautious in the process of innovation strategy decision-making, and the rich slack resources boost the confidence of enterprises in implementing innovation strategies. Third, innovation activities produce heterogeneous knowledge, technology, products and services, which can make enterprises stand out in the fierce market competition. The concept of dualism has the realization of structural dualism. To realize organizational duality by dividing the internal structure of the organization, that is, to let one part of the business unit of the organization specialize in development activities to meet the needs of existing customers and cope with existing market competition, while another part of the business unit is dedicated to exploratory activities, focusing on the long-term development of the organization and exploring new resources and sources of long-term competitive advantage.

Based on the existing literature and the connotation definition of digital innovation capability, this study formulates the initial measurement terms of digital innovation capability.

There are currently three main categories of organizational redundancy classification. One is that Singn (1986) classified redundant resources into unabsorbed redundancy and absorbed redundancy based on the state of redundancy in the organization. Unabsorbed redundancy refers to temporarily idle resources that can be utilized (Zhou et al., 2022). These resources have strong liquidity and can be directly applied to new goals (Jie, 2016); Absorbed redundancy refers to resources that have already been invested in a specific target (Tang et al., 2003), which have been solidified in a specific program and need to be identified and redeveloped before they can be applied again to other targets (Liu et al., 2018). Secondly, Bourgeois (1981) classified redundant resources into usable redundancy, exploitable redundancy, and potential redundancy based on the difficulty of resource recovery. Exploitable redundant resources refer to resources that have not been invested in an organization or organizational program and can be directly utilized, while exploitable redundancy refers to resources that have already been invested in an organization or organizational program and need to be identified and redeveloped before they can be utilized; Potential resources refer to additional resources that can be obtained in the environment (Xu et al., 2020). Thirdly, Sharfman (1998) classified resources into easily recognizable redundancy based on the degree to which they are easily recognizable and utilized by managers, that is, resources that managers can easily identify and develop; And redundancy that is difficult to identify.

From the perspective of innovation, starting from organizational structure, He et al. (2004) studied manufacturing enterprises and found that organizational structures with higher mechanization promote exploitative innovation, while organizational structures with higher flexibility promote exploratory innovation. Starting from organizational resources, Xia et al. (2012) and Wang et al. (2016) found that different types of organizational resources have different effects on dual innovation. From the perspective of organizational culture, Li et al. (2019) explored the relationship between learning inertia and experiencing inertia and exploratory innovation and exploitative innovation in enterprises. They found that learning inertia and experience inertia significantly promote exploitative innovation in enterprises,

while there is a non-linear U-shaped relationship between learning inertia and exploitative innovation in enterprises, that is, too strong or too weak learning and experience inertia are not conducive to exploitation in enterprises. From the perspective of organizational strategy, the research of Yao et al. (2019) and Wang et al. (2020) found that different organizational strategies can also affect the innovation behavior of enterprises. Among them, enterprises can significantly promote dual innovation by implementing market oriented and IT oriented strategies. As seen in Table 3.5, the measurement scale used in this survey was designed based on previous research.

Table 3.5 Initial measurement terms of digital innovation capability

Variable	Item	Content
Slack	DS1	The company encourages the proposal of new ideas and solutions.
	DS2	The company has sufficient resources and support to implement innovation.
	DS3	The company strictly controls the staffing of its resources.
	DS4	There are slack innovative projects or teams within the company.
Ambidextrous	DA1	The company utilizes digital technology to achieve intelligence and flexibility.
	DA2	The company applies digital technology to promote comprehensive information integration and analysis and optimize enterprise management decisions.
	DA3	The company is able to quickly understand new knowledge obtained from external sources.
	DA4	Newly acquired knowledge from external sources can stimulate the company's existing knowledge to take effect.

The reliability coefficient is 0.616, which is greater than 0.6, indicating that the reliability quality of the research data is acceptable. For "α coefficient of deleted items", the reliability coefficient does not increase significantly after any item is deleted, so it indicates that the item should not be deleted. To sum up, the reliability coefficient of the research data is higher than 0.6, which comprehensively indicates that the reliability quality of the data is acceptable.

Table 3.6 Cronbach reliability analysis of slack innovation capability clause

Item	CITC	Cronbach α if item deleted	Cronbach α
DS1	0.417	0.538	
DS2	0.350	0.579	0.616
DS3	0.355	0.588	
DS4	0.486	0.478	

The reliability coefficient of ambidextrous innovation is 0.627, which is greater than 0.6, indicating that the reliability quality of research data is acceptable. For "α coefficient of deleted items", the reliability coefficient does not increase significantly after any item is deleted, so it indicates that the item should not be deleted. To sum up, the reliability coefficient of the research data is higher than 0.6, which comprehensively indicates that the reliability quality of the data is acceptable.

Table 3.7 Cronbach reliability analysis of ambidextrous innovation capability clause

Item	CITC	Cronbach α if item deleted	Cronbach α
DA1	0.406	0.557	
DA2	0.360	0.590	0.627
DA3	0.377	0.578	
DA4	0.487	0.492	

3.8.3 Initial measurement terms of organizational flexibility

Taking the organizational system as the research object, researchers also made a further dimension division of organizational flexibility from the perspective of the relationship between organizational flexibility and enterprise performance, the relationship between organizational flexibility and innovation, and the relationship between organizational flexibility and coping with environmental changes. It includes structural flexibility, technical flexibility, personnel flexibility, process flexibility, resource flexibility, innovation flexibility and cultural flexibility (Jiang, 2014), production flexibility, human resource flexibility, financial flexibility, organizational structure flexibility (Zhao, 2012), forward-looking

flexibility and response flexibility, first mover flexibility, second mover flexibility (Celuch, 2007) and other dimensions. The enterprise's ability of resource reconstruction means that the enterprise can recombine, restructure and optimize the allocation of resources, and then realize the innovation of business model. This is because resources are the basis of a business model, and business model elements such as value proposition, value creation, value transmission and value acquisition are inseparable from resources. Accordingly, the change and reconstruction of resources means the change and innovation of business models. Among them, forward-looking flexibility mainly emphasizes the initiative and advance ability training and application adopted by the organization to maintain its competitive advantage in the changing environment. Response flexibility is the ability of an enterprise to respond and adjust to environmental changes that have occurred.

Based on the existing literature and the definition of organizational flexibility, this study formulates the initial measurement terms of organizational flexibility.

Some scholars have divided the dimensions of organizational flexibility based on the systematicity and integrity of the organization. From the perspective of strategic management and taking organizational systems as the research object, Ansoff (1965) first divided flexibility into internal flexibility and external flexibility. External flexibility refers to the adaptability of enterprise strategy to the external environment, which can minimize the consequences of enterprise failure through diversified products and market trends. Internal flexibility refers to the ability of enterprises to implement strategies and find buffer zones for their response to failure through the flow of internal resources. Eppink (1978) classified flexibility into strategic flexibility, operational flexibility, and competitive flexibility based on the relationship between flexibility and unpredictable change. Sanchez (1997) believes that flexibility includes two aspects, namely resource flexibility and coordination flexibility. Resource flexibility reflects the existing resource characteristics of an enterprise, which reflects the purpose and scope of the resources themselves and also indicates the enterprise's ability to utilize resources. Coordination flexibility reflects the organizational structure characteristics of an enterprise, which refers to the ability of relevant management or staff to reallocate, construct, and allocate resources in order to fully utilize enterprise resources for new strategic purposes. Taking organizational systems as the research object, researchers have

further divided organizational flexibility into dimensions from the perspectives of the relationship between organizational flexibility and corporate performance, the relationship between organizational flexibility and innovation, and the relationship between organizational flexibility and coping with environmental changes. Involving structural flexibility, technological flexibility, personnel flexibility, process flexibility, resource flexibility, innovation flexibility, and cultural flexibility (Jiang et al., 2014; Xiang et al., 2012); Production flexibility, human resource flexibility, financial flexibility, organizational structure flexibility (Cheng, 2009; Zhao et al., 2012), as well as forward-looking flexibility and responsive flexibility. Dimensions such as initial flexibility and subsequent flexibility (Evans, 1991; Karri, 2001; Celuch, 2007). Among them, forward-looking flexibility mainly emphasizes the proactive and proactive ability cultivation and application adopted by organizations to maintain their competitive advantage in environmental changes. Flexibility in response refers to the ability of enterprises to react and adjust based on environmental changes that have already occurred. After studying the flexibility dimensions divided by scholars, then drew on the views of previous scholars and designed measurement items for enterprise flexibility in this study as seen in Table 3.8.

Table 3.8 Initial measurement terms of organizational flexibility

Variable	Item	Content
Reconstruction	OR1	The organizational structure of enterprises has sufficient flexibility to adapt to changes in the market and environment.
	OR2	When formulating strategic plans, enterprises fully consider the uncertainty of the internal and external environment of the organization.
	OR3	In enterprises, organizational change can proceed smoothly without having too many negative impacts on the business.
	OR4	In enterprises, the decision-making process of organizations is flexible enough to adapt to different situations.
Technology	OT1	Technological flexibility greatly improves the production efficiency of enterprises.
	OT2	Technological flexibility greatly helps to enhance the flexibility of enterprises in responding to market changes.
	OT3	Technological flexibility can enhance the competitiveness of enterprises.

	Table 3.8 (Continue)	
Resource	OX1	Resource information can be shared among various departments of the company.
	OX2	The company has sufficient resources to adapt to the rapidly changing market environment.
	OX3	Resource flexibility provides sufficient selection space for integrating resources and forming capabilities, which is conducive to the transmission of competitive advantages for enterprises.

In the self-knowledge flexibility, the reliability coefficient values of the three item reorganization ability, resource flexibility and were 0.562, 0.482 and 0.510, respectively, which were less than 0.6, indicating that the reliability quality of the research data was weak. For "α coefficient of deleted items", the reliability coefficient does not increase significantly after any item is deleted, so it indicates that the item should not be deleted. In the implementation of large-scale questionnaires, the items be modified, and the sample size is increased to improve the reliability level.

Table 3.9 Cronbach reliability analysis of organizational restructuring capability clause

Item	CITC	Cronbach α if item deleted	Cronbach α
OR1	0.344	0.493	
OR2	0.338	0.497	0.562
OR3	0.407	0.436	
OR4	0.298	0.528	

Table 3.10 Cronbach reliability analysis of flexible terms of organizational resources

Item	CITC	Cronbach α if item deleted	Cronbach α
OX1	0.410	0.174	
OX2	0.257	0.467	0.482
OX3	0.252	0.462	

Table 3.11 Cronbach reliability analysis of organizational technology flexibility clause

Item	CITC	Cronbach α if item deleted	Cronbach α
OT1	0.415	0.275	
OT2	0.265	0.532	0.510
OT3	0.314	0.428	

3.8.4 Initial measurement terms of Organizational Cognition

It is defined from the perspective of cognitive style. Organizational learning is the process of correcting the mistakes or anomalies that the organization is aware of, and it is also the cognitive process of organizational members' new views on the organization. The design idea of organizational cognition scale should first clarify the core dimensions of organizational cognition, such as organizational structure, organizational culture, organizational goals, etc.

On the basis of literature review, key variables and measurement indicators were extracted to ensure the validity and reliability of the content of the scale. The scale design should include multiple items to measure the cognitive status of the organization. At the same time, reduce the subjective deviation and improve the accuracy of measurement. Based on the existing literature and the connotation definition of enterprise cognition, this study formulates the initial measurement terms of organizational cognition.

There are two main directions for theoretical research on organizational cognition. The first viewpoint holds that an organization is a system with social memory that can store past experiential information and consciously extract relevant information (Krippendorff, 1975; Levitt & March, 1988; Dougherty & Kunda, 1991; Walsh, 1995). Another perspective holds that organizations are explanatory systems (Da & Weick, 1984) and are mental entities with the ability to think (Sandelands & Tableau, 1987). The behavioral patterns of an organization constitute the 'hardware' of organizational thinking, which reflects the organization's ideas, and, in addition, these ideas blend together in complex forms (Sandelands & Stablin, 1987; Walsh, 1995). Organizational cognition can influence strategic decision-making and execution (Walsh & Fahey, 1986; Ford & Baucus, 1987; Walsh, 1995). Organizational cognition can have a positive impact on companies due to factors such as increased efficiency (Roos & Hall, 1980; Fiol, 1994: Weick & Roberts, 1993: Walsh, 1995), as well as a negative impact on companies due to blind spots caused by always interpreting the information environment with the same knowledge structure (Zahra & Chaples, 1993; Starbucks & Hedberg, 1977; Shrivastava et al., 1987; Narayanan & Fahey, 1990; Walsh, 1995). After studying the

cognition dimension by scholars, then drew on the views of previous scholars and designed measurement items for cognition in this study as seen in Table 3.12.

Table 3.12 Initial measurement terms of Organizational Cognition

Variable	Item	Content
Internal	OI1	In enterprises, employees have the cognitive ability to quickly understand and adapt to new information.
	OI2	Every employee of the enterprise fully understands the enterprise 's strategy.
	OI3	Every employee of the enterprise fully understands the core values of the enterprise.
External	OE1	When formulating strategic plans, the leadership emphasizes profound insights into the market and industry.
	OE2	The enterprise has a keen understanding of market trends, competitors, and customer needs.
	OE3	Considering the existing external factors, the enterprise has strong competitiveness.

Table 3.13 Cronbach reliability analysis of internal cognitive terms of enterprises

Item	CITC	Cronbach α if item deleted	Cronbach α
OI1	0.368	0.392	
OI2	0.220	0.606	0.527
OI3	0.457	0.202	

Table 3.14 Cronbach reliability analysis of external cognitive terms of enterprises

Item	CITC	Cronbach α if item deleted	Cronbach α
OE1	0.373	0.422	
OE2	0.434	0.305	0.543
OE3	0.280	0.551	

The reliability coefficient values of internal cognition and external cognition of enterprises are 0.527 and 0.543, respectively, which are less than 0.6, indicating that the reliability quality of research data is poor. For "α coefficient of deleted items", the reliability coefficient does not increase significantly after any item is deleted, so it indicates that the item should not be deleted. In the implementation of large-scale questionnaires, the items are modified, and the sample size is increased to improve the reliability level.

3.8.5 Initial measurement terms of market dynamics

For a new type of product or project, on the basis of market segmentation research, the further work to be done is market positioning. Market positioning is very important. Correct market positioning enables the product to enter the market smoothly and establish its own brand. On the contrary, if the positioning is deviated, the marketing plan be seriously hindered, and even the product fails to enter the market. In the implementation of market positioning, the positioning model usually use is based on the two main tools of interest positioning: cognition and value. According to the three four rule matrixes, the competitive position of enterprises in a mature market is analyzed. In a stable competitive market, the participants in the market competition are generally divided into three categories: leader, participant and survivor. The winner is an enterprise that can have a significant impact on market changes, such as in terms of price, output, etc.; participants generally refer to enterprises with a market share between 5% and 15%. Although these enterprises cannot have a significant impact on the market, they are effective participants in market competition. The survivors are generally those who fill the local market segments. The market share of these enterprises is very low, usually less than 5%. Based on the existing literature and models, and the connotation definition of market dynamics, this study formulates the initial measurement terms of market dynamics.

From a market-oriented perspective, Menguc and Auh (2006) found that a market orientation composed of customer orientation, competitor orientation, and cross functional coordination significantly affects firm performance after controlling external environmental factors such as market turbulence, technological turbulence, and competition intensity. By implementing a market-oriented strategic positioning, it has an impact on the internal resource restructuring of the organization. Companies with strong market orientation usually use this market information for internal resource restructuring and organizational structure restructuring in the first place to build dynamic capabilities. When market orientation and internal complementary resources such as innovation work together, the impact of market orientation on corporate performance is significantly enhanced. In addition, the higher the degree of embedding innovation in the corporate social network structure, the greater its value as a supplementary resource.

The existing research on the influencing factors of the effect of environmental factors on dynamic capabilities. Firstly, environmental dynamism. Dynamic capabilities help businesses gain competitive advantage, but this impact depends on the level of dynamism in the external environment, which moderates the relationship between dynamic capabilities and business performance (Eisenhardt & Marin, 2000; Zahra et al., 2006). There are different views on the impact of external environments with different levels of dynamics on the mechanism of dynamic capabilities in existing research. Some scholars believe that the higher the degree of dynamics in the external environment, the negative impact it has on general capabilities, but the stronger the promotion effect on the role of dynamic capabilities. That is, the faster the changes in the market and competitive environment, the more likely enterprises are to rely on constantly changing capabilities to regain competitive advantages (Rindova & Kotha, 2001; Dmevich & Kriauciunas, 2011). Some scholars also believe that this effect forms a non-linear inverted U-shape, where at moderate dynamic levels, the relationship between dynamic capability and competitive advantage is strongest, while at low or high dynamic levels, the relationship between dynamic capability and competitive advantage is relatively weak (Sehilke, 2014). Gird and Whitington (2017) argue that organizational restructuring and strategic reorganization are two forms of dynamic capabilities. The dynamic nature of the environment weakens the positive effects between organizational restructuring and performance but enhances the positive effects between strategic restructuring and performance. In addition, existing research has also divided environmental dynamism into dimensions, including market dynamism, technological dynamism, etc., and further studied the moderating effects of market dynamism and technological dynamism on the relationship between supply chain dynamic capabilities, process flexibility, and cost efficiency (Vanpoucke et al., 2014). Environmental turbulence, Wilden and Gudergan (2015) examined the moderating effect of environmental turbulence composed of market, competitor, and technological turbulence on the relationship between dynamic capabilities and business operational capabilities. Firstly, the changing characteristics of competition, market, or technological environment have created changing business domains, resulting in a series of new value creation methods; Secondly, in order to address the capability gap, the company conduct opportunity perception and resource reallocation to determine the maximization of the value of its capabilities,

providing a foundation for the implementation of its marketing and technical capabilities. Therefore, in turbulent environments, perceptual ability has a stronger positive relationship with corporate marketing and technological capabilities. As seen in Table 3.15, the measurement scale used in this survey was designed based on previous research.

Table 3.15 Initial measurement terms of market dynamics

Variable	Item	Content
Market Dynamics	MD1	In the industry where your enterprise is located, you believe that the market changes rapidly.
	MD2	Enterprises often face new market opportunities.
	MD3	Market changes have a significant impact on the business of your enterprise.
	MD4	When formulating business plans, enterprises can fully consider the uncertainty of the market.
	MD5	Enterprises can actively seek strategies to adapt to market changes.

