

Research Article

Competitive Analysis of Operation Mode of Enterprise Value Chain under the Background of Green Economy

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In order to improve the competitive advantage of the supply chain, occupy more market shares, and obtain greater benefits, many companies participate in the competition within or between supply chains. This article mainly introduces the game analysis of enterprise value chain operation mode under the background of green economy. This article mainly introduces the competition of business value chain operation mode under the background of green economy and determines its best-selling price and sales volume. This article first outlines the background of the green economy. Secondly, a competition model between multiple retailers is constructed, and the optimal strategy under the two modes of Cournot competition and Stackelberg competition is studied. Finally, the impact of the green economy coefficient on the maximum sales is analyzed. The experimental results of this article show that the average growth rate of total income after the transformation of the business value chain operation mode of the business under the background of the green economy is 9.03%, which also shows that the green economic policy has ultimate significance and is obviously innovative.

1. Introduction

Nowadays, with the improvement of people's living standard and consumption concept, more and more consumers' pursuit of product demand is becoming diversified and personalized [1], which makes many enterprises face more challenges in management and decision-making. In order to adapt to the new management environment and enhance the competitiveness in the fierce market, the management level of production and sales needs to be continuously improved. Enterprises are the core force of my country's social development. The state has invested a large amount of funds to support the development of the green economy of enterprises. Therefore, the transformation and development of the business value chain operation mode under the background of green economy directly affects the implementation effect of my country's green economy strategy [2]. Chain operation mode is the research object, and it has important practical significance to explore the game analysis of enterprise operation mode.

D'Amato et al. found that in terms of economic and environmental sustainability, the green economy is an "umbrella" concept [3], which includes elements in circular economy and bioeconomy concepts (such as eco-efficiency and renewable energy) and other elements. Particularly circular economy and bioeconomy are centered on resources, while green economy recognizes the fundamental role of all ecological processes in principle. Regarding the social level, the green economy includes more, for example, eco-tourism and education. By comparing the different sustainability strategies advocated by these concepts, it does not advocate its substitutability, but its clarity and reciprocal integration. McAfee discusses the findings based on the synergy and limitations of the concept, which are used to provide a basis for studying the business value chain operating mode and policy implementation in the context of a green economy. This study lacks case verification, no relevant experimental data, and does not constitute convincing [4]. Based on the theory of dynamic capability and value chain, Han et al. takes Angel orange juice and

Huiyuan Juice as examples to carry out empirical research. Through the comparative analysis of new retail enterprises and traditional retail enterprises, he further discusses the influence background of dynamic capabilities of enterprises on value chain reconstruction under the new retail mode. Then, it is further discussed how to apply the dynamic capabilities of enterprises to the value chain reconstruction in the complex and changeable market environment. The starting point of this research is good, but the discussion is too vague and should be studied in light of the actual situation [5]. Loiseau et al. in order to find the selection mechanism of green economy enterprise value chain routines, based on the description of the choice of green economy enterprise value chain routines, proposed and constructed an evolutionary game model. In addition, they also used the model to analyze green strategies for achieving evolutionary stability in routine procedures of economic enterprise value chains. The research is more prominent in the experimental part, but lacks a theoretical description [6]. Su et al., taking the environmental protection green closed-loop supply chain as the research object, a two-stage closed-loop supply chain game model is established. Considering the impact of environmental protection investment on the entire supply chain, the decisions of supply chain participants are different. When manufacturers choose a closed-loop supply chain, different choices will have an impact on the benefits of the entire supply chain. Therefore, this work compares and analyzes the impact of centralized and decentralized decisions on the returns and pricing strategies of each participant. Finally, a decision model of optimized cooperation mechanism considering cost-profit sharing contract is further designed [7].

The overall structure of this article is summarized as follows:

- (i) *Introduction*. It summarizes the domestic and international research status of supply chain enterprise competition, analyzes the significance of this paper, and summarizes the research content, research methods, and technical routes of this paper.
- (ii) *Method Part*. It presents the game theory, fuzzy mathematics theory, and supply chain theory research content of this article.
- (iii) *Experimental Part*. A competition model is constructed between two retailers under the background of green economy, and the optimal strategies are studied under four competition modes.
- (iv) *Analysis Part*. Game analysis of competition between retailers in a green economy environment and game analysis of competition between a single manufacturer and two retailers are carried out.
- (v) *Summary Part*. It summarizes the relationship between the optimal solutions under different competition modes in the green economic environment. In addition, it draws the shortcomings of this article and the expectations for future research.

