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The Effect of the Resilience of the Quality System of the "Specialized and New" Enterprises

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Abstract: The new crown pandemic and European geopolitical conflicts are forcing leading manufacturers to implement digital solutions to improve production flexibility and better delivery resilience. The delivery resilience of "Specialized and new" companies is closely related to quality system resilience, which helps companies to fully capture digital transformation opportunities and grow rapidly. Therefore, this paper analyzes the effect of quality system resilience on digital transformation, supply chain management, and green innovation for "Specialized and new" enterprises, and provides a better solution for "Specialized and new" enterprises under adversity. Therefore, this paper analyzes the effect of quality system resilience on digital transformation, supply chain management and green innovation of "Specialized and new" enterprises, and provides management inspiration for the development of "Specialized and new" enterprises under adversity.

1. Quotes

Industrial manufacturing companies are experiencing an unprecedented international crisis, with new crown epidemics interrupting existing supply chains, creating delivery challenges and leading to significant increases in demand volatility; and political upheavals in Eastern Europe leading to global chain disruptions and reallocation of production. This culminates in shortages of microchips and electronic components and key base materials, hindering the manufacture of products and increasing sunk costs [1]. The digital economy is booming and many companies are forced to use low-end digital technologies or have their original markets replaced by digital products. SMEs have a weak capacity base, short life span, and low resilience and stress resistance. In the face of material shortages and supply chain instability, improved deliverability is the driving force behind investments in operational resilience and line automation.

For most enterprises, developing diversified industries to compete with leading companies for market share is a difficult and dangerous move, requiring strong strength and absorbing large amounts of investment, so "specialization" is the only way for SMEs to develop, and is a new national policy strongly encouraged and supported by the Chinese government [2]. "Specialization" is in line with Porter's two strategies in competitive strategy, that is, "focus strategy" and "differentiation strategy", and is a high combination of both. "Specialized and new" enterprises have become an integral part of

China's innovation system, driving the transformation and upgrading of China's manufacturing industry with their flexibility in the market mechanism, their continuous pursuit of efficiency, and their wide geographical distribution.[3] The main business of "Specialized and new" enterprises is related to "neck" technologies, which can provide key core technologies and support the local industrial chain to counteract the impact of counter-globalization, and thus are given the role of the industrial chain and supply chain of Chinese manufacturing. The mission of "filling in the gaps" and "making up the shortcomings" is [4] to build China's "domestic and international double cycle" development pattern, the fundamental requirement is to enhance the innovation and relevance of the supply system, solve various "neck" problems, and smooth the national economic cycle, while supporting "special and new To support " Specialized and new" enterprises and enhance their scientific and technological innovation capabilities is an important measure to serve the "double cycle" pattern [5].

2. Theoretical Basis

Resilience has been addressed in many types of collateral, such as old industrial bases due to resource depletion, institutional and environmental and industrial upgrading problems, when the impact of low economic recovery and revitalization capacity needs economic resilience to solve practical problems [6]. By studying the applicable characteristics of biological resilience and engineering resilience, Li Liangang (2019) proposed the pursuit of continuous evolution and abandonment of the system equilibrium state of the economic field applicable evolutionary resilience [7], emphasizing the dynamic change capacity of the system. The quality system refers to the quality-centered operation of R&D, procurement, production, quality control, sales and other operations of the enterprise quality control integrated system in the process of production and operation activities of manufacturing enterprises, including all elements of the product quality formation process quality formation process of quality flow throughout each link of the quality system[8] . When the enterprise is impacted, the market allocation is squeezed, sales and production are hindered, and the research and development of products also appear to be stagnant, leading to the disruption of the quality system, and the operation of the enterprise is affected. Companies with high quality system resilience can quickly adjust the production situation, actively deploy all departments, obtain external resources, reset internal and external resources, and expand new resources through resource scheduling behavior to achieve resource consolidation and development, absorb shocks while transforming crises, and do not preserve strength to achieve long-term, stable development [9].

While the economy is developing with high quality, the environmental impact cannot be ignored. The traditional crude production methods have brought irreversible damage to the environment and increased the cost of environmental management; therefore, green innovation is introduced to reduce environmental pollution through digital technology. Green innovation emphasizes the reduction of corporate environmental management costs through the improvement of process production processes, the introduction of low-carbon environmental technologies, and systematic innovation to improve environmental benefits [10].