The reliability coefficient of market dynamics is 0.679, which is greater than 0.6, indicating that the reliability quality of research data is acceptable. For "α coefficient of deleted items", the reliability coefficient does not increase significantly after any item is deleted, so it indicates that the item should not be deleted. To sum up, the reliability coefficient of the research data is higher than 0.6, which comprehensively indicates that the reliability quality of the data is acceptable.

Table 3.16 Cronbach reliability analysis of market dynamic terms

Item	CITC	Cronbach α if item deleted	Cronbach α
MD1	0.453	0.623	
MD2	0.365	0.666	
MD3	0.553	0.579	0.679
MD4	0.426	0.632	
MD5	0.399	0.644	

3.8.6 Initial measurement of enterprise performance

The analysis of strategy driven performance indicators and the organizational performance model are a link and bridge between the organizational development goals and the key performance evaluation indicators of each department.

With the changes of the company's development strategy, business objectives, the company's external competitive environment and internal conditions, the company should regularly analyze the strategy driven performance indicators, so that the organizational performance model can be updated in time to guide the implementation of performance management. According to the organizational performance model, the key performance assessment indicators of the department and the key performance assessment indicators of the core positions are designed, and the corresponding weights are configured to ensure the validity and operability of the performance assessment. Based on the existing literature and models, and the definition of organizational performance, this study formulates the initial measurement terms of organizational performance.

Dmmevich and Kriauciunas (2011) explored the positive and negative contributions of capabilities to relative firm performance, as well as the impact of environmental dynamism and capability heterogeneity levels and demonstrated that dynamic capabilities have a positive impact on both business level and firm level performance. Schike (2014) divided the dynamic capabilities of enterprises into strategic alliance management capabilities and new product development capabilities and concluded that both of these capabilities can positively affect strategic and financial performance. Enterprise owners can observe the actual operational situation and management efficiency of the enterprise through its performance, which reflects the enterprise's operating efficiency and operator performance during a certain period of operation. The performance of enterprises can be measured by financial indicators such as profit and productivity, so some scholars choose financial indicators when measuring enterprise performance, and the acquisition of financial parameters is also relatively convenient. In addition, many scholars measure corporate performance from other perspectives, such as innovation, growth performance, entrepreneurial performance, economic performance, and organizational performance. Wilden and Gardner (2014) used seven indicators to measure corporate performance, namely sales revenue, sales growth rate, market share, market share growth rate, profit margin, return on capital, and net profit.

Simultaneously design a questionnaire based on the research scales of Lin and Wu (2014), Shi (2011), and Xu (2014).

Table 3.17 Initial measurement terms of organizational performance

Variable	Item	Content
Financial	PF1	The financial performance of an enterprise should be adjusted according to the enterprise 's strategy.
	PF2	The financial performance results of an enterprise can be used for evaluation and assessment.
	PF3	The innovation and research and development capabilities of an enterprise can reveal its future development potential and growth potential.
Environmental Sustainability	PE1	The enterprise is able to use eco-friendly technologies to reduce its carbon footprint.
	PE2	The enterprise is able to utilize technology to optimize energy consumption and promote energy efficiency.
	PE3	The enterprise effectively integrates environmental sustainability features into its technological innovations and products.

The reliability coefficient of organizational performance is 0.764, which is greater than 0.7, indicating that the reliability quality of research data is very good. For "α coefficient of deleted items", the reliability coefficient does not increase significantly after any item is deleted, so it indicates that the item should not be deleted. To sum up, the reliability coefficient of the research data is higher than 0.7, which comprehensively indicates that the reliability of the data is high and can be used for further analysis.

Table 3.18 Cronbach reliability analysis of terms of organizational performance

Item	CITC	Cronbach α if item deleted	Cronbach α
PF1	0.342	0.766	
PF2	0.344	0.766	
PF3	0.522	0.725	0.764
PE1	0.633	0.695	
PE2	0.540	0.720	
PE3	0.656	0.684	

CHAPTER 4

ANALYTICAL RESULTS

Before the commencement of this research survey, a small-scale test was conducted. This test enabled us to assess whether the questionnaire's logical structure was reasonable, the questions clear and unambiguous, the options comprehensive yet mutually exclusive, and the question order appropriate. Evaluated the questionnaire's feasibility in practical use, considering factors such as its length, complexity, and the time needed for completion. Also determined if the questionnaire was appropriate for the target audience and whether adjustments to the distribution method or channel were necessary, in order to predict the response rate during the large-scale survey. After undergoing small-scale testing and subsequent revisions, the questionnaire collected more accurate and reliable data, thereby enhancing the reliability of the survey results and providing stronger support for subsequent analysis and decision-making. For detailed information, please refer to Appendix 1.

This chapter introduces the method and process of obtaining the large sample data used by research, as well as the quality evaluation of the sample data. Specifically, the content of this chapter mainly includes the methods and detailed steps of data collection, such as the way and time arrangement of questionnaire distribution. The reliability and validity of variables were tested by exploratory factor analysis, CITC, confirmatory factor analysis and other methods. Test whether it is feasible to aggregate data according to several indicators and use the test of common method deviation.

4.1 Acquisition of Research Data

The acquisition of research data is the first link of empirical research, and it is also a very critical link. The quality of the data has an important impact on the subsequent research and analysis and the conclusion of the research. In order to obtain a sample that can represent the

population and make the research conclusion more universal, this study refers to the practice of Liao (2019), selects samples and collects data.

4.1.1 Selection of sample objects

On the basis of literature review, this study designed a scientific survey questionnaire, distributed, and collected large samples through relevant channels, and collected relevant survey data for the study.

This study designs a questionnaire measurement scale based on scientific principles to obtain first-hand research data. This study reviewed previous literature and preliminarily developed a measurement scale for cost research. Then, research data was obtained through questionnaire surveys, and various observations of management and dynamic capabilities and performance in the research model were analyzed. Finally, the preliminary scale was further revised through small sample testing.

This study uses non-probability sampling to select 125 enterprises in Guizhou province, Western China, with a focus on technology as the survey sample.

Since the 1990s, the economic construction of the region has experienced rapid development. So far, the information technology in the region has been at the forefront of China's information technology, with the growth rate of the digital economy ranking first in China for seven consecutive years, and the added value accounting for about 37% of GDP. The revenue growth rate of the software and information service industry has remained the first in the country for 17 consecutive months, with a total increase of five times compared to five years ago, driving more than 25000 enterprises to carry out big data integration and transformation.

The acquisition of research data is the first link of empirical research. The quality of data has an important impact on the development of subsequent research and analysis and research conclusions.

This study focuses on the impact of dynamic capabilities and performance in a dynamic environment. Therefore, this study mainly considers the following four aspects when selecting sample objects:

1) Regional factors: this study is mainly aimed at the performance of technology-based enterprises, and the investigation is mainly carried out in representative regions. This study selects typical areas in Guizhou Province of China for comprehensive investigation.

2) Industry characteristics: according to the research direction of this study, the research mainly focuses on the investigation and research of scientific and technological enterprises, such as knowledge intensive economic entities in product research, development, production, sales and service in the fields of electronic information, new material technology, high-tech services and so on.

3) Enterprise characteristics: on the basis of meeting the requirements of industry selection, the selected enterprises should cover different sizes and have been established for more than 2 years.

4) Characteristics of enterprise respondents: according to this study, in order to ensure that the respondents have a better understanding of the enterprise and have the ability to make an objective evaluation of the enterprise, this study mainly takes the management of the enterprise as the research object.

4.1.2 Determination of sampling method

Definition matrix: the sampling matrix of this study is all enterprises in the scientific and technological information technology industry in Guizhou Province, China.

Determine the sampling frame: restricted by the difficulty of actual investigation, the enterprises that can be investigated be made into a directory after communicating with the industry association, so as to facilitate subsequent sampling.

Determine the sampling unit: this study takes the enterprise as the sampling unit, with the top managers, middle managers and grass-roots managers in the enterprise as the sampling elements.

Determining the sampling method: this study uses the method of non-probability sampling. Non-probability sampling is mostly used for exploratory research and preparatory research, as well as research with unclear overall boundary and difficult to implement probability sampling, so as to ensure the accuracy of the research conclusion.

Determination of sample size: this study needs exploratory factor analysis and confirmatory factor analysis, so there are certain requirements for sample size. Rummel (1970) believed that the ratio of sample size to measurement terms should be at least 4:1 in exploratory factor analysis. Hoelter (1983) proposed that the minimum sample size for confirmatory factor analysis is 200. Based on the views of the above students and the needs of this study, this study plans to select 125 enterprises, and each enterprise issue 4 questionnaires, a total of 500 questionnaires.

Sample selection: 125 enterprises were randomly selected according to the enterprise survey directory previously determined and conducted by the industry association.

4.1.3 Data collection and screening

The large-scale questionnaire survey is scheduled to take place in June 2024 and last for one month in Guizhou Province, China. In order to obtain comprehensive and accurate information as much as possible, the survey distributed four questionnaires to each enterprise, which were filled in by the top management, middle management and grass-roots management of the enterprise.

After the questionnaire was collected, this study screened the questionnaire according to the method of Liao (2019) and deleted the questionnaire with one of the following characteristics:

1) The total number of missing questions in the main part of the questionnaire is more than 10%,

2) The filling of the questionnaire obviously shows a certain regularity. For example, all clauses are selected with the same option, and the choice is Z-shaped,

3) The returned questionnaires are obviously similar,

Finally, this study distributed 500 questionnaires to 125 enterprises, and 445 questionnaires were recovered, with a recovery rate of 89%. After deleting the invalid questionnaires according to the above screening principles, 420 valid questionnaires were finally obtained for research and analysis, with an effective questionnaire rate of 84%.

4.2 Sample Data Description

4.2.1 Statistical description of individual characteristics of samples

Among the 420 valid samples obtained in total, the statistical description of individual characteristics is shown in table 27. It can be seen that the gender distribution of respondents, in 420 valid questionnaires, 217 respondents are male, accounting for 51.55% of the total; 203 respondents were women, accounting for 48.45% of the total.

Age distribution of respondents: 12 respondents aged 20-25 years and below, accounting for 2.86% of the total; 64 respondents aged 26-30 years and below, accounting for 15.24% of the total; 157 respondents aged 31-35 years, accounting for 37.38% of the total; 128 respondents aged 36-40 years, accounting for 30.48% of the total; 51 respondents aged 41-45 years, accounting for 12.14% of the total; 6 respondents aged 46-50 years and above, accounting for 1.43% of the total; 2 respondents aged 50-55 years and above, accounting for 0.48% of the total.

The position distribution of respondents: 54 senior managers, accounting for 12.86% of the total, 184 middle managers, accounting for 43.81% of the total, and 182 grass-roots managers, accounting for 43.33% of the total.

The survey covers 125 enterprises of 420 respondents in total, and the statistical description of their characteristics is shown in Table 4.1. It can be seen from the distribution of the years of establishment of enterprises, 21 respondents from the enterprises have been established for 2-5 years, accounting for 5% of the total, 114 respondents from the enterprises have been established for 6-9 years, accounting for 27.14% of the total, 137 respondents from the enterprises have been established for 10-13 years, accounting for 32.62% of the total, and 148 respondents from the enterprises have been established for more than 13 years, accounting for 35.24% of the total.

The distribution of the number of employees in enterprises: there are 29 enterprises with 50 or less employees, accounting for 6.9% of the total, 163 enterprises with 50-199 employees, accounting for 38.81% of the total, 137 enterprises with 200-499 employees, accounting for 32.62% of the total, and 91 enterprises with more than 500 employees, accounting for 21.67%

of the total. From the perspective of company business, 163 enterprises are engaged in information technology, accounting for 38.81% of the total, 20 enterprises are engaged in biotechnology, accounting for 4,76% of the total, 59 enterprises are engaged in new energy and environmental protection technology, accounting for 14.05% of the total, 68 enterprises are engaged in artificial intelligence technology, accounting for 16.19% of the total, 92 enterprises are engaged in Internet of things and intelligent logistics, accounting for 21.9% of the total, and 18 enterprises are engaged in other enterprises, accounting for 4.29%.

Table 4.1 Statistical description of individual characteristics of samples (n=420)

Title	Item	Frequency	Percent（%）
Gender	Male	217	51.55
	Female	203	48.45
Age	20-25	12	2.86
	26-30	64	15.24
	31-35	157	37.38
	36-40	128	30.48
	41-45	51	12.14
	46-50	6	1.43
	50-55	2	0.48
Position	Senior management	54	12.86
	Middle management	184	43.81
	Primary management	182	43.33
Year of establishment	2-5	21	5
	6-9	114	27.14
	10-13	137	32.62
	Over 13	148	35.24
Number of employees	Under 50	29	6.9
	50-199	163	38.81
	200-499	137	32.62
	Over 500	91	21.67
Enterprises engaged in industries	Information technology industry	163	38.81
	Biotechnology industry	20	4.76
	New energy and environmental protection technology industry	59	14.05
	Artificial Intelligence technology industry	68	16.19
	The Internet of Things and Intelligent Logistics Technology industry	92	21.9
	Other	18	4.29

4.2.2 Statistical description of evaluation value of variable measurement terms

Descriptive statistics are to analyze the basic statistical characteristics of variables. It is helpful to deeply observe the distribution characteristics and internal structure of the data. The maximum and minimum values of each variable are within a reasonable range, and there are no abnormal values. The centralized trend of variables can be analyzed by means of mean,

median, mode and the sum of all values. The standard deviation, variance, range, minimum value, maximum value and mean standard error can be used to analyze the variance of variables. Skewness and kurtosis are used to describe the statistical characteristics of variable distribution shape and symmetry.

The statistical description of the evaluation value of the measurement terms of each variable of the sample is shown in Table 4.1. Descriptive analysis describes the overall situation of the data through the average or median. It can be concluded that there are no abnormal values in the data, which can be described and analyzed directly. As can be seen from Table 4.2, the standard deviation of each clause is between 0.031 and 0.074, the skewness is between 0.301 and 1.194, and the kurtosis is between -1.377 and 3.147. The basic conditions for judging whether the sample conforms to the normal distribution are that the absolute value of skewness is less than 3 and the absolute value of kurtosis is less than 10. To sum up, the sample data presents a normal distribution.

Table 4.2 Statistical description of evaluation values of variable measurement terms(n=420)

Item	Mean	S.D.	Skewness	Kurtosis
LC1	2.302	0.067	0.605	-0.926
LC2	2.302	0.068	0.533	-1.086
LC3	2.392	0.07	0.395	-1.257
LC4	2.318	0.067	0.538	-1.042
LA1	2.521	0.072	0.301	-1.355
LA2	2.455	0.071	0.357	-1.324
LA3	2.458	0.074	0.369	-1.377
LA4	2.508	0.072	0.334	-1.364
LI1	2.42	0.071	0.413	-1.272
LI2	2.442	0.069	0.503	-1.096
LI3	2.573	0.071	0.273	-1.356
LI4	2.442	0.071	0.433	-1.232
DS1	1.897	0.043	1.029	1.188
DS2	2.037	0.049	1.177	1.199
DS3	2.006	0.048	1.147	1.176
DS4	1.923	0.043	1.145	1.829
DA1	2.047	0.056	0.908	-0.004
DA2	2	0.058	1.045	0.162
DA3	2.074	0.058	0.891	-0.142
DA4	2.14	0.06	0.847	-0.305
OR1	2.066	0.049	0.98	0.676
OR2	1.983	0.057	0.926	0.009
OR3	2.045	0.055	0.998	0.356
OR4	2.09	0.054	0.982	0.349
OX1	1.992	0.057	1.194	0.583
OX2	1.987	0.054	1.134	0.513
OX3	2.036	0.058	1.08	0.296
OT1	2.312	0.061	0.554	-0.794
OT2	2.3	0.058	0.597	-0.643
OT3	2.171	0.061	0.732	-0.589
OI1	2.057	0.044	1.064	1.315
OI2	2.089	0.044	1.051	1.188
OI3	2.016	0.045	0.941	0.748
OE1	1.988	0.045	1.284	1.907
OE2	1.92	0.048	1.354	1.851
OE3	1.945	0.047	1.321	1.784
MD1	1.976	0.039	1.529	3.641
MD2	2.037	0.048	1.562	2.456
MD3	2.007	0.043	1.651	3.371
MD4	1.936	0.04	1.434	3.261
MD5	1.925	0.041	1.565	3.806
PF1	1.895	0.033	1.05	3.073
PF2	1.894	0.031	0.999	3.565
PF3	1.882	0.032	1.051	3.243
PE1	1.854	0.036	1.189	2.499
PE2	1.87	0.035	1.074	2.302
PE3	1.875	0.036	1.307	3.147

It can be seen from Table 4.2 that the number of effective samples of organizational learning ability is 420, the minimum and maximum values are 1 and 4.917 respectively, and the mean and standard deviation are 2.565 and 1.003 respectively. The Skewness and Kurtosis

of organizational learning ability were 0.781 and -0.338, respectively. The number of effective samples of digital innovation is 420, the minimum and maximum values are 1 and 4.875 respectively, and the mean and standard deviation are 2.117 and 0.790 respectively. The Skewness and Kurtosis of digital innovation are 1.187 and 1.230, respectively. The effective sample size of organizational flexibility was 420, the minimum and maximum values were 1.100 and 4.800, and the mean and standard deviation were 2.209 and 0.798, respectively. The Skewness and Kurtosis of tissue flexibility were 1.476 and 1.930, respectively. The number of effective samples of organizational cognition was 420, the minimum and maximum values were 1 and 5, and the mean and standard deviation were 2.092 and 0.736, respectively. The Skewness and Kurtosis of organizational cognition were 1.624 and 2.721, respectively. The number of effective samples of market dynamic ability is 420, the minimum and maximum values are 1 and 5 respectively, and the mean and standard deviation are 2.059 and 0.694 respectively. The Skewness of market dynamic ability is 1.467 and Kurtosis is 3.558. The number of effective samples of enterprise performance is 420, the minimum and maximum values are 1 and 4.500 respectively, and the mean and standard deviation are 1.944 and 0.530 respectively. The Skewness of enterprise performance is 2.066, and the Kurtosis is 6.667.