2. Competitive Methods of Operation Mode of Enterprise Value Chain

2.1. Method of Business Value Chain Operation Mode under the Background of Green Economy

2.1.1. System Theory Analysis. The analysis methods of system theory include the integrity, relevance, and coordination of the system. Taking the main participants of the green economy, governments, enterprises, and consumers as examples, integrity means that if any one of these three parties is abnormal, then the overall green economy will be abnormal [1]. Relevance means that any one of these three parties will be abnormal, and the other two will be abnormal; coordination means that the abnormal relationship of the three parties will cause the tripartite imbalance [8]. Therefore, when discussing issues related to green economy in this article, we must adhere to the method of system theory and establish an economic development model based on the characteristics of tripartite interest balance [9]. This article defines the concept and characteristics of green economy and uses sustainable development theory, ecological economics theory, circular economy theory, low-carbon economy theory, and basic game theory to analyze the status quo of the development of business value chain operation models under the background of China's green economy. Analyzing the problems and their causes, and thus establishing a three-in-one economic development model of government, enterprises and consumers, belongs to the category of system analysis [10].

2.1.2. Combination of Qualitative Analysis and Quantitative Analysis. Economics is characterized by a high degree of abstraction. Many scholars use qualitative analysis methods for research, while natural sciences tend to use quantitative models to analyze problems [11]. In view of the fact that the green economic development theory has the characteristics of both social science and natural science, the method of qualitative analysis and quantitative analysis is comprehensively used in this research [12]. This article mainly uses qualitative research methods for the development status, existing problems, and cause analysis of the enterprise value chain operation mode under the background of my country's green economy. In the process of researching the value chain operation mode of my country's green economy enterprise value chain from the perspective of game theory, it mainly uses qualitative and quantitative research methods [13]. Qualitative research is the foundation, and quantitative research is deepening. The two correspond to each other and complement each other [14].

2.1.3. Comparative Analysis. Through studying the experience of the development of corporate value chain operation mode in foreign countries and various regions of my country under the background of green economy, certain enlightenment can be obtained, so as to put forward countermeasures and suggestions for the development of corporate value chain operation mode under the background of green

economy in my country [15]. Through the comparison of the practical experience of the development of the value chain operation mode of green economy enterprises in some countries and regions, it provides an effective reference for the development of the theory and practice of the enterprise value chain operation mode under the background of my country's green economy [16]. However, due to the different backgrounds of green economy development in various regions, relevant theories must be innovated. This article focuses on the in-depth study of how to promote the healthy development of my country's green economy through game analysis of corporate value chain operating models based on my country's actual national conditions [17].

2.1.4. Theory and Practice. Theory needs to be tested by practice, and practice is the only criterion for testing truth. At the same time, theory also needs to be gradually revised and perfected in the process of exploration in practice [18]. The research on the theory and practice of green economy development in my country's enterprises is still in its infancy. For example, the core concepts and characteristics of green economy have not yet reached a unified standard, and a relatively complete system needs to be tested by practice [19]. This article adopts the method of combining theoretical analysis and practical summary, interspersing part of the data support and practical content in the theoretical discussion process, in order to achieve the effect of integrating theory with practice [20].

2.2. The Cost Control Method of Enterprise Value Chain under the Background of Green Economy. From the perspective of enterprise cost control under the background of green economy, the ultimate goal of enterprises implementing value chain management is to reduce product costs from a strategic perspective, improve corporate competitive advantages, and achieve environmentally friendly and sustainable economic development [20]. Strategic cost management requires companies to give full play to the role of value chain in the cost management process, combine value chain theory, use overall planning analysis methods, tap the potential of cost reduction from a strategic perspective, and create relevant conditions for the adoption of activity-based costing [21]. According to the location where the product runs, it can be divided into internal processes and external processes. From the interaction between the input rate of the enterprise process and the postoperation process, look for a process with low input rate and weak correlation, separate it from the internal business, and try to merge the external business to achieve the goal of reducing the company's operating costs [22, 23].

- (1) Let X represent the collection of products or cost objects, Y represent the set of activity cost drivers associated with the job, x represent the x th product ($x \in X$), y represent the y th activity cost driver, and M_y represent the activity cost of the activity cost driver Sum of Y . N_x represents the sum of operations for the x th product, O_{xy} represents the number of

products x consuming activity cost drivers y (absolute quantity), and P_{xy} represents the percentage of product x consuming activity cost drivers y to the total y activity cost drivers (relative proportion). And x -product is called x -activity cost driver coefficient, referred to as activity cost driver coefficient [24, 25]. This gives the following formula:

$$P_{xy} = \frac{O_{xy}}{\sum_{x=1}^X O_{xy}}, \tag{1}$$

$$\sum_{x=1}^X P_{xy} = 1.$$

In $P_{xy} = O_{xy} / \sum_{x=1}^X O_{xy}$, $\sum_{x=1}^X O_{xy}$ represents the total amount of y -cost drivers, so the sum of the operating costs of product x is