3. "Specialized and New" Enterprise Quality System Resilience Effect

3.1. The Effect of the Resilience of the Quality System of "Specialized and New" Enterprises on the Digital Transformation of Enterprises

The introduction of digital technology can establish a sound financial system, preserve accounting information, control financial risks, and reduce self-dealing, private transactions with customers or suppliers, and false accounting [11], and use ERP or COP management systems to improve the

efficiency of capital management and investment and financing management. The use of digital technology to solve financial risk problems can provide a solid foundation for enterprises to go public. At the same time, there are multiple management systems in the "Specialized and new" enterprises, which are not interconnected and cannot effectively integrate all functions, forming information silos and dealing with business inefficiencies. The quality system toughness can enhance the connection between organizations, transform effective resources into protective factors to a great extent, gather internal resources, provide a basis for absorbing external resources, introduce digital management systems, build multi-system integration and intelligent data analysis platform, and meet the high customization requirements and high demand characteristics of "Specialized and new" enterprises. We are committed to creating a platform system that can be developed independently by the module and promote the pace of digitalization to intelligent construction of enterprises [12].

When facing business expansion, high cost of product innovation and financing or IPO needs, "Specialized and new" enterprises need to consider their own resource allocation capacity and management structure, and quality system toughness to quality-centered coordination between organizations deployment issues, facing digital impact, it can improve business compliance and risk management system Integration and linkage[11,13] form a heavy-weight awareness of financial and production management, and a light-weight awareness of personnel and process management, improve the coverage and connectivity of information flow, capital flow and work flow, conduct standardized quality management, advocate service customization, and maintain the openness of services and data. As consumption levels escalate and customer needs tend to diversify, enterprises need to build a large number of applications internally to support production flexibility [14]. Through digital construction, companies can be known for personalized services, build brand image, meet special customer requirements, provide customized process technology, provide high quality products directly and efficiently to end customers, and achieve market and customer flow development through digital marketing means.

3.2 The Effect of Quality System Resilience on Supply Chain Management in "Specialized and New" Enterprises

The digital technology represented by "big intelligence, mobile cloud and object area" has realized the interconnection of people and equipment, people and people, and equipment and equipment.[15], the quality system resilience drives enterprises to continuously achieve technological innovation and business model evolution, and strengthen the stickiness between manufacturers and suppliers, on the other hand, enterprises through the collaborative development of the platform, driving the supply chain network On the other hand, the enterprise through the platform collaborative development, drive the supply chain network members collaborative innovation, realize the elements of collaborative innovation and market efficient docking, improve the supply chain resilience [16]. As for the supply chain, enterprises with high leadership status have absolute say and can influence the price strategies of downstream enterprises in the supply chain, as well as restrain supply chain members to maintain established business relationships and reduce market substitutability to gain long-term relationships [17]. Therefore, enterprise quality system resilience can enhance the trust of members by developing benefit redistribution mechanisms, reduce the leakage of business information in the supply chain, and enhance the controllability of information for the enterprise [18]. Enterprise quality system resilience will promote digital supply chain management, optimize product quality and cost control based on data analysis, interface with databases upstream and downstream of the supply chain, facilitate product process quality control and assessment, accurately trace every step of the product, and make changes to quality issues at any time[17].

For the downstream of the supply chain, the linkage between "Specialized and new" enterprises,

customers and retailers is extremely close and an indispensable part of the quality network. While decentralizing the goods, enterprises have conducted sufficient market research to choose the right sales platform, while communication with retailers adds to the product attributes and unique corporate culture, while reflecting the added value of the product. At the same time, the contract to develop a reasonable range of quality can better improve the retailer's initiative [19], take the initiative to solve customer problems, effectively increase sales and lead the market. The constraints between manufacturers and retailers can significantly increase the market share of goods, which in turn drives product change and drives "Specialized and new" companies to continue to innovate, injecting a constant stream of energy into the market and becoming the industry leader.

After-sales demand for customers is the last step of quality inspection, total quality management to customer demand for the purpose of promoting enterprises to establish a special after-sales organization, for product attributes to introduce different warranties, regular telephone contact, are extremely important. The customer's environmental demands also need to be reflected in the product packaging and product concept to improve quality flexibility. At the same time, we establish long-term partnership with customers to always capture changes in demand and promote further improvement of product quality management [20]. Therefore, the resilience of the quality system of "Specialized and new" enterprises promotes the digital transformation of the supply chain and improves the overall efficiency.