Table 4.3 Descriptive statistics(n=420)

Item	Mean	S.D.	Skewness	Kurtosis
LC	2.462	1.230	0.693	-0.717
LI	2.627	1.260	0.505	-1.099
LA	2.607	1.259	0.507	-1.001
DS	2.055	0.783	1.145	1.580
DA	2.179	0.995	1.033	0.467
OR	2.151	0.947	1.177	0.968
OT	2.379	1.038	0.963	0.080
OX	2.116	1.037	1.534	1.289
OI	2.141	0.798	1.471	2.154
OE	2.043	0.876	1.712	2.994
PF	1.953	0.575	1.604	5.846
PE	1.936	0.645	1.630	4.348
MD	2.059	0.694	1.467	3.558

4.3 Quality and Structure Analysis of Variables

To evaluate the quality of variable measurement terms, it needs to examine the reliability, content validity, validity and discriminant validity (Bagozzi, 1982). Among them, content validity is evaluated according to the degree of literature review (Nunnally, 1978), while reliability, validity and discriminant validity need to be evaluated through CITC analysis, exploratory factor analysis and confirmatory factor analysis.

This study mainly examines how forward-looking strategies affect enterprise performance by affecting the dynamic capabilities of enterprises, involving multiple variables such as organizational learning ability, organizational innovation ability, organizational flexibility, organizational cognition, market dynamics and performance. In this study, the sample data were used for exploratory factor analysis, CITC analysis and confirmatory factor analysis to investigate the reliability and validity of the measurement terms.

4.3.1 Exploratory factor analysis (EFA)

This study incorporated the main research variables into the overall model for exploratory factor analysis, including information collection ability, alertness, information integration ability, slack innovation, ambidextrous innovation, organizational restructuring ability, resource flexibility, technology flexibility, internal cognition, external cognition, market dynamics, and performance.

EFA is a technology to extract key information according to the relationship between observed variables, so as to reduce the dimension of observed variables. It is to explore the basic structure of observed data by explaining the information of all variables as much as possible through a few factors. Exploratory factor analysis can integrate the observation variables with complex relationships into a few key common factors.

In exploratory factor analysis, the premise of factor analysis needs to be met first, that is, there is a strong correlation between items, which is reflected in two test indicators: KMO value and bartlett spherical test value. Among them, KMO value is used to compare the simple correlation and partial correlation coefficient between items, and the value is between 0 and 1. From the value, it can get whether it is suitable for factor analysis. The standard is:

greater than 0.9 is very suitable, 0.7-0.9 is suitable, 0.6-0.7 is not suitable, and less than 0.6 is not suitable. Bartlett's spherical test value is used to test whether the correlation coefficient between items is significant. If it is significant (i.e., sig.<0.05), it is suitable for exploratory factor analysis.

Table 4.4 KMO and Bartlett test of sphericity

KMO and Bartlett's Test of Sphericity		
KMO		0.897
Bartlett's Test of Sphericity	Approx. Chi-Square	11779.821
	df	1081
	p	0.000

There are 47 measurement terms for exploratory factor analysis in this study, while the sample size for exploratory factor analysis is 420, and the ratio of effective sample size to the number of measurement terms is 8.94, which meets the minimum requirement for sample size of factor analysis (Rummel, 1970). The test shows that: KMO value is 0.897, and the statistical value of Bartlett test of sphericity is 0, lower than 0.05, indicating that the data used can be subject to factor analysis. In this study, principal component analysis was used to extract the factors in exploratory factor analysis, and the maximum variance method was used to rotate the factors.

After exploratory factor analysis according to the above method, the results showed a total of 13 common factors with characteristic roots greater than 1, and the cumulative variance interpretation of these 13 factors reached 75.251%. After rotation by orthogonal rotation method, 47 items could be classified as 13 factors, and the load coefficient of each item of each factor was higher than 0.5, indicating that the corresponding relationship between each factor and item was good, and there was no case of high load of double factors, and the observed variables were aggregated to each dimension according to the theoretical preset. The common degree values of all research items are higher than 0.4, which means that there is a strong correlation between research items and factors, and factors can effectively extract information. The above analysis shows that the scale selected in this study has good construct validity. The analysis results are shown in Table 4.5. In general, the results of exploratory

factor analysis are consistent with the expected factor structure, and the measurement terms of each variable have good discrimination validity.

Table 4.5 Load factor after rotation

Title	Item	Factor loading (Rotated)													Communality
		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	
Learning	LC1		0.829												0.804
	LC2		0.803												0.753
	LC3		0.815												0.749
	LC4		0.861												0.829
Integration	LI1						0.844								0.798
	LI2						0.802								0.742
	LI3						0.769								0.678
	LI4						0.793								0.710
Alertness	LA1			0.812											0.728
	LA2			0.850											0.833
	LA3			0.806											0.740
	LA4			0.816											0.782
Slack	DS1							0.769							0.738
	DS2							0.713							0.679
	DS3							0.703							0.701
	DS4							0.806							0.758
Ambidextrous	DA1					0.759									0.669
	DA2					0.798									0.726
	DA3					0.803									0.774
	DA4					0.753									0.683
Reconstruction	OR1				0.831										0.812
	OR2				0.818										0.744
	OR3				0.767										0.709
	OR4				0.810										0.756
Technology	OT1											0.797			0.699
	OT2											0.789			0.732
	OT3											0.814			0.747
Resource	OX1									0.841					0.809
	OX2									0.820					0.797
	OX3									0.836					0.806
Internal	OI1										0.791				0.798

Table 4.5 (Continue)

	OI2								0.839					0.822
	OI3								0.721					0.704
External	OE1						0.861							0.838
	OE2						0.864							0.838
	OE3						0.865							0.828
Market Dynamics	MD1												0.767	0.776
	MD2												0.746	0.775
	MD3												0.744	0.761
	MD4											0.764		0.798
	MD5											0.773		0.781
Financial	PF1											0.811		0.812
	PF2	0.723												0.659
	PF3	0.826												0.723
Sustainability	PE1	0.767												0.690
	PE2	0.742												0.657
	PE3	0.696												0.622
Eigen Value		10.913	5.012	3.578	2.849	2.246	1.763	1.598	1.444	1.404	1.273	1.217	1.071	1.001	
% of Variance		23.219	10.664	7.612	6.061	4.778	3.751	3.399	3.073	2.987	2.708	2.590	2.279	2.129	
Cumulative % of Variance		23.219	33.882	41.495	47.556	52.334	56.086	59.485	62.558	65.545	68.253	70.843	73.122	75.251	

4.3.2 CITC analysis and internal consistency reliability test

Confirmatory factor analysis is a statistical analysis of survey data. This method is used to test whether the relationship between a factor and the corresponding observation variable is in line with the theoretical relationship presented by the researcher. Swedish statisticians first systematically put forward the theory and method of confirmatory factor analysis, and its basic idea is expressed as follows. Researchers first put forward assumptions and reasoning based on existing theories and knowledge and gradually build a model about the relationship between a group of variables. The purpose of the study is to test the consistency between theory and the data from the theoretical hypothesis, so as to test and ultimately develop the theory.

In this part, this study tests the relevance of each clause under each variable. This study takes the CITC value of 0.40 as the measurement standard, and observes whether the deletion

of the clause can improve the reliability (Far et al., 1997). Then, α coefficient is used to evaluate the reliability of variables.

The results of CITC analysis and internal consistency analysis are shown in Table 4.6, from which it can be seen that the lowest α coefficient of the variable is 0.802. In general, the lowest reliability coefficient is 0.864, which is greater than 0.8, indicating that the reliability of the research data is acceptable.

For "α coefficient of deleted items", the reliability coefficient does not increase significantly after any item is deleted, so it indicates that the item should not be deleted.

For the "CITC value", the CITC values of the analysis items are greater than 0.6, which indicates that there is a good correlation between the analysis items and also indicates that the reliability level is good. To sum up, the reliability coefficient of the research data is higher than 0.8, which comprehensively indicates that the reliability of the data is acceptable and can be used for further analysis.

Table 4.6 CITC analysis and internal consistency reliability test

Item	CITC	Cronbach α if item deleted	Cronbach α
LC1	0.806	0.87	0.905
LC2	0.763	0.885	
LC3	0.752	0.89	
LC4	0.825	0.863	
LI1	0.726	0.882	0.896
LI2	0.832	0.843	
LI3	0.74	0.877	
LI4	0.781	0.861	
LA1	0.786	0.813	0.873
LA2	0.733	0.835	
LA3	0.684	0.854	
LA4	0.707	0.845	
DS1	0.717	0.811	0.856
DS2	0.674	0.829	
DS3	0.703	0.815	
DS4	0.712	0.812	
DA1	0.659	0.832	0.856
DA2	0.706	0.813	
DA3	0.742	0.798	
DA4	0.687	0.821	
OR1	0.804	0.83	0.882
OR2	0.734	0.854	
OR3	0.708	0.863	
OR4	0.743	0.849	
OT1	0.608	0.772	0.802
OT2	0.666	0.712	
OT3	0.671	0.705	
OX1	0.77	0.817	0.876
OX2	0.76	0.827	
OX3	0.755	0.831	
OI1	0.74	0.764	0.848
OI2	0.736	0.768	
OI3	0.672	0.83	

Table 4.6 (Continue)

OE1	0.806	0.852	0.899
OE2	0.801	0.856	
OE3	0.795	0.86	
MD1	0.665	0.837	0.861
MD2	0.714	0.825	
MD3	0.702	0.827	
MD4	0.678	0.833	
MD5	0.649	0.84	
PF1	0.717	0.79	0.849
PF2	0.724	0.785	
PF3	0.713	0.794	
PE1	0.749	0.801	0.864
PE2	0.724	0.824	
PE3	0.75	0.8	

4.3.3 validation factor analysis

Confirmatory factor analysis is a statistical analysis of survey data. This method is used to test whether the relationship between a factor and the corresponding observation variable is in line with the theoretical relationship presented by the researcher. Swedish statisticians first systematically put forward the theory and method of confirmatory factor analysis, and its basic idea is expressed as follows. Researchers first put forward assumptions and reasoning based on existing theories and knowledge and gradually build a model about the relationship between a group of variables. The purpose of the study is to test the consistency between theory and the data from the theoretical hypothesis, so as to test and ultimately develop the theory.

In this part, this study conducted confirmatory factor analysis to further confirm the convergence validity, aggregate validity and discriminant validity of each variable. The effective sample size was 420. The verification results are shown in Table 4.7. From the table, it can be seen that the GFI value is 0.904, the NFI value is 0.913, the CFI value is 0.99, the IFI value is 0.99, and the NFI value is 0.913, which are all greater than 0.9. The model CMIN is 1070.663, DF is 956, CMIN/DF is 1.12<3, and the values are ideal. RMSEA is 0.017<0.08. It can be seen from Table 4.7 that all indicators meet the standard, indicating that the fitting degree of the model is good.

Table 4.7 model fitting indicators

Value	CMIN	DF	CMIN/DF	GFI	RMSEA	CFI	NFI	IFI
Predicted	-	-	<3	>0.9	<0.08	>0.9	>0.9	>0.9
Qualify	-	-	<5	>0.8	<0.10	>0.8	>0.8	>0.8
Actual	1070.663	956	1.12	0.904	0.017	0.99	0.913	0.99

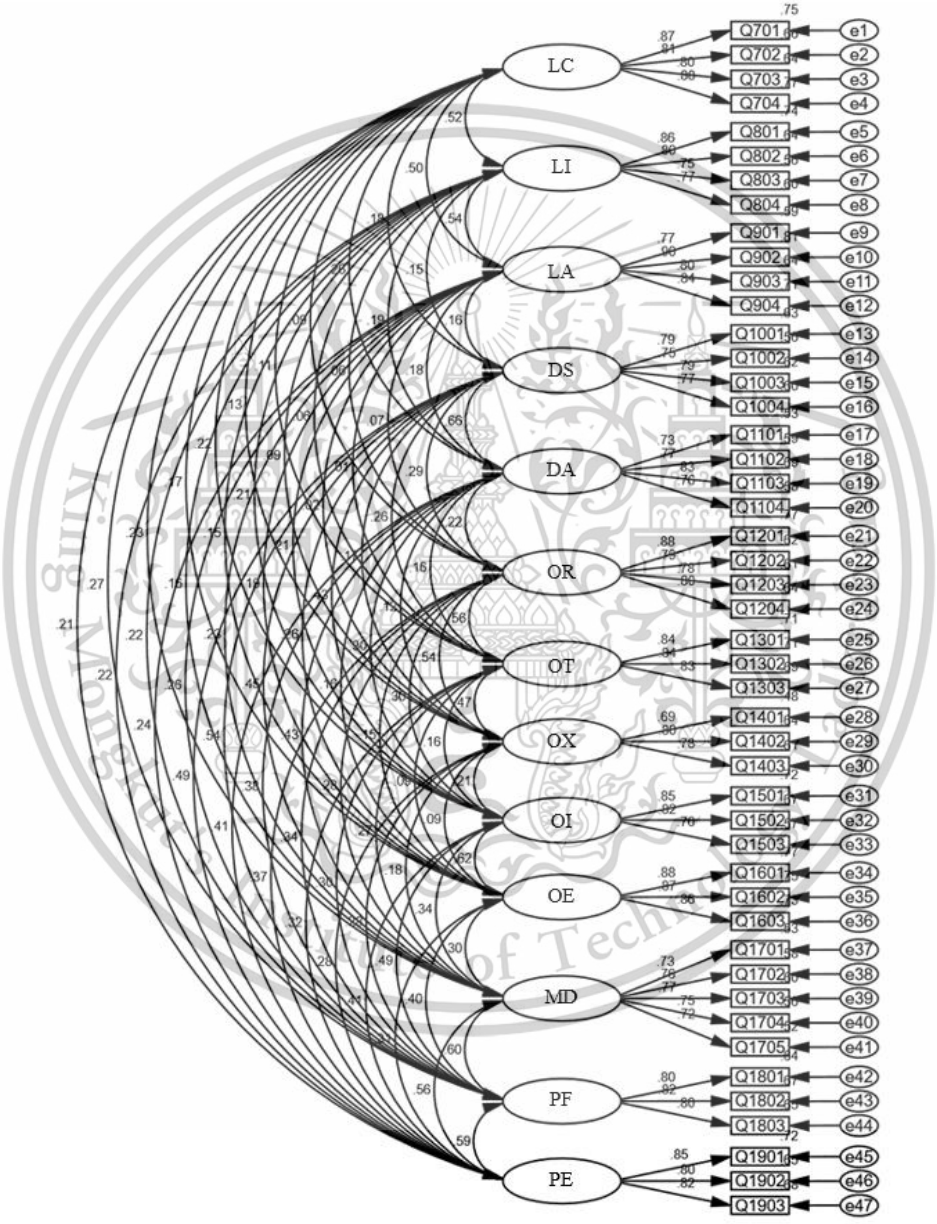


Figure 4.1 Model results

The confirmatory factor standardized factor load table mainly includes factors (latent variable), measurement item (explicit variable), non-standard load coefficient, standardized

factor load, standard error (S.E.), Z value (C.R.), and significance (P). The standardization factor load is greater than 0.5, indicating that each observed variable can well explain the potential variable. T value and P value are mainly significant judgment, and P value is less than 0.05, indicating that the standardization factor load is significant.

Table 4.8 Factor load factor

Factor	Item	Coef.	Std.E	S.E.	z (C.R.)	p
LC	LC1	1.0	0.868			
	LC2	0.956	0.815	0.046	20.701	***
	LC3	0.959	0.799	0.048	20.067	***
	LC4	1.016	0.88	0.043	23.412	***
LI	LI1	1.0	0.861			
	LI2	0.923	0.801	0.049	18.869	***
	LI3	0.889	0.748	0.052	17.208	***
	LI4	0.905	0.775	0.05	18.046	***
LA	LA1	1.0	0.771			
	LA2	1.13	0.902	0.058	19.635	***
	LA3	1.037	0.797	0.06	17.143	***
	LA4	1.09	0.84	0.06	18.221	***
DS	DS1	1.0	0.791			
	DS2	1.097	0.75	0.07	15.691	***
	DS3	1.119	0.79	0.067	16.642	***
	DS4	0.981	0.774	0.06	16.28	***
DA	DA1	1.0	0.726			
	DA2	1.102	0.771	0.075	14.703	***
	DA3	1.182	0.832	0.075	15.713	***
	DA4	1.115	0.762	0.077	14.553	***
OR	OR1	1.0	0.879			
	OR2	1.049	0.787	0.054	19.304	***
	OR3	0.996	0.779	0.052	19.022	***
	OR4	1.006	0.8	0.051	19.784	***
OT	OT1	1.0	0.844			
	OT2	0.941	0.842	0.048	19.41	***
	OT3	0.993	0.829	0.052	19.123	***
OX	OX1	1.0	0.691			
	OX2	1.114	0.802	0.085	13.166	***
	OX3	1.141	0.784	0.087	13.058	***
OI	OI1	1.0	0.848			
	OI2	0.97	0.819	0.054	18.117	***
	OI3	0.915	0.758	0.055	16.671	***
OE	OE1	1.0	0.875			
	OE2	1.062	0.865	0.047	22.388	***
	OE3	1.031	0.856	0.047	22.06	***
MD	MD1	1.0	0.73			
	MD2	1.285	0.764	0.087	14.701	***
	MD3	1.154	0.772	0.078	14.852	***
	MD4	1.049	0.748	0.073	14.411	***

Table 4.8 （Continue）

	MD5	1.022	0.719	0.074	13.86	***
PF	PF1	1.0	0.798			
	PF2	0.972	0.821	0.056	17.254	***
	PF3	0.995	0.804	0.059	16.91	***
PE	PE1	1.0	0.846			
	PE2	0.931	0.804	0.051	18.191	***
	PE3	0.981	0.822	0.053	18.632	***

When there is a connection between things, but the causal relationship cannot be explained directly, the relationship between things is called correlation. Pearson correlation coefficient is a kind of linear correlation coefficient, which is used to reflect the statistics of the linear correlation degree of two variables. The correlation coefficient describes the degree of linear correlation between two variables. The greater the absolute value of the coefficient correlation the stronger the correlation is. If the correlation coefficient is greater than 0, it indicates that there is a significant positive relationship between variables, that is, the greater one variable is, the greater the other variable is. On the contrary, if the Pearson correlation coefficient is less than 0, it indicates that there is a significant negative relationship between variables, that is, the larger one variable is, the smaller the other variable is. The correlation coefficient can be taken from -1 to+1, which indicates a perfect negative (-1) or positive (+1) correlation. A correlation coefficient of 0 indicates no correlation. In a broad sense, the closer the correlation coefficient is to zero, the weaker the correlation is, and the closer the correlation coefficient is to+1 or -1, the stronger the correlation is. Generally, the P value is less than 0.05, indicating that there is a significant correlation between variables.