$$N_x = \sum_{y=1}^Y M_y P_{xy}. \tag{2}$$

The cost of all products is

$$N = \sum_{x=1}^X N_x. \tag{3}$$

In order to construct a cost driver optimization model, it is necessary to first determine how to measure the accuracy of cost information and the loss of accuracy after the cost driver is merged [26]. Therefore, the accuracy standard of the merger of the two cost drivers based on the operation is required [27]. Let N_x^{km} denote the cost of product x calculated after merging the activity cost driver k into the activity cost driver m ; the cost of the new cost library after k and m are combined is $M_k + M_m$, and the cost driver coefficient is $\frac{xm}{p}$; then, the following relationship holds:

$$N_x^{km} = \sum_{y=1}^Y (M_y P_{xy} + (M_k + M_m) P_{im}),$$

$$N_x = \sum_{y=1}^Y M_y P_{xy} = \sum_{y=1}^Y (M_y P_{xy} + M_k P_{xk} + M_m P_{xm}). \tag{4}$$

Subtract formula (4) to obtain a formula representing the difference between the product cost calculated after merging the activity cost driver k into m and the product cost before the merger [28], that is, the accuracy loss formula after the two activity cost drivers are combined:

$$N_x^{km} - N = M_k (P_{xm} - P_{xk}). \tag{5}$$

- (2) Suppose C_y is the information cost related to the activity cost driver y . Because the activity cost drivers k and m are combined, the information cost C_k

related to k can be saved. In other words, not all products are exactly the same, and some products are more important to the enterprise strategic or operational importance [23]. Therefore, a weight ω_x is

set for the product x . The model maximizes the difference between the information cost savings and the loss of cost calculation accuracy. The relationship is as follows:

$$\begin{aligned} \text{Max} \quad & \sum_{\text{allpairs}(k,m)} \alpha_{km} \left\{ C_k - \text{SQRT} \left[\sum_{x=1}^X \omega_x (N_x - N_x^{km})^2 \right] \right\} \\ = \text{Max} \quad & \sum_{\text{allpairs}(k,m)} \alpha_{km} \left\{ C_k - M_k \cdot \text{SQRT} \left[\sum_{x=1}^X \omega_x (P_{xk} - P_{xm})^2 \right] \right\}, \end{aligned} \quad (6)$$

where $\alpha_{km} \in \{0, 1\}$ ($k, m = 1, 2, \dots, y$). If k and m are combined, then $\alpha_{km} = 1$; if k does not combine with m , then $\alpha_{km} = 0$. In practice, based on the consideration of the cost-benefit principle, the number of activity cost drivers should not be too large [29]. Therefore, let D be the upper limit of the number of activity cost drivers, and there are constraints:

$$Y - \sum_{\text{allpairs}(k,m)} \alpha_{km} \leq D. \quad (7)$$

The combination of a number of completely related activity cost drivers does not change the accuracy of product activity costs. According to this theory, it is possible to combine the many operating cost drivers of the implementing enterprise according to their quantitative relevance [30]. In this way, it can greatly reduce the number of cost libraries, reduce the workload of identifying, collecting, calculating, and analyzing the drivers of operating costs, reduce corporate costs, and achieve a green economy [31].

manufacturers and retailers determine their own competitive decision-making issues when retailers conduct different competitive behaviors. According to different competitive behaviors, this article assumes that there are three types of competition between retailers as follows:

Mode 1. Cournot competition among retailers

Mode 2. Collusion competition among retailers

Mode 3. Stackelberg competition among retailers

A game model of competition between two manufacturers and two retailers: when establishing a competition model between supply chains, it is assumed that the production and sales in the supply chain are equal. Since the two supply chains are playing a Cournot game, they decide their respective retail sales at the same time. When making decentralized decision-making, the manufacturer in the supply chain is the leader and the retailer is the follower; that is, the Stackelberg game is played in the chain. Finally, the three situations of decentralized-decentralized decision-making (mode 1), centralized-decentralized decision-making (mode 2), and centralized-centralized decision-making (mode 3) are separately established and solved.

2.3. Game Analysis Model. A game model of competition between two retailers: in this model, retailer A and retailer B will determine their own sales at the same time, and neither of these two companies knows each other's sales decisions. Therefore, it is necessary to use the ranking index of the profit function to obtain the first-order derivation of the profit function ranking index of the two retailers one by one for the sales volume of the company, so as to determine the optimal sales volume of each retailer.

Game model of competition among multiple retailers: in this model, all retailers will determine their own sales at the same time, and each retailer does not know the sales strategies of other retailers. Each retailer competes for sales based on the principle of maximizing its own profit. Therefore, it is necessary to use the ranking index of the profit function to find the first-order derivation of the sales volume of the company by the profit function ranking index of each retailer to determine each retailer.