3.3 The Effect of Quality System Resilience on Green Innovation in "Specialized and New" Enterprises

From the perspective of resource orchestration, enterprises with high quality system resilience will improve their ability to absorb, reconstruct and coordinate external resources, thus helping them to actively search for knowledge outside the field, combine multiple technologies, break the traditional path dependence of enterprises, seek innovation in green and digital technologies, gather green knowledge, and provide technical guarantee for the green transformation of enterprises [21]. At the same time, enterprises with high-quality system resilience are more forward-looking green innovation consciousness, which can fully enhance the initiative of organizational members within the enterprise to absorb external heterogeneous knowledge, solidify new internal knowledge networks, further fill internal knowledge gaps, release the value of new knowledge networks, and improve R&D technology output rate[22]. On the other hand, high-quality system-resilient enterprises promote external green enterprises to establish relationship networks, realize the integration of inter-industry relationships, strengthen the complementarity of industry partners' resources, promote the movement of their enterprise resource power to the centre of the network, consolidate resource acquisition, construct core technologies[23], improve the awareness of exploitative innovation, and obtain a broader market.

From the perspective of environmental regulation, enterprises with high quality system resilience are more willing to use low energy consumption technology, adopt environmentally friendly raw materials, reduce environmental destructiveness, reasonably dispose of waste, improve material recycling rate, and are good at using digital technology for the whole environmental monitoring, while building a reasonable carbon index evaluation system, carbon tracing for the whole life cycle of products, and accomplishing the emission reduction target of enterprises in accordance with environmental policies[24], reducing environmental regulation costs, obtain policy preferences, reduce environmental financing constraints, accumulate capital, and improve resistance to external environmental shocks. On the other hand, the environmental awareness of stakeholders promotes the development and implementation of corporate green strategies, concentrates internal resources, promotes innovation of corporate green technologies, develops goods with environmental

characteristics, improves brand image, enhances public recognition of the company, and thus better maintains social relations[25].

4. Conclusions and Recommendations

4.1 Research Findings

The rapid development of "Specialized and new" enterprises has created technological contributions for China, with their development from "Specialized and new" cultivated enterprises, Specialized and new "Small giants" enterprises, National Specialized and new. With the development of "Small giants" across the scale, the volume of technology has increased year by year, the quality of technology has improved, and the influence of technology has gradually shown, playing a strong supporting role for the scientific development of the whole society. The state adopts a ladder cultivation model for "Specialized and new" enterprises, while enterprises at the lower end of the scale and environmental impact are difficult to cross the platform period and achieve cross-level development. Therefore, this paper studies the role of quality system resilience of "Specialized and new" enterprises on the digital transformation, supply chain management and green innovation of enterprises. Therefore, this paper investigates the effect of quality system resilience on digital transformation, supply chain management and green innovation, and concludes that the quality system resilience of "Specialized and new" enterprises positively affects digital transformation, supply chain management and green innovation, which has implications for the prosperous development of "specialized and new" enterprises.

4.2 Policies and Recommendations

The government should establish a perfect incentive innovation output mechanism, reduce the tax on the purchase of patents and scientific research results by SMEs, increase the R&D funds of universities and scientific research teams, help the cooperation between industry, academia and research, and promote the development of knowledge innovation. On the other hand, the government should take into account local conditions. The government should introduce professionals, enhance network coverage, provide lectures on digital management for enterprises, establish expert volunteer teams, promote digital tools, and strengthen cooperation between enterprises and the government to ultimately achieve high-quality regional development.

"For the R&D department, process flow management is carried out to visualize the R&D progress and require multiple departments to coordinate resources and focus them on the R&D department; for the production department, ERP and MES are used to For production department, we use ERP and MES to manage production progress and plan, reasonably arrange machine production, improve equipment utilization rate, coordinate material demand and product production progress, and improve production efficiency. For the finance department, we will improve the approval requirements, focus on financial risk management and report improvement, improve the efficiency of business and financial process connection, cultivate the concept of multi-departmental collaborative development, and improve the digital capacity building of "Specialized and new" enterprises.

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