Table 4.9 Results of variable correlation

	1	2	3	4	5	6	7	8	9	10	11	12	13
LC	1												
LI	.471**	1											
LA	.457**	.471**	1										
DS	.161**	.125*	.143**	1									
DA	.230**	.176**	.160**	.572**	1								
OR	0.087	0.061	0.073	.247**	.200**	1							
OT	.120*	0.085	0.024	.136**	.099*	.451**	1						
OX	.101*	0.057	0.006	.226**	.144**	.495**	.392**	1					
OI	.200**	.191**	.190**	.363**	.257**	.265**	.171**	.135**	1				
OE	.155**	.136**	.178**	.224**	.141**	.134**	0.073	0.080	.546**	1			
MD	.239**	.190**	.226**	.459**	.333**	.293**	.227**	.254**	.419**	.348**	1		
PF	.184**	.183**	.207**	.422**	.359**	.321**	.230**	.279**	.349**	.270**	.509**	1	
PE	.200**	.141**	.198**	.385**	.362**	.249**	.144**	.238**	.296**	.268**	.515**	.487**	1

It can be seen from Table 4.9 that Pearson correlation analysis is used to study the correlation among 13 items, including information collection, information integration, alertness, slack resources, ambidextrous innovation, reorganization ability, resource flexibility, technology flexibility, internal cognition, external cognition, financial performance, sustainable development and market dynamic ability. Specific analysis shows that:

Information collection and information integration, alertness, slack resources, ambidextrous innovation, resource flexibility, technology flexibility, internal cognition, external cognition, financial performance, sustainable development, and market dynamic ability are all significantly correlated. The correlation coefficient values are 0.471, 0.457, 0.161, 0.23, 0.12, 0.101, 0.2, 0.155, 0.239, 0.184, 0.2, respectively, which are greater than 0, which means that there is a positive correlation between them. There is no significant relationship between information collection and reorganization ability, which means there is no significant correlation between them.

Information integration and alertness, slack resources, ambidextrous innovation, internal cognition, external cognition, financial performance, sustainable development, and market dynamic ability are significantly correlated, and the correlation coefficient values are 0.471,

0.125, 0.176, 0.191, 0.136, 0.19, 0.183, and 0.141, respectively, which are greater than 0, indicating that there is a positive correlation between them. There is no significant correlation between information integration and reorganization capability, resource flexibility and technology flexibility, which means that there is no significant correlation between them.

Alertness and slack resources, ambidextrous innovation, internal cognition, external cognition, financial performance, sustainable development, and market dynamic ability are significantly correlated. The correlation coefficient values are 0.143, 0.16, 0.19, 0.178, 0.226, 0.207, and 0.198, respectively, which are greater than 0, which means that there is a positive correlation between them. There is no significant correlation between alertness and reorganization capability, resource flexibility, and technology flexibility, which means there is no significant correlation between them.

Slack resources and ambidextrous innovation, restructuring capability, resource flexibility, technological flexibility, internal cognition, external cognition, financial performance, sustainable development, and market dynamic capability are significantly correlated. The correlation coefficient values are 0.572, 0.247, 0.136, 0.226, 0.363, 0.224, 0.459, 0.422, 0.385, respectively, which are greater than 0, which means that there is a positive correlation between them.

Ambidextrous innovation and restructuring capability, resource flexibility, technology flexibility, internal cognition, external cognition, financial performance, sustainable development, and market dynamic capability are significantly correlated. The correlation coefficient values are 0.2, 0.099, 0.144, 0.257, 0.141, 0.333, 0.359, and 0.362, respectively, which are greater than 0, which means that there is a positive correlation between them.

There is a significant correlation between restructuring capability and resource flexibility, technology flexibility, internal cognition, external cognition, financial performance, sustainable development, and market dynamic capability. The correlation coefficient values are 0.451, 0.495, 0.265, 0.134, 0.293, 0.321, and 0.249 respectively, which are greater than 0, which means that there is a positive correlation between them.

Resource flexibility and technology flexibility, financial performance, sustainable development, and market dynamic ability are significantly correlated, and the correlation coefficient values are 0.392, 0.171, 0.227, 0.23, and 0.144, respectively, which are greater

than 0, indicating that there is a positive correlation between them. There is no significant relationship between resource flexibility and externality, which means there is no significant correlation between them.

Technical flexibility and internal cognition, financial performance, sustainable development, and market dynamic ability are significantly correlated. The correlation coefficient values are 0.135, 0.254, 0.279, and 0.238, respectively, which are greater than 0, indicating that there is a positive correlation between them. There is no significant relationship between technological flexibility and external cognition, which means there is no significant correlation between them.

There are significant differences between internal cognition and external cognition, financial performance, sustainable development and market dynamic ability. The coefficient values are 0.546, 0.419, 0.349 and 0.296 respectively, which are greater than 0, which means there is a positive correlation between them.

There is a significant correlation between external cognition and financial performance, sustainable development and market dynamic ability. The correlation coefficient values are 0.348, 0.27 and 0.268 respectively, which are greater than 0, which means there is a positive correlation between them.

Financial performance, sustainable development and market dynamic ability are significantly correlated, and the correlation coefficient values are 0.509 and 0.515 respectively, which are greater than 0, indicating that there is a positive correlation between them.

The correlation coefficient between sustainable development and market dynamic ability is 0.487, which is greater than 0, indicating that there is a positive correlation between them.

Table 4.10 Results of variable correlation analysis

	1	2	3	4	5	6
Learning	1					
Digital Innovation	0.236**	1				
Flexibility	0.107*	0.248**	1			
Cognition	0.247**	0.304**	0.206**	1		
Market Dynamics	0.224**	0.419**	0.267**	0.320**	1	
Performance	0.292**	0.502**	0.390**	0.448**	0.576**	1

It can be seen from Table 4.10 that pearson correlation analysis is used to study the correlation between six items, including organizational learning ability, digital innovation, organizational flexibility, organizational cognition, market dynamic ability and enterprise performance. Specific analysis can be as follows:

The correlation coefficients between organizational learning ability and digital innovation, organizational flexibility, organizational cognition, market dynamic ability, and enterprise performance are 0.236, 0.107, 0.247, 0.224, and 0.292, which are greater than 0, indicating that there is a positive correlation between them.

There is a significant correlation between digital innovation and organizational flexibility, organizational cognition, market dynamic ability, and enterprise performance. The correlation coefficient values are 0.248, 0.304, 0.419, and 0.502, respectively, which are greater than 0, indicating that there is a positive correlation between them.

There is a significant correlation between organizational flexibility and organizational cognition, market dynamic ability, and enterprise performance. The correlation coefficient values are 0.206, 0.267, and 0.39, respectively, which are greater than 0, which means that there is a positive correlation between them.

There is a significant correlation between organizational cognition, market dynamic ability and enterprise performance, and the correlation coefficient values are 0.32 and 0.448 respectively, which are greater than 0, which means that there is a positive correlation between them.

The correlation coefficient between market dynamic capability and enterprise performance is 0.576, which is greater than 0, indicating that there is a positive correlation between them.

It can be seen from Table 4.11 that the square root value of AVE of each latent variable is greater than the correlation coefficient between this latent variable and other latent variables, indicating that the scale has good differential validity.

Table 4.11 Pearson correlation and AVE square root values

	LC	LI	LA	DS	DA	OR	OT	OX	OI	OE	MD	PF	PE
LC	0.841												
LI	0.517	0.797											
LA	0.500	0.536	0.829										
DS	0.180	0.147	0.159	0.776									
DA	0.263	0.194	0.178	0.658	0.774								
OR	0.091	0.058	0.074	0.288	0.219	0.812							
OT	0.110	0.060	0.009	0.262	0.162	0.558	0.838						
OX	0.129	0.093	0.020	0.167	0.117	0.541	0.471	0.761					
OI	0.218	0.210	0.213	0.427	0.302	0.295	0.160	0.207	0.809				
OE	0.174	0.149	0.187	0.256	0.157	0.149	0.093	0.088	0.616	0.865			
MD	0.225	0.161	0.227	0.450	0.427	0.278	0.274	0.179	0.342	0.304	0.747		
PF	0.271	0.223	0.259	0.543	0.381	0.340	0.297	0.277	0.493	0.403	0.603	0.808	
PE	0.208	0.216	0.243	0.494	0.411	0.370	0.320	0.278	0.406	0.307	0.564	0.592	0.824

4.4 Harman Single Factor Test

From the results in Table 4.4 and 4.3.2 of the exploratory factor analysis results above, there are 13 common factors with characteristic roots greater than 1. The cumulative explanatory variance is 75.251%, and the maximum variance of a single factor is 23.219%, accounting for 30.855% of the total variance. There is no single factor explaining most of the variance. Therefore, it further shows that the common method deviation of this study is not serious.

4.5 Summary of Data Collection

This Part introduces the large-scale research carried out in the target research area. After collecting the questionnaire, the questionnaire was screened according to scientific standards, and finally 420 valid samples from 125 enterprises were obtained. In the data analysis stage, the characteristics of respondents and enterprises are described, and the normality of the data distribution of measurement terms is tested. Secondly, the quality and structure of the data were analyzed by exploratory factor analysis and confirmatory factor analysis. Then, the feasibility of the data was tested according to several indicators, and the reliability and validity of the data were evaluated again. Finally, Harman single factor test is used to test the possible common method deviation. The preliminary data quality test lays a good foundation for the subsequent hypothesis test.

HYPOTHESIS TEST

This part tests the hypotheses proposed in this study by using the first-hand data collected after preliminary testing. This chapter mainly includes the following contents:

1. The structural equation model is used to test the relationship model between forward-looking strategy, dynamic capability and enterprise performance.

2. Test the moderating effect of the dimension of market dynamics on the relationship between dynamic capabilities and enterprise performance.

4.6 Structural Equation Model

Structural Equation Modeling (SEM) is a statistical method to analyze the relationship between variables according to the covariance matrix of variables. SEM is a statistical method combining multiple regression, path analysis and factor analysis. It is suitable for potential variable analysis, variable error analysis, intermediary variable analysis, multi-path analysis and other theoretical models.

The main purpose of structural equation is to judge whether the theoretical models and assumptions put forward by scholars are tenable through the analysis of empirical data, and to

analyze whether the actual situation conforms to theoretical assumptions. The structural equation analysis method mainly includes the model fitting test and the path analysis of the model.

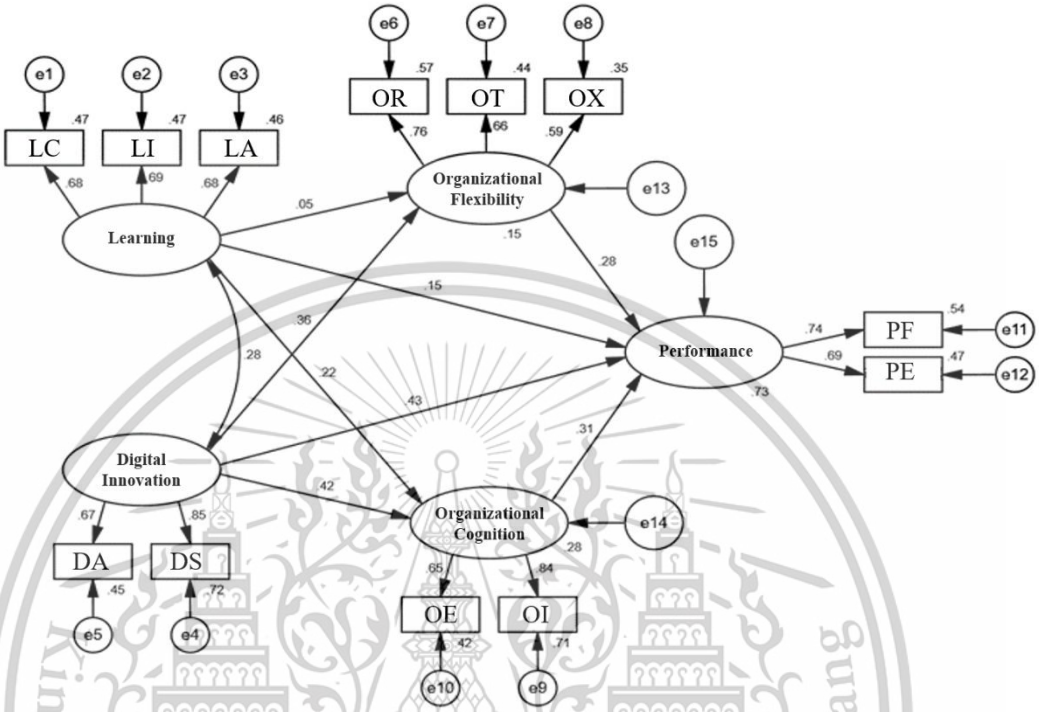


Figure 4.2 Structural Equation Model

Table 4.12 shows the fitting indicators of the model, and some indicators can be appropriately selected for evaluation. The model CMIN is 49.653, DF is 45, and CMIN/DF is 1.103<3, which is ideal. RMSEA was 0.016<0.08, and the indicators of GFI, CFI, NFI and IFI were greater than 0.9. To sum up, all indicators meet the standard, indicating that the fitting degree of the model is acceptable.

Table 4.12 Model fitting indicators

Value	CMIN	DF	CMIN/DF	GFI	RMSEA	CFI	NFI	IFI
Predicted	-	-	<3	>0.9	<0.08	>0.9	>0.9	>0.9
Qualify	-	-	<5	>0.8	<0.10	>0.8	>0.8	>0.8
Actual	49.653	45	1.103	0.981	0.016	0.996	0.963	0.996

4.7 Path Analysis

Path analysis is the core function of structural equation analysis, which is mainly to verify the relationship between variables. Before analyzing the relationship between variables, must theoretically analyze the relationship between variables, and specify independent variables, dependent variables and intermediary variables. Researchers must clarify the causal relationship between variables in the model. Previous scholars generally believed that the path coefficient needs to be greater than 0.1. The path coefficient mainly reflects the direct relationship between potential variables. Indirect impact analysis is one of the unique functions of structural equation. It is mainly to verify that independent variables affect dependent variables through one or more intermediary variables. It is an effective method to verify the intermediary effect.

Table 4.13 Summary of model coefficients

Independent	Dependent	Coef.	Std.E	S.E.	z (C.R.)	p
Learning	Flexibility	0.046	0.053	0.059	0.771	0.441
Learning	Cognition	0.179	0.223	0.053	3.36	***
Digital Innovation	Flexibility	0.391	0.363	0.079	4.971	***
Digital Innovation	Cognition	0.423	0.418	0.07	6.036	***
Flexibility	Performance	0.168	0.284	0.038	4.408	***
Cognition	Performance	0.195	0.311	0.048	4.104	***
Learning	Performance	0.076	0.152	0.031	2.477	0.013
Digital Innovation	Performance	0.275	0.434	0.052	5.312	***

(*** p<0.001)

Table 4.13 shows that the standardized path coefficient from organizational learning ability to organizational flexibility is 0.053 (t=0.771, p=0.441>0.05), indicating that organizational learning ability has no significant impact on organizational flexibility.

The standardized path coefficient from organizational learning ability to organizational cognition was 0.223 (t=3.36, p=0.0<0.05), indicating that organizational learning ability has a significant positive impact on organizational cognition, that is, the higher the organizational learning ability, the higher the organizational cognition.

The standardized path coefficient from digital innovation to organizational flexibility is 0.363 (t=4.971, p=0.0<0.05), indicating that digital innovation has a significant positive impact on organizational flexibility, that is, the higher the digital innovation, the higher the organizational flexibility.

The standardized path coefficient from digital innovation to organizational cognition was 0.418 (t=6.036, p=0.0<0.05), indicating that digital innovation has a significant positive impact on organizational cognition, that is, the higher the digital innovation, the higher the organizational cognition.

The standardized path coefficient from organizational flexibility to enterprise performance is 0.284 (t=4.408, p=0.0<0.05), indicating that organizational flexibility has a significant positive impact on enterprise performance, that is, the higher the organizational flexibility, the higher the enterprise performance.

The standardized path coefficient of organizational cognition to enterprise performance is 0.311 (t=4.104, p=0.0<0.05), indicating that organizational cognition has a significant positive impact on enterprise performance, that is, the higher organizational cognition, the higher enterprise performance.

The standardized path coefficient from organizational learning ability to enterprise performance is 0.152 (t=2.477, p=0.013<0.05), indicating that organizational learning ability has a significant positive impact on enterprise performance, that is, the higher the organizational learning ability, the higher the enterprise performance.

The standardized path coefficient from digital innovation to enterprise performance is 0.434 (t=5.312, p=0.0<0.05), indicating that digital innovation has a significant positive impact on enterprise performance, that is, the higher the digital innovation, the higher the enterprise performance.

4.8 Intermediary Effect Analysis

This study uses the bootstrap method, sets the bootstrap sample number of 2000, and performs the mediation effect test at the 95% confidence level. According to the research of preacher (2011), if the bootstrap confidence interval does not contain 0, the corresponding

indirect, direct or total effects exist. The test results of mediation effect are shown in Table 4.14.

Table 4.14 Test of mediating effect

Path	Direct Effects	Indirect Effects	Bias-corrected (95%)		p	Decision
			Lower Bounds	Upper Bounds		
Learning -> Flexibility -> Performance	0.076(0.013)	0.008	-0.01	0.043	0.346	Neg.
Learning -> Cognition -> Performance	0.076(0.013)	0.035	0.009	0.088	0.004	Partial
Digital Innovation -> Flexibility -> Performance	0.275(***)	0.065	0.026	0.132	0.001	Partial
Digital Innovation -> Cognition -> Performance	0.275(***)	0.083	0.03	0.182	0.001	Partial

(*** p<0.001)

For the path: organizational learning ability --- organizational flexibility ---- enterprise performance, the mediating effect is not significant, and the mediating variable has no mediating effect.