A game model of competition between a single manufacturer and two retailers: a two-level supply chain competition model composed of a single manufacturer and two competing retailers is constructed. This model analyzes how

3. Construction of Competitive Experiments on the Operation Mode of Enterprise Value Chain

3.1. Design of Green Supply Chain Operation System. Before the implementation of the green supply chain, the process of green supply chain management is very complex, which can be divided into the following stages: first, green supply chain planning and then, green supply chain management.

3.1.1. The Start of Green Supply Chain Plan

(1) *Choose the Right Partner.* Before starting the green supply chain management plan, enterprises should first choose the right supply chain management partners. According to the relevant theories of green supply chain management, choosing the right supply chain partners is the basis for the efficient operation of the supply chain. Because the operation mode of green supply chain management is different from the general supply chain

operation mode, there are often obstacles due to the unqualified suppliers. Therefore, the correct selection of suppliers is the basis for the smooth operation of green supply chain.

(2) *Coordinate with Partners.* After selecting the right supply chain partners, we need to coordinate the green supply chain plan with the partners. The start-up of green supply chain may be caused by the environmental, health and safety departments finding out the needs and opportunities of green supply chain management first, and then making suggestions to the top management of enterprises. It may also be caused by the enterprises' awareness of the importance of environmental problems and the opportunities that green supply chain management will bring to enterprises. In order to improve the environmental performance, not only the departments in the core enterprises need to pay attention to the environmental problems, but also the cooperation of the external partners in the green supply chain. Therefore, the core enterprises need to communicate and negotiate with suppliers, customers, and even consumers at the stage of starting the green supply chain, so as to explain the benefits that the implementation of green supply chain management can bring to the enterprises, get partners' attention to environmental issues, reach an agreement with partners, and set overall environmental goals for the supply chain so that enterprises in the supply chain can make specific action plans according to specific goals.

3.1.2. Set Specific Objectives of Green Supply Chain Management. The next stage of green supply chain management is to set management objectives. Due to different motivations of green supply chain operation and dynamic factors of external environment, the objectives are also different. Generally speaking, they mainly include the following aspects:

- (1) Optimize environmental performance
- (2) Cost reduction
- (3) Improve quality
- (4) Expand trademark image

Cost reduction and quality improvement are the same goals set by enterprises under the influence of internal motivation, which seek to improve the quality of products and processes. The focus on trademark image is mainly related to external motivation, but the environmental factors of the goals are very clear.

3.1.3. Selection of Working Objects in Green Supply Chain. Green supply chain management is oriented to the whole supply chain, and the most important thing is to ensure that suppliers comply with various environmental regulations. Due to limited resources or limited supply chain improvement process, in fact, each green supply chain management plan can only focus on a few specific problems or organizations, and most companies need to choose the

working objects of green supply chain management according to the situation.

3.2. Building a Flat Organizational Structure of the Enterprise Value Chain Operation Model. The flat organizational structure can meet changing environmental requirements and further reduce management costs. Streamlining the organizational structure is a process in which the management level continues to decrease and the scope of management continues to expand. The system architecture has gradually changed from a single application (dividing data access directly into a service-based green economic structure) and gradually transformed into a composite organizational structure based on small teams. These team members generally only have about 10 people. This organizational structure pays more attention to the concept of responsibility of each member. Although there are not many people, they can maintain a certain focus within their responsibilities and be responsible for their work and the entire team. For example, the responsibility of search engine optimization team members is to reduce click costs and increase profitability by optimizing links. All they have to do is to focus on their work, and completing the work is the ultimate goal. From the results, this small team brought two more advantages.

On the one hand, when the business system is assigned to a small team by function (or specific business), the scale and complexity of the problem it can handle will be limited. Similarly, the scale and complexity of the architectural problem the team has to face is reduced accordingly, which is achieved precisely through team division to reduce the scale and complexity of the problem. On the other hand, when the number of people decreases, bureaucracy is difficult to develop, and the entire team is more likely to form a positive and autonomous atmosphere.

This division allows the technical team to focus on solving the corresponding business problems, or this is the embodiment of business-driven technology in the organizational structure (or business priority). Because the team size is usually around ten people at this time, there is generally no particularly complicated work, and business design decisions will be digested within the team. Another advantage of this division is that technical personnel, especially the leaders of the technical team, are very familiar with the business. Under this organizational structure, companies divide the organization vertically by business line, and technical support is usually within the business line. The internal members of the team take their work seriously, perform their duties with due diligence, and possess certain innovative capabilities. In a team, there are engineers, product managers, and designers who directly report work problems to the team's supervisor. There is almost no cooperation within the team, and members can act independently among various departments to complete their own tasks. In this way, the team can maintain its own innovation, improve the agility of response to affairs, save human resources, and achieve green economic development.

3.3. Building a Dynamic Cooperative Alliance Operation Model

3.3.1. *Effectively Reduce Marketing Costs.* The cost of dynamic alliance is borne by all parties in the alliance. This corresponds to the fact that other members of the organization provide themselves with a certain amount of free advertising or a certain degree of sales comfort, while the company uses the marketing resources of other parties for free, which of course reduces marketing costs.

3.3.2. *Expand Customer Base.* Through dynamic alliances, companies can make consumers belonging to only one party become their own consumers to a certain extent and at the same time increase the number of potential consumers under the powerful offensive of dynamic alliances, thereby expanding the consumer group of products. Dynamic alliance can only develop further. The influence of each brand can use the other to expand consumer groups and create greater market space.

3.3.3. *Expand Brand Influence.* Even if it is a well-known brand or a strong brand, it is impossible for everyone to be familiar with and like it. Customers with different brand knowledge, different reputations, and different loyalties will have different impressions, feelings, and ratings. In dynamic alliances, use certain brand influence, promotion skills, and other resource advantages to improve the visibility and reputation of related brands, enhance the loyalty of certain brands, and increase the influence of related brands. By forming a dynamic alliance, alliance members can provide other alliance members with a certain degree of advertising comfort on their respective powerful sales terminals and at the same time exchange experience with successful advertising and promotional activities across the country.

3.3.4. *Market Information Exchange, Strengthening Alliance, and Cooperation.* Under the guidance of multi-interest thinking, with the extension and deepening of the franchise company's cooperation period, the alliance members will gradually break the pure business relationship and realize the exchange of market information between the companies in the alliance organization, through the use of operators as collaboration links. It can even communicate through other technical information to maximize market potential, improve market efficiency, and gradually develop from the initial transactional partnership with operators to alliance partnerships with value-added channels within the alliance organization. The efficiency of information utilization by member companies can be improved, and higher benefits are achieved. By using the market information network to communicate with each member company externally, transaction costs can be reduced and the market information network can be improved. More effective information exchange and processing can enable all member companies to fully share the information benefits of the companies in the dynamic alliance and improve market competitiveness.

4. Competitive Analysis of the Operation Mode of Enterprise Value Chain

4.1. *Status Quo of Enterprise Value Chain under the Background of Green Economy.* For the enterprise value chain, starting from the basic value-added activities and auxiliary activities of the value chain, the basic value-added activities of the value chain include marketing, internal logistics, production and operation, and external logistics. The supporting activities include corporate infrastructure. The purpose is to formulate the management system of the organization, implement corporate strategies, and effectively integrate internal resources and market resources through the information management system to provide effective protection for the value creation of the value chain; the purpose of human resource management is that the strategy requires building a highland of talents and cultivating compound talents for enterprises; the purpose of technology development is to continuously summarize cooperation experience and solve cooperation problems, form the enterprise's own marketing skills, and improve its core competitiveness; the purpose of enterprise procurement is to improve combining our own resources and market resources to achieve the purpose of controlling procurement costs by choosing an optimized procurement plan.

4.1.1. *The Status Quo of Enterprise Value Chain System under the Background of Green Economy.* With the phased changes in China's economic development and the deepening of structural adjustments in supply-side reforms, the shortcomings of small- and medium-sized private enterprises have gradually been exposed. The vast majority of enterprises in the industry are facing a shortage of comprehensive resources, lack of talents, lack of intellectual property rights, and work efficiency. The current traditional value chain management system has begun to face the challenges of Internet+ and other emerging value chain systems, such as the low quality of production methods and production lines, and the low value-added benefits of the value chain management system. Although the comprehensive governance structure of small- and medium-sized private enterprises is unreasonable, they still have the advantage of rapid turnaround in terms of mechanism; although the property rights structure of large state-owned enterprises is not dynamic enough, they may accumulate and develop after reform or transformation; listed companies have advantages in financing, but pursuing the profit-seeking mentality of rapid capital return is very easy to cause investment errors. The development status of the enterprise value chain under the background of the green economy, etc., is charted, as shown in Figure 1.

For small- and medium-sized enterprises, the advantage is that they have a flexible management structure, and the disadvantage is that they lack sufficient corporate funds; for large enterprises, the advantage is that they have a huge management structure that can better allocate talents, and the disadvantage is management personnel complexity and long decision-making process; for state-owned enterprises,