For the path: organizational learning ability --- organizational cognition --- enterprise performance, the mediating effect is significant, and the independent variable organizational learning ability has a significant impact on the dependent variable enterprise performance, which is part of the mediating effect.

For the path: digital Innovation --- organizational flexibility --- enterprise performance, the mediating effect is significant, and the independent variable digital innovation has a significant impact on the dependent variable enterprise performance, which is part of the mediating effect.

For the path: digital Innovation --- organizational cognition --- enterprise performance, the mediating effect is significant, and the independent variable digital innovation has a significant impact on the dependent variable enterprise performance, which is part of the mediating effect.

4.9 Regulation Effect Analysis

If the relationship between the independent variable X and the dependent variable Y is a function of the regulating variable M, then the regulating variable m has a regulating effect on the influence of X on Y. This model with adjustment variables is shown in Figure 19.

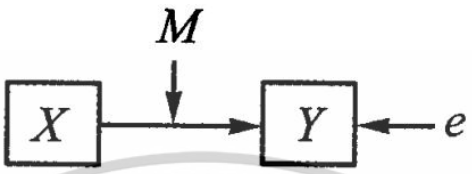


Figure 4.3 Model of regulating variable

When analyzing the regulatory effect, it is usually necessary to make a centralized transformation between the independent variable and the regulatory variable. The relationship of the regulation model is y=aX+bM+cXM, where c measures the regulation effect.

According to Wen (2018) regulatory effect test method, mainly use multiple hierarchical regression to test, and mainly establish three multiple regression models. The first model is to introduce control variables and independent variables, mainly because the role of regulatory variables is more sensitive, to prevent the occurrence of pseudo regression, it needs to control independent variables, regulatory variables and interactive items; the second model introduces control variables, independent variables and regulatory variables. The model mainly judges the influence of independent variables and regulatory variables on dependent variables and determines the explanatory ability of the model, that is, to judge the size of the model R^2; The third model is to introduce control variables, independent variables, regulatory variables and interactive items. If the regression coefficient of interactive items is significant and R^2 is significantly increased, then the regulatory variables have a significant regulatory effect.

Table 4.15 Adjustment effect analysis of organizational flexibility

Dependent	Independent: Performance		
	Model 1	Model 2	Model 3
(constant)	1.525**(8.708)	0.774**(4.735)	1.064**(7.112)
Age	-0.076**(-3.257)	-0.033(-1.594)	-0.022(-1.182)
Position	0.051(1.425)	0.055(1.789)	0.053(1.932)
Year of establishment	-0.000(-0.005)	0.007(0.286)	-0.023(-0.991)
Number of employees	-0.032(-1.083)	-0.016(-0.619)	0.010(0.433)
Enterprises engaged in industries	0.027*(2.021)	0.009(0.753)	0.008(0.781)
Flexibility	0.258**(8.767)	0.174**(6.608)	0.151**(6.346)
Market Dynamics		0.373**(12.003)	0.234**(7.513)
Flexibility and Market Dynamics			0.238**(9.995)
R^2	0.195	0.404	0.520
Adjusted R^2	0.184	0.394	0.511
F	F=16.711 p=0.000	F=39.866 p=0.000	F=55.743 p=0.000

* p<0.05 ** p<0.01, The value of t is enclosed in parentheses

Taking organizational flexibility as the independent variable, enterprise performance as the dependent variable, and market dynamic ability as the regulatory variable, the regulatory effect is tested. It can be seen from Table 4.15 that the regulatory effect is divided into three models. Model 1 includes independent variables (organizational flexibility), as well as five control variables: age, position, years of establishment, staff size and enterprise industry. Model 2 adds adjustment variables (market dynamic capacity) on the basis of model 1; Model 3 adds an interaction term (the product of independent variables and regulatory variables) to model 2.

For Model 1, the purpose is to study the influence of the independent variable (organizational flexibility) on the dependent variable (enterprise performance) without considering the interference of the regulatory variable (market dynamic ability). It can be seen from Table 4.15 that the independent variable (organizational flexibility) shows significant (t=8.767, p=0.000<0.05), which means that organizational flexibility have a significant impact on enterprise performance. The moderation effect means that there is a moderation effect by looking at the significance of the interaction item in model 3. The results of the regulatory effect analysis show that based on the interactive item organizational flexibility ×

market dynamic ability, the significance p value is 0.000, and the interactive item of Model 3 is significant, which means that the regulatory variable market dynamic ability significantly interferes with the impact of organizational flexibility on enterprise performance.

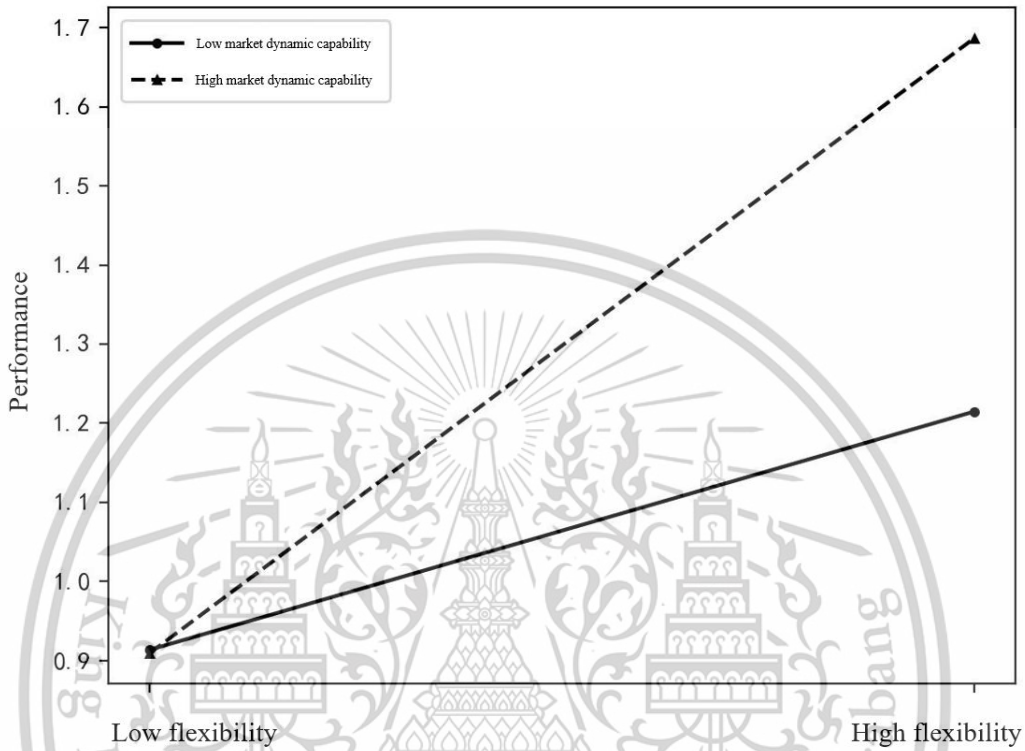


Figure 4.4 Slope chart of organizational flexibility

Figure 4.4 is the slope chart of organizational flexibility, showing the difference in the impact of organizational flexibility on enterprise performance at different levels of market dynamic capacity of the adjusting variable.

In a highly volatile and competitive market environment, enterprises need to have a high degree of market dynamic ability to respond to constantly changing market demands and technological innovations. At this point, organizational flexibility becomes a key factor for enterprises to maintain a competitive advantage. High organizational flexibility enables enterprises to quickly adjust their organizational structure and optimize resource allocation to adapt to changes in the external environment. This flexibility helps companies maintain a leading position in competition, improve market responsiveness and innovation capabilities. At a high level of market dynamic capability, organizational flexibility is positively correlated

with corporate performance. The higher the organizational flexibility, the better the performance of the enterprise.

In a relatively stable and predictable market environment, companies may not require excessive market dynamic capabilities. At this point, the importance of organizational flexibility is relatively low, as companies can respond to market changes by maintaining stable strategies and organizational structures. However, even at low levels of market dynamics, a certain degree of organizational flexibility can still help companies cope with unexpected events and uncertainties. For example, companies can improve internal operational efficiency by simplifying processes, moving decisions downwards, and other means. However, it should be noted that at low levels of market dynamics, excessive organizational flexibility may lead to resource waste and low decision-making efficiency. Therefore, enterprises need to balance the relationship between organizational flexibility and market dynamic capabilities based on their own situation and market environment.

Table 4.16 Analysis of organizational cognitive regulation effect

Dependent	Independent: Performance		
	Model 1	Model 2	Model 3
(constant)	1.596**(9.620)	0.865**(5.466)	1.090**(7.197)
Age	-0.057*(-2.478)	-0.022(-1.067)	-0.022(-1.141)
Position	0.000(0.009)	0.021(0.677)	0.025(0.891)
Year of establishment	-0.028(-0.984)	-0.012(-0.486)	-0.025(-1.049)
Number of employees	-0.034(-1.173)	-0.018(-0.703)	-0.007(-0.278)
Enterprises engaged in industries	0.022(1.671)	0.006(0.532)	0.007(0.670)
Flexibility	0.313**(9.924)	0.210**(7.240)	0.162**(5.809)
Market Dynamics		0.357**(11.436)	0.278**(8.965)
Flexibility and Market Dynamics			0.175**(7.533)
R^2	0.229	0.415	0.486
Adjusted R^2	0.218	0.405	0.476
F	F=20.488 p=0.000	F=41.764 p=0.000	F=48.582 p=0.000

* p<0.05 ** p<0.01, The value of t is enclosed in parentheses

Taking organizational cognition as the independent variable, enterprise performance as the dependent variable, and market dynamic ability as the moderating variable, the moderating

effect is tested. It can be seen from Table 4.16 that the regulatory effect is divided into three models. Model 1 includes independent variables (Organizational Cognition), as well as five control variables: age, position, years of establishment, staff size and enterprise industry; Model 2 adds adjustment variables (market dynamic capacity) on the basis of model 1; Model 3 adds an interaction term (the product of independent variables and regulatory variables) to Model 2.

For Model 1, the purpose is to study the influence of the independent variable (Organizational Cognition) on the dependent variable (enterprise performance) without considering the interference of the regulatory variable (market dynamic ability). It can be seen from the above table that the independent variable (organizational cognition) shows significant ($t=9.924$, $p=0.000<0.05$), which means that organizational cognition has a significant impact on enterprise performance. Moderating effect by looking at the significance of the interaction item in Model 3, the results of the moderating effect analysis table show that based on the interaction item organizational cognition × market dynamic ability, the significance p value is 0.000, and the interaction item in Model 3 is significant; It means that the ability of adjusting variable market dynamics significantly interfere with the impact of organizational cognition on enterprise performance.

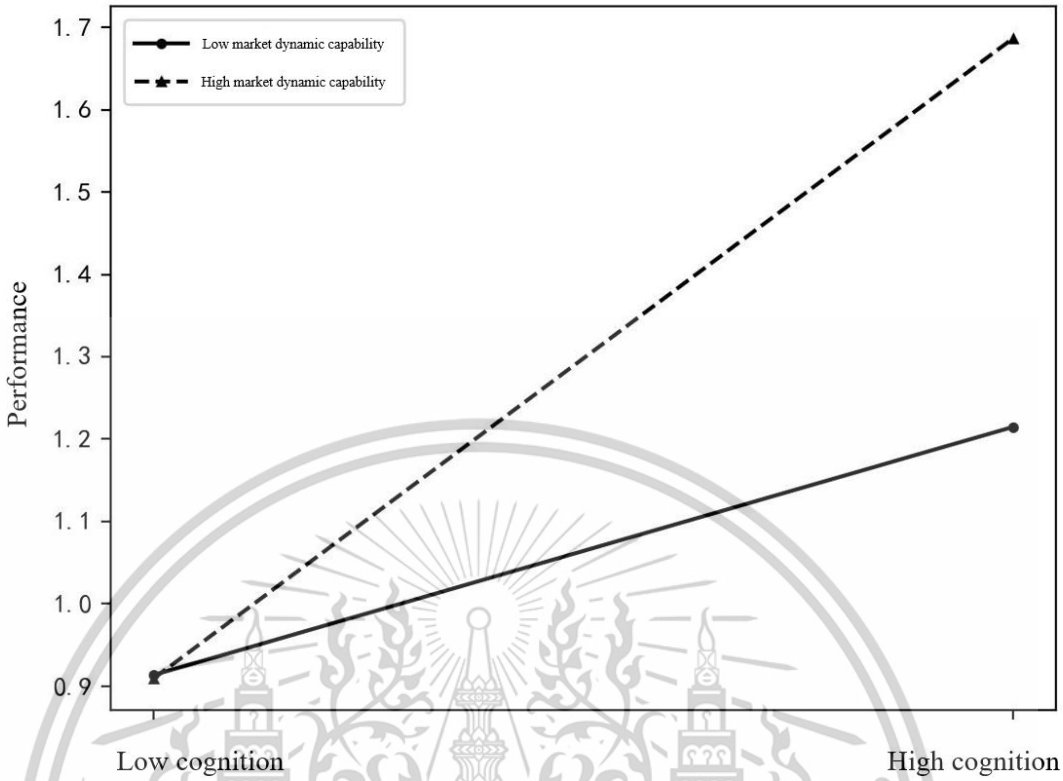


Figure 4.5 Slope chart of Organizational Cognition

Figure 4.5 is the slope chart of organizational cognition, showing the difference in the impact of organizational cognition on enterprise performance at different levels of market dynamic ability of regulatory variables.

While the market dynamic capability level is high, enterprises can quickly perceive and respond to market changes and seize new market opportunities. At this point, the importance of organizational cognition is particularly prominent. Clear organizational awareness helps companies establish clear strategic goals, thereby guiding the efficient allocation of enterprise resources. At high levels of market dynamic capability, there is often a positive correlation between organizational cognition and corporate performance. The clearer and more consistent the organizational cognition is, the better the performance of the enterprise.

4.10 Hypothesis Testing

In the data analysis of this chapter, this study examines the relationship between forward-looking strategy, dynamic capabilities and performance, and uses structural equation

regression analysis to examine the moderating effect of market dynamics on the relationship between dynamic capabilities and performance. The final data analysis results confirm most of the research proposed in this study.

Hypothesis verification results

H1 proposes that forward looking strategies have a positive impact on performance. Through the analysis of structural equation model, the standardized path coefficient from organizational learning ability to enterprise performance is 0.152 (t=2.477, p=0.013<0.05), indicating that organizational learning ability has a significant positive impact on enterprise performance, that is, the higher the organizational learning ability, the higher the enterprise performance. The standardized path coefficient from digital innovation to enterprise performance is 0.434 (t=5.312, p=0.0<0.05), indicating that digital innovation has a significant positive impact on enterprise performance, that is, the higher the digital innovation, the higher the enterprise performance. Because both organizational learning ability and digital innovation are forward-looking strategic factors, it is inferred that forward-looking strategy has a significant positive impact on performance. Hypothesis H1 is supported.

H2a proposes that organizational learning ability has a positive impact on organizational flexibility. Through the analysis of structural equation model, the standardized path coefficient from organizational learning ability to organizational flexibility is 0.053 (t=0.771, p=0.441>0.05), indicating that organizational learning ability has no significant impact on organizational flexibility. Hypothesis H2a is not supported.

H2b proposed that organizational learning ability has a positive impact on organizational cognitive ability. Through the analysis of structural equation model, the standardized path coefficient from organizational learning ability to organizational cognition is 0.223 (t=3.36, p=0.0<0.05), indicating that organizational learning ability has a significant positive impact on organizational cognition, that is, the higher the organizational learning ability, the higher the organizational cognition. Hypothesis H2b is supported.

H3a proposed that digital innovation has a positive impact on organizational flexibility. Through the analysis of structural equation model, the standardized path coefficient from digital innovation to organizational flexibility is 0.363 (t=4.971, p=0.0<0.05), indicating that

digital innovation has a significant positive impact on organizational flexibility, that is, the higher the digital innovation, the higher the organizational flexibility. Hypothesis H3a is supported.

H3b proposes that digital innovation has a positive impact on organizational cognition. Through the analysis of structural equation model, the standardized path coefficient from digital innovation to organizational cognition is 0.418 (t=6.036, p=0.0<0.05), indicating that digital innovation has a significant positive impact on organizational cognition, that is, the higher the digital innovation, the higher the organizational cognition. Hypothesis H3b is supported.

H4a proposes that organizational flexibility has a positive impact on performance. Through the analysis of structural equation model, the standardized path coefficient from organizational flexibility to enterprise performance is 0.284 (t=4.408, p=0.0<0.05), indicating that organizational flexibility has a significant positive impact on enterprise performance, that is, the higher the organizational flexibility, the higher the enterprise performance. Hypothesis H4a is supported.

H4b suggests that organizational cognition has a positive impact on performance. Through the analysis of structural equation model, the standardized path coefficient of organizational cognition to enterprise performance is 0.311 (t=4.104, p=0.0<0.05), indicating that organizational cognition has a significant positive impact on enterprise performance, that is, the higher organizational cognition, the higher enterprise performance. Hypothesis H4b is supported.

H5a posits that market dynamics positively moderate the relationship between organizational flexibility and performance. The interaction term between organizational flexibility and market dynamics has a significant p-value of 0.000, suggesting that market dynamics, as a moderator, significantly influence the effect of organizational flexibility on corporate performance. Thus, H5a is supported.

H5b posits that market dynamics positively moderate the relationship between organizational cognitive ability and performance. The interaction term between organizational cognitive ability and market dynamics has a significant p-value of 0.000, indicating that

market dynamics, as a moderator, significantly influence the effect of organizational cognitive ability on corporate performance. Hence, H5b is supported.

Table 4.17 Summary of hypothesis testing

	Content	Result
H1	Forward looking strategies have a positive impact on the organization performance.	Support
H2a	Organizational learning ability has a positive impact on organizational flexibility.	Invalid
H2b	Organizational learning ability has a positive impact on organizational cognitive ability.	Support
H3a	Digital innovation capability has a positive impact on organizational flexibility.	Support
H3b	Digital innovation ability has a positive impact on organizational cognitive ability.	Support
H4a	Organizational flexibility has a positive impact on organization performance.	Support
H4b	Organizational cognitive ability has a positive impact on organization performance.	Support
H5a	Market dynamics have a positive moderating effect on the relationship between organizational flexibility and organization performance.	Support
H5b	Market dynamics have a positive moderating effect on the relationship between cognitive ability and organization performance.	Support

According to the results of hypothesis test, the above confirmed and unconfirmed research hypotheses are summarized, as shown in table 4.10. The discussion and analysis of confirmed hypothesis and unconfirmed hypothesis be carried out in the next part.