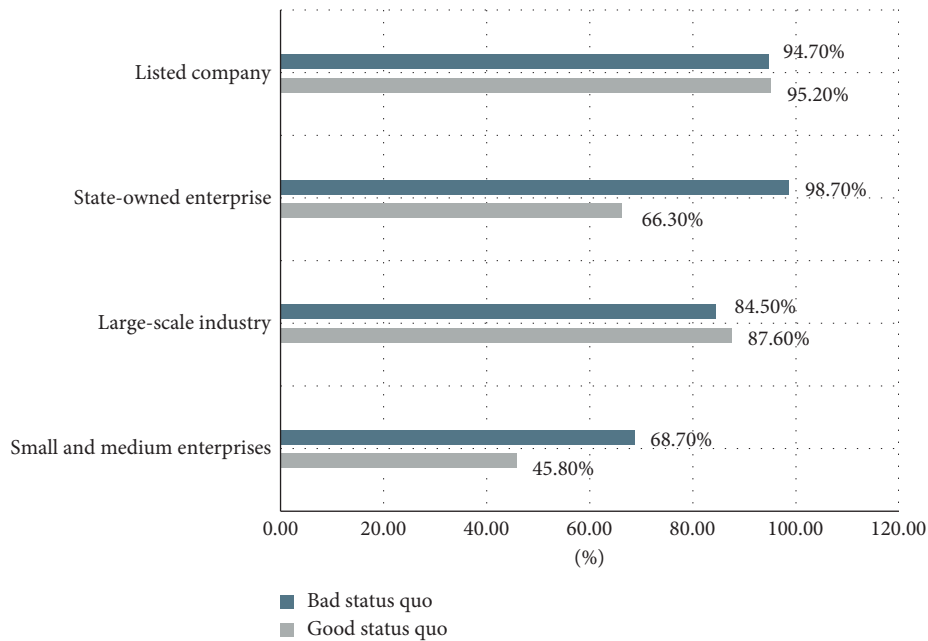


FIGURE 1: Development status of enterprise value chain under the background of green economy.

the advantage is the strong support of national policies and control of many people’s livelihood operations, and the disadvantage is that the management structure is relatively loose, which is not conducive to vertical management; for listed companies, the advantage is that the flow of funds is sufficient. The value chain of the enterprise is adjusted more freely. The disadvantage is the same as that of a large enterprise. The management personnel are complicated, and the decision-making process is longer.

4.1.2. Elements of Enterprise Value Chain and Competitors. Collect and count the elements of the enterprise value chain and competitors. The elements of the enterprise value chain include governance structure, employment mechanism, work efficiency, enterprise scale, enterprise management, business model, logistics support, corporate culture, human resource management, market adaptability, corporate infrastructure, corporate operating qualifications, capital financing capabilities and technology development capabilities, etc.; competitors can be divided into small- and medium-sized enterprises and large-scale enterprises according to the total amount. Draw specific statistics into charts, as shown in Figure 2.

From the comprehensive analysis table of value-added elements of the value chain, it can be concluded that although small- and medium-sized enterprises have simple advantages in terms of property rights structure and flexible management structure, they have comparative advantages in terms of corporate mechanism, work efficiency, and employment system, but in other comprehensive governance structures, there are obvious shortcomings in terms of operation and management, human resources and capital management, and technological development. Large-scale enterprises have

relatively sufficient capital flow and a relatively complete management structure. It is more advantageous to adjust the business value chain operation mode under the background of green economy.

4.2. Business Revenue Analysis under the Background of Green Economy. This article uses relevant databases to inquire about the revenue of my country’s enterprises in the past five years after the adjustment of the value chain operation model under the advocacy of the green economy strategy (the year 2020 has not yet ended, not included) (only representative companies are used as examples, not all included data), including small- and medium-sized enterprises, large-scale enterprises, and state-owned enterprises. The statistical data drawing results of the specific situation are shown in Table 1. Table 1 shows the total income of enterprises under the background of the green economy from 2015 to 2019.

It can be seen from the statistical chart that small- and medium-sized enterprises have achieved good results in compliance with the development strategy of the green economy. The total revenue has been rising steadily, with an average growth rate of 10.50%; state-owned enterprises have been supported by national policies and subsidies, and most of them are subsidized support. The total revenue of the people’s livelihood companies also showed a steady growth trend, with an average growth rate of 12.22%; the revenue of large enterprises occasionally declined in 2017, but the overall growth trend is still growing, with an average growth rate of 4.36%. It can be seen that the transformation of the business value chain operation mode of the enterprise in accordance with the green economic policy advocated by the country is conducive to the steady development of the enterprise, saving costs, and increasing revenue. The average growth rate of overall revenue is 9.03%.

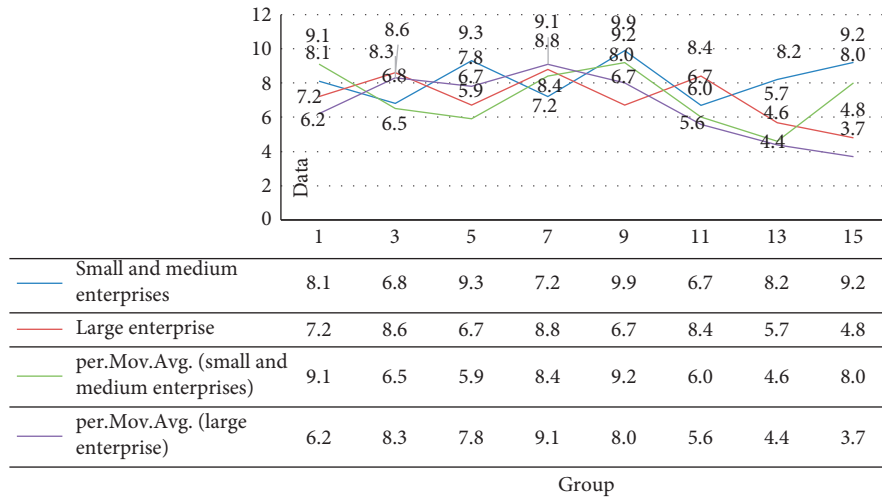


FIGURE 2: Elements of the corporate value chain and competitors.