This Part tests the hypothesis model proposed in this study. Firstly, this study tested the mediating effect model of "forward-looking strategy dynamic capability performance" through structural equation model. Secondly, the potential impact of control variables was analyzed by correlation analysis and variance analysis. Then, the moderating effect of market dynamics on dynamic capability and enterprise growth performance was tested by regression

analysis and structural equation model. Finally, the hypotheses confirmed by hypothesis test, unconfirmed hypotheses and additional findings were summarized.

CHAPTER 5

CONCLUSIONS AND DISCUSSION

In the previous chapter, this study systematically tested the research hypothesis proposed in this study through structural equation model and regression analysis. This chapter summarizes the research results obtained in the previous chapter, explains the research results from a theoretical perspective, discuss the confirmed hypothesis and unconfirmed hypothesis respectively, and reveal the theoretical contribution of the research results and the enlightenment to management practice. Finally, in view of the limitations and shortcomings of this study, the direction of future research is pointed out.

This study takes forward-looking theory, dynamic theory and resource-based theory as theoretical basis and follows the logic of "forward-looking dynamic capability enterprise performance". Based on literature research, this study adopts the method of questionnaire survey and uses a variety of statistical analysis methods to analyze the data obtained from the research. The main research contents involved in this study are as follows. Firstly, based on resource-based theory and dynamic capability theory, this study discusses the composition of forward-looking strategy and dynamic capability. Secondly, from the perspective of enterprises, it explores some cognitive factors that affect dynamic capability. Then, it analyzes the impact of different types of dynamic capability on enterprise performance. Finally, it analyzes the regulatory effect of environmental dynamics on the relationship between dynamic capability and enterprise performance. In general, the theoretical model of this study consists of 9 research hypotheses. After hypothesis testing, this study forms several research results. These findings are discussed separately in this section.

5.1 Dimension Division of Dynamic Capability

Based on a systematic review of the existing research literature, combined with the scale data of previous scholars, this study defines the concept of forward-looking strategy and forms a measurement scale. Then, through exploration factor analysis and confirmatory factor analysis, the reliability and validity of the scale of forward-looking strategy were proved to be good.

Based on theoretical research, this study divides forward-looking strategy into two dimensions: learning ability and digital innovation. The division of forward-looking strategy in this study follows and integrates the previous research results, and on this basis, integrates the measurement of dynamic forward-looking strategy scale. Based on the mature scale of the existing research, this study supplemented the scale through literature research and data and formed the initial measurement scale. In the initial measurement scale, learning ability consists of 12 items, and digital innovation consists of 8 items.

After a large-scale survey, through exploration factor analysis, it found that learning ability and digital innovation have certain discriminant validity, and the factor load value of each variable also meets the research requirements. At the same time, the Cronbach's α values of learning ability and digital innovation variables are greater than 0.8, and the CITC values of each measurement item are greater than 0.5. Therefore, the reliability of each variable also meets the research requirements. Then, through confirmatory factor analysis, it was found that the construct reliability (CR) of the five factors under the two variables were 0.906, 0.874, 0.898, 0.959 and 0.856, which were greater than 0.8, and the average variance extraction (AVE) were 0.708, 0.636, 0.687, 0.603 and 0.599, which were greater than 0.5, indicating that the aggregate validity of each variable was good (Formell & Larcker, 1981). In a word, the scale that divides forward-looking strategy into two dimensions: learning ability and digital innovation has good reliability and validity.

Based on theoretical research, this study divides enterprise dynamic capabilities into two dimensions: organizational flexibility and organizational cognition. The division of enterprise dynamic capability in this study follows and integrates the previous research results, and on this basis, integrates the measurement scale of enterprise dynamic capability. Based on the

mature scale of the existing research, this study supplemented the scale through literature research and data and formed the initial measurement scale. In the initial measurement scale, organizational flexibility consists of 10 items, and organizational cognition consists of 6 items.

After a large-scale survey, exploratory factor analysis found that organizational flexibility and organizational cognition had a certain degree of discriminant validity, and the factor load value of each variable also met the research requirements. At the same time, the Cronbach's α values of organizational flexibility and organizational cognition variables are greater than 0.8, and the CITC values of each measurement item are greater than 0.5. Therefore, the reliability of each variable also meets the research requirements. Then, through confirmatory factor analysis, it was found that the construct reliability (CR) of the five factors under the two variables were 0.859, 0.856, 0.886, 0.876 and 0.804, which were greater than 0.8, and the average variance extraction (AVE) were 0.603, 0.599, 0.660, 0.703 and 0.578, which were greater than 0.5, indicating that the aggregate validity of each variable was good (Formell & Larcker, 1981). In a word, the scale which divides dynamic ability into two dimensions of organizational flexibility and organizational cognition has good reliability and validity.

5.2 Impact of Forward-Looking Strategy on Dynamic Capabilities of Enterprises

In recent years, the relevant research on dynamic capabilities has also pointed out the important impact of forward-looking strategy on dynamic capabilities, but the relevant empirical research is not rich enough. Based on the previous theoretical research, this study puts forward nine research hypotheses on the impact of forward-looking strategic factors on the dynamic capabilities of enterprises. In the subsequent large-scale research, this study collected effective data from 125 enterprises and conducted relevant data analysis to test the research hypothesis. Specifically, this study first conducted data aggregation analysis to test whether the data reached the aggregation standard and then tested the common method deviation through Harman single factor test and label variable test. Finally, the structural equation model was used to test the research hypothesis. The final data analysis results show that 8 research hypotheses have been verified. This shows that the forward-looking strategy indeed have an impact on the dynamic capabilities of enterprises. Different forward-looking

strategies have different effects on different dynamic capabilities. Next, this study discusses confirmed hypothesis and the unconfirmed hypothesis respectively.

5.3 Confirmed Assumptions

5.3.1 Forward looking strategy has a positive impact on performance

The results of this study show that forward-looking strategy has a positive impact on performance. Through the analysis of structural equation model, the standardized regression coefficient from organizational learning ability to enterprise performance is $p=0.013<0.05$, indicating that organizational learning ability has a significant positive impact on enterprise performance, that is, the higher the organizational learning ability, the higher the enterprise performance. The standardized regression coefficient from digital innovation to enterprise performance is $p=0.0<0.05$, indicating that digital innovation has a significant positive impact on enterprise performance, that is, the higher the digital innovation, the higher the enterprise performance. Because both organizational learning ability and digital innovation are forward-looking strategic factors, it is inferred that forward-looking strategy has a significant positive impact on performance.

What information should be paid attention to in the context of forward-looking strategic choice and guide the attention of managers by configuring and distributing stimulus information. The decision-making of enterprises is the result of limited attention allocation (Ocasio, 1997). The concept of forward-looking strategy proposed in this study is to examine whether enterprises can dynamically learn new information and dynamically change the allocation of resources. In a changing environment, it is no longer feasible for enterprises not to receive new information and develop without innovative development mode. On the contrary, enterprises need to change the strategic orientation according to the changes of the environment, so that the ability of enterprises can be developed by leaps and bounds. Changing the strategic orientation of the enterprise enables the enterprise to often obtain new information and focus on new priorities, so as to promote the enterprise to learn new knowledge. It also enables the enterprise to have more opportunities to integrate the newly acquired knowledge with the existing knowledge and enables the enterprise to realize the

necessity of re allocating internal resources. In other words, forward-looking strategies can promote performance, and the research hypothesis H1 is true.

5.3.2 Organizational learning ability has a positive impact on enterprise dynamic ability

Through the analysis of the structural equation model of this study, the standardized regression coefficient from organizational learning ability to organizational cognition is p=0.0<0.05, indicating that organizational learning ability has a significant positive impact on organizational cognition, that is, the higher the organizational learning ability, the higher the organizational cognition. Hypothesis H2b is supported.

Enterprises with strong learning ability can always obtain a large amount of new information, discover all kinds of knowledge useful to enterprises in time, and promote the integration of products, technology, market and other information. At the same time, enterprises with strong learning ability often have more opportunities to contact the outside world, and the scope of choosing alliance partners is larger, so it is easier to obtain opportunities, so that enterprises can obtain more external resources. In other words, learning ability can promote the cognitive ability of enterprises, assuming that H2b is true.

5.3.3 Digital innovation capability has a positive impact on enterprise dynamic capability

Through the analysis of the structural equation model in this study, the standardized regression coefficient from digital innovation to organizational flexibility is p=0.0<0.05, indicating that digital innovation has a significant positive impact on organizational flexibility, that is, the higher the organizational flexibility. Hypothesis H3a is supported. At the same time, that the standardized regression coefficient from digital innovation to organizational cognition is p=0.0<0.05, indicating that digital innovation has a significant positive impact on organizational cognition, that is, the higher the digital innovation, the higher the organizational cognition. Hypothesis H3a and H3b are true.

Digital transformation provides more innovative technologies and tools. It can help enterprises dig into the preferences and demands of the market, so as to provide innovative

products and services for enterprises. Artificial intelligence technology can help enterprises realize automated and intelligent production, improve production efficiency and product quality. The application of these technologies and tools provides more possibilities and choices for enterprise innovation. Secondly, digital transformation also promotes cooperation and resource sharing between enterprises and other innovation institutions, which can not only accelerate the innovation process of enterprises but also reduce innovation costs and improve innovation efficiency. Hypothesis H3a and H3b are true.

5.3.4 The dynamic capabilities of enterprises have a positive impact on enterprise performance

Through the analysis of structural equation models in this study, organizational flexibility has a positive impact on performance. The standardized regression coefficient from organizational flexibility to enterprise performance is $p=0.0<0.05$, indicating that organizational flexibility has a significant positive impact on enterprise performance, that is, the higher the organizational flexibility, the higher the enterprise performance. Suppose H4a is supported. At the same time, it can be seen that the standardized regression coefficient of organizational cognition to enterprise performance is $p=0.0<0.05$, indicating that organizational cognition has a significant positive impact on enterprise performance, that is, the higher organizational cognition, the higher enterprise performance. Hypothesis H4b is supported.

Organizational flexibility refers to the application of organizational flexibility to business decision-making and product innovation based on the actual situation of an enterprise and the resources it controls. Enterprise cognition refers to the ability of enterprises to quickly respond to market changes and their own strength, including product design, production process and organizational structure. Therefore, H4a and H4b are assumed to be true.

5.3.5 Market dynamics has a positive moderating effect on dynamic capabilities and performance of enterprises

According to the research in this study, the significance p value of organizational flexibility and market dynamic capability based on interactive terms is 0.000, which means

that market dynamic capability as a regulatory variable have a significant impact on the impact of organizational flexibility on enterprise performance. Hypothesis H5a is supported. The significance p value of organizational cognition and market dynamic ability based on interactive items is 0.000, which means that market dynamic ability as a moderating variable have a significant impact on the impact of organizational cognition ability on enterprise performance. Hypothesis H5a is supported. Hypothesis H5b is supported.

Market dynamic capability refers to the situation where uncontrollable losses may occur outside the enterprise. The variable market dynamics regulated in this study refers to the assessment of threats in the external environment by enterprises, that is, whether enterprises can identify potential threats in the external environment. Enterprises with high cognitive tendency are more sensitive to potential threat factors in the external environment and can find more and more factors that threaten the growth and development of enterprises. After recognizing the threats in the external environment, enterprises have a stronger motivation to conduct internal learning and speed up the flow of information and knowledge within the enterprise. In order to deal with the threats that may affect the survival of enterprises, enterprises more actively integrate the knowledge and resources they have obtained, while flexibly reallocating internal resources and seeking external resources to deal with the threats that may affect enterprises to maintain or improve enterprise performance (Teece, 2007). Many previous theoretical and empirical studies have pointed out that the effect of dynamic capabilities on enterprise performance is likely to be affected by the level of market dynamics. The moderating role of market dynamics in the relationship between dynamic capabilities and enterprise growth performance through analysis, this study found that market dynamics played a positive moderating role in the impact of enterprise dynamics on performance. Market dynamism plays a positive regulatory role in the impact of organizational flexibility and organizational cognitive ability on enterprise growth performance. Market dynamism is reflected in the speed and degree of enterprises' response to changes in market demand (Wilden, 2014). When the environment is relatively stable, the maintenance cost required by the dynamic ability to change without significant customer preferences is very prominent (Li & Liu, 2014). Enterprises with strong dynamic ability can seize the opportunity to respond faster than competitors, so they can gain a competitive advantage (Li & Liu, 2014). Through

empirical research, this study finds that market dynamics plays a positive role in regulating the relationship between enterprise dynamic capabilities and performance. That is, the higher the level of market dynamics, the stronger the role of enterprise dynamic capabilities on performance. Therefore, it is assumed that H5a and H5b are valid.

5.4 Unconfirmed Assumptions

According to the data research in this study, the standardized regression coefficient from organizational learning ability to organizational flexibility is $p=0.441>0.05$, indicating that organizational learning ability has no significant effect on organizational flexibility. Hypothesis H2a is not supported.

Organizational flexibility means that all departments and personnel of an organization can flexibly adjust and change according to changes in the internal and external environment of the organization. It reflects the potential ability of the organization to deal with environmental uncertainty. The basic characteristics are function integration, decision-making level down, structural networking, adaptive function, and crossing organizational boundaries. Organizational learning ability is a long-term behavior, which continuously scans the information in the external environment and remains highly sensitive to changes in the external environment. However, if only mechanical access to information, the positive impact on enterprises is always limited. Learning ability requires that enterprises can absorb and understand the acquired knowledge and can communicate and learn in various channels and ways within the organization for a long time, so as to improve the ability of enterprises. Therefore, it is assumed that H2a does not hold.

5.5 Theoretical and Practical Significance of The Study

Based on the perspective of forward-looking strategy, this study analyzes the relationship between dynamic capabilities and performance of enterprises and obtains some meaningful research conclusions. These research conclusions make a certain contribution to enriching the relevant theories of management and guiding the management practice.

5.5.1 Theoretical significance

This study discusses the connotation of dynamic capabilities, analyzes the impact of forward-looking strategies on dynamic capabilities, tests the effects of different dynamic capabilities on enterprise performance, and explores the moderating effect of market dynamics on dynamic capabilities and enterprise performance.

1) Studied the composition of forward-looking strategic factors and enterprise dynamic capabilities. Since the concept of forward-looking strategic factors was formally proposed, scholars have been discussing the composition and connotation of forward-looking strategic factors from multiple perspectives. Based on forward-looking strategy theory and dynamic capability theory, this study believes that forward-looking strategy can be divided into two dimensions: learning ability and digital innovation. At the same time, this study also believes that dynamic capability can be divided into two dimensions: organizational flexibility and organizational cognition, which has been verified by empirical research, and it has been verified by empirical research.

Based on the existing theoretical and empirical research progress, this study further clarifies the composition of forward-looking strategy and dynamic capability and enriches the research in related fields. At the same time, it also lays a good foundation for the study of the factors affecting dynamic capabilities and the results of dynamic capabilities.

2) Explore the mechanism between dynamic capabilities and performance. Firstly, this study explores the strategic factors that affect dynamic capabilities, including organizational learning ability and digital innovation. The results show that different strategic factors have different effects on different dynamic capabilities. Then, this study examines the impact of dynamic capabilities on performance. The results show that different dynamic capabilities have different effects on enterprise performance. Finally, this study also explores the path of forward-looking strategic factors affecting enterprise performance through dynamic capabilities through the intermediary test. At present, the research on the relationship between forward-looking strategy and dynamic capabilities mostly stays at the theoretical level, and this study enriches the relevant research from the empirical perspective. At the same time, although there have been some empirical studies measuring the impact of dynamic capabilities

on enterprise performance from the perspective of definition in recent years, this study makes a further test on the basis of clarifying the connotation of dynamic capabilities.

3) The moderating effect of market dynamics on the relationship between dynamic capabilities and performance is examined. This study brings market dynamics into the research model to explore how different types of dynamic capabilities have different effects on enterprise performance when different aspects of the market present different levels. The results provide empirical evidence for deepening the dynamic capability theory. Previous studies on market dynamics have reached some different conclusions. At the same time, many studies have not refined the measurement of market dynamics. This study also makes a further test on the basis of clarifying the connotation of market dynamics.

5.5.2 Practical significance

Through the investigation and empirical analysis of 125 science and technology enterprises, this study explores the mechanism of "forward-looking strategy dynamic capability performance", and the research results have some practical implications for enterprises facing rapid change environment.

1) Through theoretical analysis, this study found that from the perspective of resources, the acquisition, absorption, integration and reconstruction of resources by enterprises are of great significance to the survival and development of enterprises, which determines whether enterprises can flexibly change the resource base of enterprises to adapt to the changing environment. In view of this, this study proposes that learning ability, digital innovation ability, organizational flexibility and organizational cognition are four important factors. Enterprises should pay attention to the cultivation of dynamic capabilities, which can have a positive effect on the growth performance of enterprises. Specifically, the purpose of forward-looking strategy is to improve the learning ability and innovation ability of enterprises. It can enable enterprises to absorb more external knowledge, accelerate the circulation of internal knowledge, and enable enterprises to obtain the survival market through their own innovation in the volatile market. Therefore, enterprises should not only acquire external knowledge by participating in industry activities, but also pay attention to internal education and training and knowledge sharing. Secondly, enhancing the integration ability of enterprises can improve the

efficiency of enterprises, and find new ways to improve enterprise performance. Therefore, enterprises should always follow up the latest information, select appropriate ways to integrate new technical knowledge, methods and experience, and integrate these factors to achieve performance improvement.

2) Enterprises should cultivate the dynamic ability of enterprises according to the different situations of market dynamics. The development and cultivation of dynamic capabilities need cost, so enterprises need to analyze what kind of situation, more need to pay attention to dynamic capabilities, to maintain the competitive advantage of enterprises. The empirical results of this study show that different aspects of environmental dynamics have different effects on the relationship between dynamic capabilities and enterprise performance. For example, in the dynamic environment of high technology, technology changes frequently and greatly. Enterprises should pay attention to enhancing the integration ability, integrating new technology with existing technology, developing new products and maintaining the competitiveness of enterprises. In the environment of high market dynamics, market preferences change rapidly. Enterprises should pay attention to the cultivation of learning ability and integration ability. After obtaining the corresponding changed information, they should fully learn within the enterprise and integrate the new information into the enterprise products.

5.6 Discussion

Some scholars have divided the dimensions of dynamic capabilities based on the systematicity and integrity of organizations. From the perspective of strategic management and taking organizational systems as the research object, Ansoff (1965) first divided flexibility into internal flexibility and external flexibility. External flexibility refers to the adaptability of enterprise strategy to the external environment, which can minimize the consequences of enterprise failure through diversified products and market trends. Internal flexibility refers to the ability of enterprises to implement strategies and find buffer zones for their response to failure through the flow of internal resources. Eppink (1978) classified dynamic capabilities into strategic, operational, and market flexibility based on the

relationship between dynamic capabilities and unpredictable change. Sanchez1(1997) believed that flexibility includes two aspects, namely resource flexibility and coordination flexibility. Resource flexibility reflects the characteristics of existing resources in an enterprise, reflecting the purpose and scope of the resources themselves, and also indicating the enterprise's ability to utilize resources. Flexibility reflects the organizational structure characteristics of an enterprise, which refers to the ability of relevant management or staff to redistribute, construct, and allocate resources in order to fully utilize enterprise resources for new strategic purposes. Taking organizational systems as the research object, researchers have further divided organizational flexibility into dimensions from the perspectives of the relationship between organizational flexibility and corporate performance, the relationship between organizational flexibility and innovation, and the relationship between organizational flexibility and coping with environmental changes. Involving structural flexibility, technological flexibility, personnel flexibility, process flexibility, resource flexibility, innovation flexibility, and cultural flexibility (Zhu et al., 2014; Xiang et al., 2012); production flexibility, human resource flexibility, financial flexibility, organizational structure flexibility (Cheng, 2009; Zhao et al., 2012), as well as forward-looking flexibility and responsive flexibility; Dimensions such as initial flexibility and subsequent flexibility (Evans, 1991; Karri, 2001; Celuch, 2007). Among them, foresight mainly emphasizes the proactive and proactive ability cultivation and application adopted by organizations to maintain their competitive advantage in the face of environmental changes. Dynamics refers to the ability of enterprises to respond and adjust based on environmental changes that have already occurred.

In existing research, there are few studies that separately investigate the impact of forward-looking strategies and dynamic capabilities on corporate performance. Through the review of relevant literature, it can be found that dynamic capabilities can integrate existing resources, improve the efficiency of resource utilization by enterprises (He et al., 2019), increase information transparency between entities (Yu et al., 2022), improve the efficiency of information communication (Triguer, 2013), promote the transformation and upgrading of existing products and services (Ganter, 2013), improve internal control governance (Yu et al., 2022), solve financing difficulties (Liu et al., 2021), enhance the ability of enterprises to resist risks (Yang et al., 2021), and promote the development of utilization based innovation in

enterprises. On the other hand, digital transformation can help enterprises seize opportunities to improve product and service quality in a timely manner by exploring the needs of potential customers (Zheng, 2019), improve production models (Grant, 1996), construct new innovation and evaluation systems (Mao, 2021), and promote the development of exploratory innovation. Therefore, it can provide technical support for enterprises to carry out exploitative innovation and exploratory innovation and promote the development of enterprise innovation.

Based on existing research, this study divides both forward-looking strategies and dynamic capabilities into two dimensions, applying them to the study of forward-looking strategy and corporate performance. Forward-looking strategy positively promotes organizational learning and innovation. Enterprises can enhance their management capabilities through forward-looking strategies, respond to external stimuli, and improve their performance by collecting, integrating, and processing knowledge. This provides new research evidence for the study of the mechanism of the impact of forward-looking strategies on corporate performance. This study explores and examines the moderating effects of organizational flexibility, organizational cognition, and market uncertainty on the path process between forward-looking strategy and corporate performance. Firstly, statistical testing of empirical data supports the impact of forward-looking strategies on the dynamic capabilities of enterprises. The stronger the forward-looking awareness of enterprises, the more they can mobilize higher dynamic capabilities to adapt to the external environment. Secondly, from the perspective of the company's own capabilities, statistical tests of empirical data support the positive moderating effect of the company's flexibility and cognition on the performance of forward-looking strategies, that is, the stronger the company's dynamic capabilities, the better the application of forward-looking strategies. Finally, environmental uncertainty reduces the impact of organizational learning on business performance, and the weaker the environmental uncertainty, the better the business performance.

5.7 Research Recommendation and Limitations

Enterprises should have a profound understanding of the importance of forward-looking strategies for the company. With the rapid development of the economy, forward thinking

strategy should become an important choice for more and more enterprises. However, in reality, many managers are hesitant to make strategic decisions regarding the implementation of a forward-looking strategy due to the potential upfront investment it may bring. The study results of this study indicate that forward-looking strategies can have a significant positive impact on the economic performance of enterprises, which means that within the enterprise, the revenue brought by forward-looking strategies far exceeds the costs that need to be invested.

This study explores the impact of forward-looking strategic elements and the composition of enterprise dynamic capabilities on enterprise performance and sustainable development. Since the concept of forward-looking strategic factors was formally proposed, scholars have been discussing the composition and connotation of forward-looking strategic factors from multiple perspectives. Based on the forward-looking strategy theory and dynamic capability theory, this study believes that the forward-looking strategy can be divided into two dimensions: learning ability and digital innovation. At the same time, this study also believes that dynamic capability can be divided into two dimensions: organizational flexibility and organizational cognition, which has been verified by empirical research.

Forward-looking strategy and dynamic capabilities are two pivotal elements in enterprise strategic management, offering significant advantages to businesses. Forward-looking strategy allows enterprises to anticipate future market trends and competitive dynamics, enabling them to prepare ahead of time and seize market opportunities. By anticipating market opportunities and developing unique products and services, enterprises can seize the initiative, identify and respond to potential market risks, thereby minimizing potential losses and resource wastage. This aids businesses in establishing brand advantages in the market and boosting market share. Dynamic capabilities further empower enterprises to allocate resources more efficiently, encompassing manpower, material resources, and financial resources, allowing them to swiftly respond to market shifts, including technological innovations and evolving consumer demands. Through rapid adjustments to strategies and business models, dynamic capabilities facilitate swift adjustments to internal structures and resource allocation in response to external environmental shocks, mitigating their impact on business operations, preventing market elimination, and preserving competitive advantages. Forward-looking strategy and

dynamic capabilities are crucial factors for businesses to maintain their competitive edge in a complex and ever-changing market environment. Forward-looking strategy enables companies to anticipate the future and be well-prepared, while dynamic capabilities facilitate rapid adaptation to market changes and continuous innovation. The integration of these two factors provides businesses with enhanced competitive advantages and sustained development momentum.

This research is conducted in strict accordance with scientific standards and strives to make contributions to management theory and practice. However, subject to some objective conditions, there are still some factors that need to be further improved in future research. For example, the theme of this study is to explore the impact of forward-looking strategies on the dynamic capabilities of enterprises and ultimately reflect the impact on the performance of enterprises, as well as the impact of enterprises' own dynamic capabilities on performance in the dynamic market environment. Because the cultivation and development of dynamic capabilities of enterprises need a long time to develop, the impact on enterprise performance also needs a long time to truly reflect. Therefore, for the research of dynamic energy, it is best to use longitudinal research to track and analyze the enterprise for a long time. However, due to the time limit of this study, it is impossible to conduct long-term tracking of enterprises. Therefore, in future research, efforts be made to seek long-term cooperation with enterprises, so as to better observe and study the development of dynamic capabilities of enterprises vertically, hoping to better grasp the impact and results of forward-looking strategies and dynamic capabilities on the development of enterprises.

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APPENDIX

APPENDIX A SMALL SAMPLE EXPERIMENT

1. Small Scale Interviews

The previous study described how this study formed a part of the measurement scale by deductive method. However, when the existing literature is not rich enough in concepts to be studied, it is necessary to use the inductive method to form a measurement scale (Hinkin, 1995). Therefore, because of the concept that the current research is not mature enough, this study obtained relevant data through small-scale interviews with middle and senior managers and academic experts of enterprises, supplemented the existing research results, and provided support for the subsequent scale development and revision.

This study arranged interviews with relevant personnel with rich management practice experience, in order to have a deeper understanding of the research topic and supplement the data needed for the study. The small-scale interview was scheduled from May 20th to 24th, 2024. This study selected five senior managers in the technology-based service industry and two strategic management experts as the interviewees. In order not to limit the thinking of the respondents, the researchers did not specifically put forward the definition of relevant concepts during the interview, but adopted the method of semi-structured interview, put forward corresponding questions around the research theme, and recorded the answers of the respondents.

1.1 Self-prepared partial scales

For the variables whose research is not mature at present, this study developed the corresponding research scale on the basis of combing literature and small-scale interviews. At the same time, according to the data obtained from literature and interviews, the mature scale was supplemented. When preparing questions, they should be tailored to the research theme, and the expression should be as simple and easy to understand as possible, avoiding ambiguity, ambiguity, and social taboos. The questions are not suggestive or tendentious (Ajzen, 2005;bradburn, Sudman & Wansink，2004; Zhao, 2009).

1.2 Evaluation of measurement terms

After the formation of the initial measurement scale, it is necessary to make a preliminary evaluation of the content validity of the items contained in the scale (Podsakoff, 2003). Content validity refers to the extent to which the scale reflects the structural concepts that researchers want to measure (Haynes, Richard & Kubany， 1995; Chen et.al, 2012) if the measurement terms cannot completely and accurately reflect the connotation of the architecture concept, measurement errors occur (Chen et.al, 2012).

Three experts familiar with the research field of this study were invited to evaluate the content validity of the initial measurement scale. Firstly, the author introduces the research framework, the connotation definition and dimension division of the main variables to the experts; Then, the experts were asked to score the meaning clarity and accuracy of the measurement terms contained in the scale; Finally, compare the opinions of the experts, and modify, add or delete the measurement terms according to the suggestions of the experts.

As mentioned above, based on the existing relevant literature, this study compares and selects the appropriate maturity scale, improves the existing scale through small-scale interviews, uses the literature and interview data to prepare the immature scale, and finally uses expert evaluation to improve and modify the scale, and finally forms the questionnaire for the study.

2. Small Sample Test

As mentioned above, this study uses inductive and deductive methods to form the initial measurement scale. Therefore, among the measurement scales used in this study, there are not only mature scales that have been tested by empirical research, but also measurement terms formed or added through literature review and interview research. In this case, it is necessary to conduct a small sample test before the formal large-scale research to purify the measurement terms. Therefore, this study conducted a small sample test before formal large-scale research to ensure the effect of large-scale research.

2.1 Small sample sampling and data description

After communicating with Guizhou digital industry association, 30 enterprises were selected for the small sample questionnaire survey in the target area, and the industry association was responsible for the distribution and collection of small sample questionnaire. Each enterprise randomly selected four managers to investigate according to the rules. In this small-scale survey, 120 questionnaires were distributed and 100 were recovered, with a recovery rate of 83.33%.

After collecting the questionnaire, the demographic characteristics and enterprise characteristics of the small sample finally used for analysis in this study are described in Table 2.1.

Table 2.1 Description of small sample characteristics (n=100)

Title	Item	Frequency	Percent (%)	Cumulative percentage
Gender	Male	55	55%	55
	Female	45	45%	100
Age	26-30	8	8	8
	31-35	34	34	42
	36-40	38	38	80
	41-45	18	18	98
	46-50	2	2	100
Position	Senior management	19	19	19
	Middle management	67	67	86
	Primary management	14	14	100
Year of establishment	2-5	7	7	7
	6-9	27	27	34
	10-13	32	32	66
	Over 13	34	34	100
Number of employees	Under 50	7	7	7
	50-199	37	37	44
	200-499	35	35	79
	Over 500	21	21	100
Enterprises engaged in industries	Information technology industry	45	45	45
	Biotechnology industry	6	6	51
	New energy and environmental protection technology industry	11	11	62
	Artificial Intelligence technology industry	15	15	77
	The Internet of Things and Intelligent Logistics Technology industry	23	23	100

2.2 Descriptive statistical analysis of small sample data

Although the content of this study is aimed at enterprise level variables, such as enterprise cognition, enterprise dynamic capability and enterprise performance, in the small sample test stage, this study does not aggregate the data of the same enterprise. Some

researchers have pointed out that it is more appropriate not to aggregate the data when testing the statistical value of the measurement terms, because it can avoid damaging the psychological characteristics of the measurement terms due to the change of data distribution (Liao, 2019). In addition, due to the small sample size in the small sample test stage, the sample size can be expanded without data aggregation, which is convenient for exploration factor analysis (Zhao, 2020).

After obtaining a valid questionnaire, this study first makes a descriptive statistical analysis of the data to test whether the data conform to the normal distribution. The descriptive statistical results of each measurement term, including mean, standard deviation, skewness and kurtosis, are shown in table 2.2. It can be seen from the results in table 2.2 that the maximum absolute value of skewness of each measurement term is 2.25, and the maximum absolute value of kurtosis is 7.707. The basic conditions for judging whether the sample conforms to the normal distribution are that the absolute value of skewness is less than 3 and the absolute value of kurtosis is less than 10 (Kline, 1998). It can be seen that the small sample data of this study obeys the normal distribution and can be analyzed in the next step.

Table 2.2 Descriptive statistics of each measurement clause data of small sample(n=100)

Item	Mean	S.D.	Skewness	Kurtosis
LC1	1.76	0.712	1.926	7.707
LC2	1.52	0.745	2.248	7.838
LC3	1.72	0.653	0.801	1.508
LC4	1.69	0.706	1.226	2.494
LA1	1.76	0.754	1.441	3.815
LA2	1.59	0.767	1.955	6.153
LA3	1.87	0.747	1.254	3.294
LA4	1.68	0.827	1.972	5.841
LI1	1.81	0.692	1.391	4.896
LI2	1.6	0.752	1.25	1.41
LI3	1.93	0.807	1.422	3.565
LI4	1.7	0.772	1.922	6.162
DS1	1.77	0.617	0.712	2.062
DS2	1.52	0.703	1.884	5.905
DS3	1.81	0.837	1.638	3.913
DS4	1.74	0.719	0.934	1.227
DA1	1.73	0.723	1.935	7.464
DA2	1.53	0.745	1.916	5.27
DA3	1.78	0.675	0.698	0.982
DA4	1.68	0.827	1.863	4.84
OR1	1.84	0.631	1.367	6.456
OR2	1.54	0.673	1.272	2.023
OR3	1.83	0.753	1.307	3.388
OR4	1.6	0.651	1.522	5.994
OX1	1.73	0.617	0.768	2.15
OX2	1.55	0.757	2.25	7.7
OX3	1.64	0.644	1.428	6.004

Table 2.2(Continue)

OT1	1.82	0.77	1.269	2.97
OT2	1.66	0.781	1.46	3.145
OT3	1.67	0.637	0.891	1.944
OI1	1.84	0.647	1.305	5.698
OI2	1.75	0.869	1.549	3.142
OI3	1.72	0.792	1.044	0.843
OE1	1.72	0.604	0.774	2.452
OE2	1.59	0.668	1.529	5.427
OE3	1.62	0.763	1.746	4.596
MD1	1.68	0.601	0.551	1.006
MD2	1.68	0.79	2.146	7.394
MD3	1.7	0.644	0.835	1.723
MD4	1.6	0.711	1.62	4.888
MD5	1.63	0.691	1.578	5.325
PF1	1.83	0.604	0.37	0.943
PF2	1.52	0.611	1.007	1.402
PF3	1.73	0.709	1.484	4.827
PE1	1.63	0.72	1.686	5.189
PE2	1.66	0.755	1.377	2.379
PE3	1.65	0.869	2.07	5.473

2.3 Small sample test method and results

After confirming that the small sample data conforms to the normal distribution, it is necessary to purify the measurement terms according to certain standards, so that the problems existing in the measurement scale can be found and timely improved and corrected, which is conducive to the subsequent research of large-scale samples. In view of this, this study first makes a preliminary judgment on the structure of each variable and dimension through exploration factor analysis, then uses CITC analysis to test the measurement terms, and finally evaluates the reliability of each variable and dimension through consistency coefficient analysis.

The measurement scales used in this study include both mature scales that have been tested by empirical research, and measurement terms that have been formed or added through literature review and interview research. In order to grasp the dimensional structure of each variable as a whole and observe whether there are interrelated measurement terms between different variables, this study conducts exploratory factor analysis on the remaining measurement terms on the basis of the previous step. The main research variables involved were analyzed by exploratory factor analysis at the same time.

The validity study is used to analyze whether the research items are reasonable and meaningful. The validity analysis uses factor analysis, a data analysis method, to conduct a

comprehensive analysis through KMO value, common degree, variance interpretation rate value, factor load coefficient value and other indicators to verify the validity level of the data. KMO value is used to judge the suitability of information extraction, common degree value is used to exclude unreasonable research items, variance interpretation rate value is used to describe the level of information extraction, and factor load coefficient is used to measure the correspondence between factor (dimension) and item. It can be seen from the above table that the common degree value of all research items is higher than 0.4, indicating that the information of research items can be effectively extracted. In addition, the KMO value is 0.796, greater than 0.6, and the data can be effectively extracted. In addition, the variance interpretation rates of 11 factors were 10.985%, 9.548%, 8.391%, 6.403%, 6.250%, 5.999%, 5.682%, 5.503%, 5.111%, 4.368%, 3.796%, respectively. The cumulative variance interpretation rate after rotation was 72.010%>50%. It means that the amount of information of research items can be effectively extracted. Finally, please combine the factor load coefficient to confirm whether the corresponding relationship between the factor (dimension) and the research item is consistent with the expectation. If it is consistent, it means it has validity. Otherwise, it needs to be adjusted again. When the absolute value of factor load factor is greater than 0.4, it means that the options and factors have a corresponding relationship.