TABLE 1: Total revenue of enterprises under the background of green economy (unit: ten million).

Small and medium enterprises	4.12	4.23	4.81	5.92	6.07
Large-scale industry	30.31	31.25	29.87	33.56	35.71
State-owned enterprise	8.26	9.34	10.52	12.37	13.06

4.3. Mixed Strategy Game of Enterprise Value Chain Operation Mode under the Background of Green Economy

- (1) Based on the noncooperative game strategy under uniform distribution, the distribution of corporate revenue in the case of different transaction volumes is shown in Figure 3.

It can be seen from Figure 3 that whether it is a small and medium-sized enterprise, a large private enterprise, or a state-owned enterprise, the revenue distribution is relatively even, and the trend is relatively consistent. With the development of the green economy, the total revenue has increased the most from 2018 to 2019. Small and medium enterprises increased by 18.89%; large private enterprises increased by 2.93%; and state-owned enterprises increased by 16.01%.

- (2) Based on the noncooperative game strategy under the normal distribution, the distribution of corporate revenue in the case of different transaction volumes is shown in Figure 4.
- (3) Stability test of mixed strategy game of enterprise value chain operation mode under the background of green economy.

Small- and medium-sized, large-scale enterprises' competitive advantages weaken the costs and high R&D

costs caused by low-end lock-in effects. The two decision-making costs have strong hidden and indirect effects, and the reverse effect on the potential of the domestic value chain of latecomers is not significant, especially in the early and middle stages of the evolutionary game. In view of the obscure contract orientation, it is assumed that hidden costs are not an important consideration for corporate decision-making. However, under long-term cooperation conditions, it will affect the evolution of the game stabilization strategy between the companies. The result is shown in Figure 5.

On the whole, the local stability of the mixed strategy game is relatively strong. The first company compares the expected benefits of overflowing knowledge with the speculative cost plus the penalty for breach of contract and believes that it is worthwhile to negotiate with internal personnel or third-party intelligence agencies to reach an obscure contract, indicating that the first company will choose a breach strategy to acquire technology and products. Knowledge resources are required for upgrading. The second company's initial judgment believes that taking the risk of default to acquire the spillover knowledge of the first company cannot offset the sum of the speculative cost and the penalty for default, and the second company tends to choose a contract-abiding strategy.

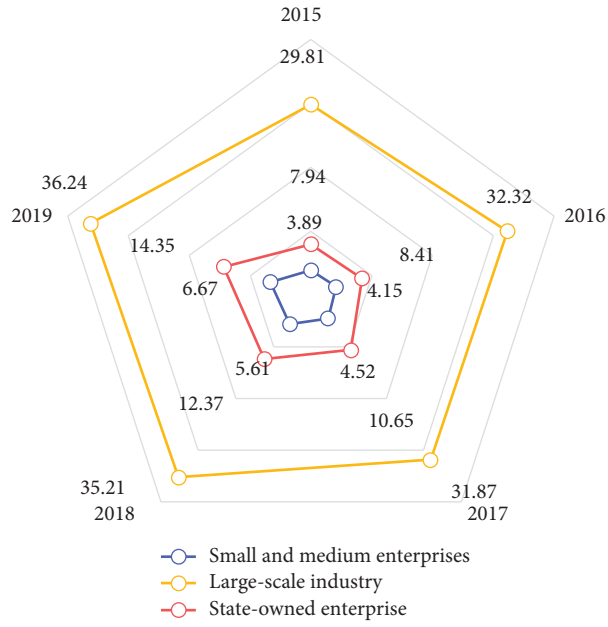


FIGURE 3: Corporate revenue under uniform distribution (unit: ten million).