The analysis results show that the KMO value of the measurement terms of the main research variables involved in this study is 0.796, and the significance statistical value of Bartlett sphere test is 0. According to previous scholars' views, when the sum of squares of simple correlation coefficients among all variables is far greater than the sum of squares of partial correlation coefficients, the closer the KMO value is to 1, which means that the stronger the correlation between variables, the more suitable the original variables for factor analysis (Chen, 2018). At the same time, according to (Kaiser, 1974) 0.7< KMO <0.9, the data are suitable for factor analysis. Therefore, this study optimize the variable monitoring terms for the next step of large sample data collection. Factor analysis uses principal component analysis to extract factors and uses the maximum variance method as the method of factor rotation.

From the results of table 2.3.1, the main research variables of this study include organizational learning ability, organizational digital innovation ability, organizational flexibility, organizational cognition, market dynamics and enterprise performance. In these projects, there are 11 common factors with characteristic roots greater than 1, and the cumulative variance of these 11 common factors is 72.010%.

After exploratory factor analysis, this study screened the measurement terms contained in each variable through CITC analysis and internal consistency reliability analysis. According to previous research (FARH et.al, 1997), this study selects 0.4 as the standard to detect whether the CITC value meets the standard and observes whether deleting a measurement clause can improve the internal consistency coefficient. In addition, referring to Nunnally (1978), this study believes that the Cronbach's α value of the variable should be higher than 0.7 after screening the measurement terms through CITC analysis. Next, the CITC value analysis of the measurement terms of each variable and the internal consistency reliability analysis of each variable are carried out.

Table 2.3.1 Validity analysis results

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
Eigen value	15.498	4.172	2.545	1.991	1.765	1.598	1.412	1.384	1.319	1.114	1.048
% of Variance	32.974 %	8.876 %	5.415 %	4.237 %	3.755 %	3.401 %	3.004 %	2.944 %	2.806 %	2.370 %	2.230%
Cumulative % of Variance	32.974 %	41.850%	47.265%	51.502%	55.257%	58.658%	61.662%	64.606%	67.412%	69.782%	72.012%
(Unrotated)											
Item	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**	**Factor 6**	**Factor 7**	**Factor 8**	**Factor 9**	**Factor 10**	**Factor 11**
Eigen value	5.150	4.487	3.944	3.009	2.938	2.819	2.671	2.587	2.402	2.053	1.784
% of Variance	10.95 %	9.548 %	8.391 %	6.403 %	6.250 %	5.999 %	5.682%	5.503%	5.111 %	4.368 %	3.796 %
Cumulative % of Variance	10.958%	20.506%	28.897%	35.300%	41.550%	47.549%	53.231%	58.735%	63.846%	68.214%	72.010%
(Rotated)											
KMO	0.796										
Bartlett's Test of Sphericity	3340.094										
df	1081										
p	0										

KMO and Bartlett test were used to verify the validity. From the table above, it can be seen that KMO value is 0.796, ranging from 0.7 to 0.8. The research data is suitable for extracting information, and the validity is good from the side.

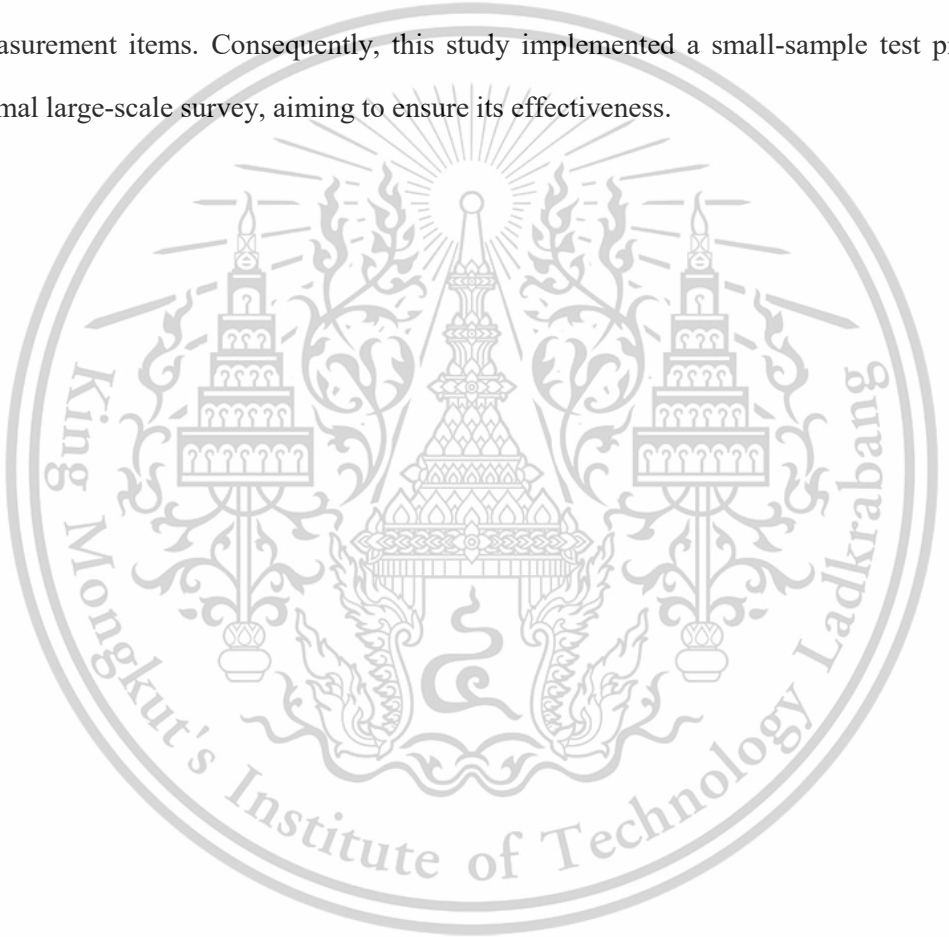
Table 2.3.2 Validity analysis of main research variables

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
LC1	0.16	0.18	0.52	0.21	0.28	0.22	0.14	0.29	0.24	0.13	-0.14
LC2	0.05	0.32	0.52	0.09	0.23	-0.09	0.37	0.06	0.02	0.47	0.06
LC3	0.23	0.27	0.35	0.00	0.23	0.07	0.29	0.36	0.26	-0.35	-0.14
LC4	0.18	0.73	0.19	0.28	0.04	-0.04	0.13	-0.06	-0.01	0.12	-0.16
LI1	0.19	0.25	0.07	0.10	0.02	0.08	-0.04	0.30	0.11	0.77	0.04
LI2	0.00	0.54	0.52	0.03	0.06	0.00	0.17	0.20	-0.07	-0.01	0.24
LI3	0.33	0.24	0.42	0.28	0.05	0.05	0.03	0.20	0.27	0.10	-0.23
LI4	0.08	0.60	0.32	0.03	0.15	0.17	0.06	0.11	0.10	0.38	0.22
LA1	0.05	0.15	0.56	-0.12	0.17	0.28	0.04	0.51	-0.05	0.10	-0.04
LA2	0.26	0.75	0.02	0.11	-0.04	0.08	0.07	0.07	0.11	-0.07	0.24
LA3	0.29	0.21	0.09	0.16	-0.16	0.29	0.13	0.60	-0.05	0.21	0.13
LA4	0.17	0.61	0.32	0.16	-0.17	0.38	0.01	0.06	-0.22	0.13	-0.06
DS1	0.11	0.07	0.24	0.30	0.09	-0.08	0.08	0.70	0.10	0.08	-0.06
DS2	0.33	0.04	0.66	0.34	-0.05	0.14	0.05	0.07	0.03	0.00	0.06
DS3	-0.02	0.67	0.12	-0.08	0.14	0.14	0.20	0.42	0.19	0.07	0.05
DS4	0.20	0.39	0.37	0.06	-0.06	0.49	0.15	0.04	0.07	0.36	0.15
DA1	-0.14	0.47	0.21	-0.04	0.32	0.01	-0.12	0.43	-0.02	0.38	0.23
DA2	0.09	0.26	0.69	0.09	-0.16	0.07	0.13	0.15	0.26	0.04	0.20
DA3	0.28	0.46	-0.05	0.08	0.23	0.02	0.23	0.45	-0.09	0.23	-0.20
DA4	0.34	0.35	0.37	0.35	-0.16	0.33	0.11	0.24	0.07	0.10	-0.08
OR1	0.55	0.12	0.25	0.30	0.28	0.22	-0.05	0.18	0.26	-0.04	0.00
OR2	0.15	0.34	0.05	0.07	-0.10	0.12	0.65	-0.02	0.20	0.27	0.28
OR3	0.79	0.14	-0.02	0.18	0.12	0.11	0.01	0.18	-0.08	0.15	0.05
OR4	0.09	0.14	0.13	0.09	0.01	0.00	0.12	-0.03	-0.06	0.09	0.83
OX1	0.45	0.04	-0.01	0.02	0.58	0.20	-0.02	0.11	0.29	0.24	-0.08
OX2	0.14	0.25	0.48	0.17	0.44	0.22	0.26	-0.22	0.01	-0.11	0.16
OX3	0.42	-0.24	0.26	-0.07	0.25	0.00	0.04	0.02	0.36	-0.07	-0.34
OT1	0.08	0.11	0.07	0.77	0.13	0.08	0.18	0.16	0.20	0.03	0.18
OT2	0.67	0.28	0.29	0.06	0.00	0.23	0.18	0.02	0.10	0.16	0.15
OT3	0.10	0.12	-0.13	0.27	0.51	0.33	0.23	0.13	0.04	-0.19	-0.24
OI1	0.54	-0.04	0.08	0.19	0.04	0.43	0.16	0.26	0.23	-0.06	0.01
OI2	0.25	0.11	0.14	0.36	-0.01	0.32	0.44	0.25	-0.11	0.00	0.27
OI3	0.31	0.13	0.06	0.07	0.17	0.73	0.06	0.05	0.09	0.12	0.07
OE1	0.19	-0.04	0.01	0.23	0.80	0.05	0.05	0.06	0.09	0.06	0.08
OE2	0.48	0.15	0.21	0.10	0.03	0.27	0.32	0.03	0.40	-0.28	0.01
OE3	0.40	0.27	0.18	0.40	0.35	0.05	0.22	-0.04	0.06	0.17	-0.25
MD1	0.14	-0.05	0.04	0.21	0.07	0.03	0.10	0.06	0.82	0.15	-0.02
MD2	0.51	0.07	0.23	0.35	0.28	-0.18	0.36	-0.12	-0.05	0.08	0.08
MD3	0.16	0.25	0.22	0.16	0.24	0.36	0.11	-0.06	0.60	-0.05	-0.06
MD4	0.45	0.22	0.19	0.29	0.23	-0.06	0.32	0.08	0.19	0.13	0.07
MD5	0.17	0.00	0.27	0.15	0.40	0.60	0.07	0.03	0.23	-0.14	-0.17
PF1	0.38	0.10	0.26	-0.14	0.31	0.31	-0.15	0.20	0.25	-0.19	0.27
PF2	0.11	0.09	0.09	0.16	0.14	0.07	0.84	0.12	0.08	-0.11	-0.06
PF3	0.59	0.18	0.08	0.26	0.17	0.20	-0.09	-0.07	0.35	-0.14	-0.10
PE1	0.34	0.08	0.24	0.64	0.29	0.11	0.02	0.14	0.12	-0.01	0.01
PE2	0.58	0.09	0.09	0.05	0.15	0.30	0.36	0.12	0.08	0.07	0.07
PE3	0.40	0.16	0.11	0.56	0.19	0.17	0.23	0.04	0.18	0.15	-0.07

This part introduces the questionnaire design and small sample test of this study. Firstly, the principles and approaches of questionnaire design are introduced; Then, the initial measurement scale was formed based on literature research and data; Finally, the

measurement scale was modified and improved through a small sample test, forming a questionnaire for large-scale research.

As mentioned above, the measurement scales utilized in this study encompass both established scales that have undergone empirical validation and newly formed or added measurement items derived from literature review and interview research. Following the perspectives of researchers like Hinkin (1995) and Podsakoff (2003), it is imperative to conduct small-sample testing prior to commencing large-scale research, in order to refine the measurement items. Consequently, this study implemented a small-sample test prior to the formal large-scale survey, aiming to ensure its effectiveness.



APPENDIX B QUESTIONNAIRE DESIGN

According to the framework of this study, the following studies need to be conducted:

1. The impact of forward-looking strategy (explanatory variable X) on corporate performance (dependent variable Y).

2. The mediating effect of enterprise dynamic capability (mediating variable M) in the main test

3. Divide based on differences in market dynamics levels and conduct heterogeneity analysis on the main test.

In the study, forward-looking strategy was divided into three variables (organizational learning ability, alertness, and innovation ability), and enterprise dynamic ability was also divided into three variables (organizational flexibility, cognitive ability, and restructuring ability), and hypotheses were made separately. Therefore, it is necessary to collect data on the above variables through questionnaire surveys, construct comprehensive indicators, and then conduct data analysis through multiple linear regression analysis.

In addition, it is necessary to collect characteristic data of sample enterprises as control variables, such as total assets, sales revenue, profit margin, and other factors that may affect enterprise performance (dependent variable Y). Enterprise performance (dependent variable Y) is measured through objective indicators.

Questionnaire

To whom it may concern,

Thank you for taking the time to participate in this research survey amidst your busy schedules. This is an anonymous survey questionnaire on the impact of forward-looking strategies on corporate performance. The questionnaire was conducted anonymously, and the information you provided strictly confidential. Please fill it out according to the actual situation of the company.

The results of this survey are only for academic research purposes and not used for any commercial purposes. The survey data also cannot be shared or leaked.

Your questionnaire is very important for this research, and we sincerely thank you for your strong support.

Part 1 Basic Information

1. Gender

□Male □Female

2. Age (years old)

□20-25 □26-30

□31-35 □36-40

□41-45 □ 46-50

☐51-55 □over 50

3. The position you hold in the enterprise.

□Senior management □Middle management

□Primary management

4. Years of establishment of your company.

□2-5 □6-9

□10-13 □Over 13

5. Number of employees in your enterprise

☐ Under 50 ☐50-100

☐101-199 ☐over 200

6. The company you are in is mainly focused on:

□ Information technology industry.

□ Biotechnology industry.

□ New energy and environmental protection technology industry.

□ Artificial Intelligence technology industry.

□ The Internet of Things and Intelligent Logistics Technology industry.

□ Other

Part 2 Questionnaire

The following questions aim to understand the situation of your company. Please check the options according to the actual situation.

Forward-looking strategy

Organizational Learning Questions					
Collection	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.Enterprises often dispatch personnel to learn new technologies, knowledge, or participate in exchange meetings.					
2.Enterprises can provide appropriate training resources to help employees continuously improve their skills and knowledge.					
3.Various forms of activities are held in enterprises to promote the dissemination of new knowledge.					
4.When formulating new strategies or policies, companies can collect relevant market information in advance.					

Integration	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. The enterprise has established an effective knowledge management system to promote information sharing and transmission.					
2. Internal information integration within enterprises is crucial for improving work efficiency and decision-making quality.					
3. The company can effectively integrate or apply existing or newly acquired knowledge to different contexts.					
4. The company is able to flexibly apply existing or newly acquired knowledge to cope with environmental changes.					

Alertness	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. The company remain sensitive to changes in the market and industry.					
2. When formulating new strategies, enterprises can timely identify potential opportunities, threats, strengths, and weaknesses.					
3. There is a team or mechanism within the enterprise specifically responsible for monitoring market changes.					
4. The company pay attention to market changes and consider their potential impact on business.					

Digital Innovation Questions					
Slack	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. The company encourages the proposal of new ideas and solutions.					
2. The company has sufficient resources and support to implement innovation.					
3. The company strictly controls the staffing of its resources.					
4. There are slack innovative projects or teams within the company.					

Ambidextrous	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. The company utilizes digital technology to achieve intelligence and flexibility.					
2. The company applies digital technology to promote comprehensive information integration and analysis and optimize enterprise management decisions.					
3. The company is able to quickly understand new knowledge obtained from external sources.					
4. Newly acquired knowledge from external sources can stimulate the company's existing knowledge to take effect.					

Dynamic Capability

Organizational Flexibility Questions					
Reconstruction	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. The organizational structure of enterprises has sufficient flexibility to adapt to changes in the market and environment.					
2. When formulating strategic plans, enterprises fully consider the uncertainty of the internal and external environment of the organization.					
3. In enterprises, organizational change can proceed smoothly without having too many negative impacts on the business.					
4. In enterprises, the decision-making process of organizations is flexible enough to adapt to different situations.					

Technology	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.Technological flexibility greatly improves the production efficiency of enterprises.					
2.Technological flexibility greatly helps to enhance the flexibility of enterprises in responding to market changes.					
3.Technological flexibility can enhance the competitiveness of					

enterprises.					

Resource	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.Resource information can be shared among various departments of the company.					
2.The company has sufficient resources to adapt to the rapidly changing market environment.					
3. Resource flexibility provides sufficient selection space for integrating resources and forming capabilities, which is conducive to the transmission of competitive advantages for enterprises.					

Organizational Cognition Questions					
Internal	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.In enterprises, employees have the cognitive ability to quickly understand and adapt to new information.					
2. Every employee of the enterprise fully understands the enterprise 's strategy.					
3.Every employee of the enterprise fully understands the core values of the enterprise.					

External	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. When formulating strategic plans, the leadership emphasizes profound insights into the market and industry.					

2.The enterprise has a keen understanding of market trends, competitors, and customer needs.					
3. Considering the existing external factors, the enterprise has strong competitiveness.					

Market Dynamics

Market Dynamics Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.In the industry where your enterprise is located, you believe that the market changes rapidly.					
2.Enterprises often face new market opportunities.					
3. Market changes have a significant impact on the business of your enterprise.					
4.When formulating business plans, enterprises can fully consider the uncertainty of the market.					
5. Enterprises can actively seek strategies to adapt to market changes.					

Performance

Performance Questions					
Financial	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.The financial performance of a enterprise should be adjusted according to the enterprise 's strategy.					
2.The financial performance results of a enterprise can be used for evaluation and assessment.					
3.The innovation and research and development capabilities of a					

enterprise can reveal its future development potential and growth potential.					

Environmental Sustainability	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.The enterprise is able to use eco-friendly technologies to reduce its carbon footprint.					
2.The enterprise is able to utilize technology to optimize energy consumption and promote energy efficiency.					
3.The enterprise effectively integrates environmental sustainability features into its technological innovations and products.					

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