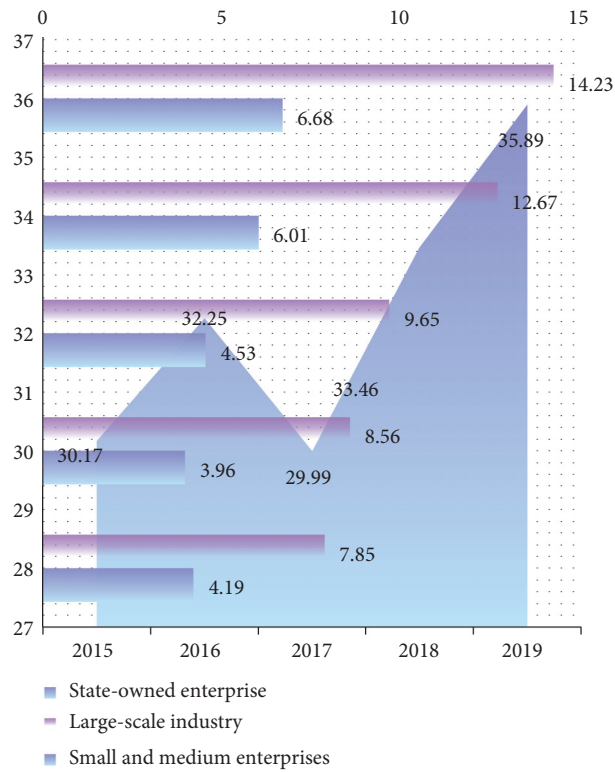


FIGURE 4: Corporate revenue under normal distribution (unit: ten million).

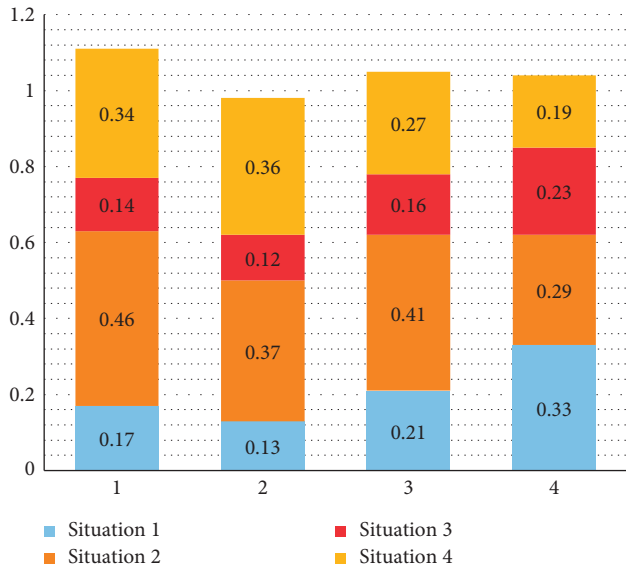


FIGURE 5: Local stability of mixed strategy game.

5. Conclusions

The understanding of environmental problems is constantly deepening, and the theory of solving environmental problems is constantly innovating. The understanding of environmental issues has evolved from the early days of environmental understanding to the theory of sustainable development on a global scale in the 1990s. In recent years, on the basis of the theory of sustainable development, the concept of environmental security has been gradually established and improved, and some theoretical systems have been formed to raise environmental security to a high level of understanding of national security and human survival. Regarding the model of solving environmental problems, the model of “circular economy” has been proposed and started to be established. It is required to use natural resources and environmental capacity in an environmentally friendly way to realize the ecological shift of economic activities. The efficiency of the green economy is an important indicator to measure the quality of current economic development. The theoretical and empirical analysis involved in the efficiency of the green economy still has broad room for expansion in the context of the new era.

At the beginning of the research, this paper summarized the relevant experience of the predecessors and proposed the analysis method of enterprise value chain operation mode under the background of green economy, including system theory analysis method, qualitative analysis and quantitative analysis combination method, comparative analysis method, and theory integration method. A cost control method for enterprise value chain under the background of green economy is proposed, which reduces the cost of enterprise products from a strategic point of view and maximizes the difference between the design activity cost driver coefficient and the information cost savings and the loss of cost calculation accuracy, which also includes the mixed-strategy

game Nash equilibrium. However, there are some shortcomings in this paper. The mastery of theoretical knowledge of supply chain management is relatively preliminary, which will have an impact on the interpretation of knowledge map. Because the overall grasp of supply chain management is not very sufficient, it will make the interpretation of this map more simple. In the future study, we should invest more time to improve theoretical cognition. With the increasing importance of supply chain management, the research of supply chain management is becoming more and more mature. For researchers, it is more and more important to sort out the research context and clarify the research hot-spots efficiently and intuitively.

This article analyzes the business value chain operation mode under the background of green economy. Traditional technology has problems such as low technical content, high resource consumption, and serious environmental pollution, which have become the bottleneck of its development. In order to achieve a balanced development of environment and interest, it is necessary to study the protection of value chain business models under the constraints of green environment. To this end, color textile companies should establish a distinct differentiation strategy, establish function settings, corporate culture, flat organization, and coordinated incentive mechanism structure. At the same time, a strong customer value management system should be relied on to establish a value chain business model with competitive advantages to realize the sustainable development of color textile enterprises.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding the publication of this paper.

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