Research Article

Dynamic Pricing Model of Service-Oriented Educational Products Based on Revenue Management

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As the economic environment changes, more and more loopholes appear in the actual application of traditional pricing methods. Existing methods cannot accurately predict changes in consumer demand and cannot accurately mine potential consumer demand. Existing methods cannot achieve the maximization of corporate profits, which has become a difficult problem for service-oriented corporate revenue management. This article mainly studies the pricing of service-oriented products in the context of revenue management. By studying and reviewing relevant literature on the dynamic pricing of service-oriented products, this article clarifies the characteristics of service-oriented products and several loopholes in the current pricing of service-oriented products. Based on the current research results of dynamic pricing at home and abroad, this article summarizes the influencing factors of dynamic pricing and establishes the dynamic pricing model of this article. This article selects the current hotspot and the reinforcement learning method that conforms to the multidimensional characteristics to solve the calculation of the model. Through analysis, the optimal state-action pair of the model in this article is obtained, and the optimal path of environment and behavior is formed to obtain the maximum profit.

1. Introduction

In order to verify the overall model and the result, this article makes case simulation and analysis based on whether the service product has spatial movement as the standard. This article obtains the optimal price and profit results under different backgrounds through analysis. In the case of fixed service products, this article selects hotel room service revenue management as the background and establishes a dynamic pricing model for hotel rooms. The model combines the actual situation with the remaining number of hotel rooms, consumer strategic behavior, presale, and pricing to make price decisions [1–3]. The main goal of the model is to maximize corporate profits. In the case of mobile service products, this article selects the Gaosu railway fare issue as the background to establish a dynamic pricing model for the Gaosu railway passenger ticket [4–7]. The results of the model study ensured the efficiency of railway operations while pursuing the maximization of profits [8].

In the process of seeking the optimal solution for the two cases, this article uses reinforcement learning theory and learning methods to transform the dynamic pricing problem of revenue management into a process of agent traversal state and action. Dynamic pricing of service products requires an analysis of their overall value. This article further validates the overall model and results, takes the economic and social value of service products as the measurement standard, and conducts a case simulation analysis. This article analyzes the optimal price and profit results of product value formulation in different trading environments. The model obtains the optimal state-action pair by learning the iterative profit function, which directly guides the firm's pricing behavior [9–11]. Finally, the article summarizes the dynamic pricing model, dynamic pricing method, and static sensitivity analysis of factors. With the increasing demand of enterprises to reduce losses and increase profits, the theory of income management has continuously improved, and the theory of income management

has increasingly been used in many industries. The conclusion of the article puts forward corresponding management suggestions on the aspects that enterprises should make use of price adjustment and pay attention to the singular value of price influencing factors [12–15].

Earnings management, first proposed by foreign scholars, was applied to the US aviation industry in the early days. They significantly improved the earnings situation of the aviation industry at that time through the implementation of earnings management and dynamic pricing. They also make people realize the important role of revenue management. Taking fixed service products as an example, this article analyzes the revenue management method of hotel room service. This article further establishes a dynamic pricing model for hotel rooms. The model combines the actual situation with the remaining number of hotel rooms, customer consumption behavior, and commodity presale pricing to make price decisions. This article further compares the results of the dynamic pricing model with traditional pricing methods and finds that dynamic pricing methods are better than traditional pricing methods. At the same time, a sensitivity analysis of factors such as market, inventory, cost, and consumer price sensitivity was carried out [16–18]. Some scholars have made statistics on the distribution of domestic revenue management literature from 2009 to 2014. Among them, the aviation industry has the most literature, accounting for 24.7%; followed by the hotel industry, accounting for 18.67%; followed by the manufacturing industry and railways, both accounting for 10.84%. So far, revenue management ideas have successfully applied to many industries such as rental, freight, service, tourism, and medical care. The theory of income management has strong applicability. Due to the significant effect of benefit growth brought about by revenue management, this concept has been gradually applied to more industries and fields [19–22].

Dynamic pricing refers to the strategy that companies sell the same type of products to different consumers or different market segments at different prices in a timely manner according to market demand and their own supply capabilities to maximize revenue. The main goal of constructing the model in this article is to maximize the profit of the enterprise. Taking mobile service products as an example, this article analyzes the pricing principle of expressway fare charges and establishes a dynamic pricing model for high-speed rail fares. The results of the model study ensure the efficiency of railway operation while also satisfying the maximization of profits. With the development of the Internet and information technology, data analysis tools and support management tools are becoming more abundant and perfect, and dynamic pricing technology has been widely used. In the fierce market competition, service capabilities and service quality are important indicators to measure the level of enterprise development [23–25]. In the process of seeking the optimal solution of the two research methods, this article fully draws on the reinforcement learning theory and learning method and transforms the dynamic pricing problem of revenue management into an agent ergodic process. At present, Internet

information technology has rapidly popularized in major cities in China, and the functions of general data analysis tools and management software have continuously improved. Therefore, the related technologies of dynamic pricing have been widely used and promoted. The advantage of dynamic pricing is to continuously improve the competitiveness of enterprise services. At the current stage, the service capability and service quality of an enterprise are the best way for an enterprise to enhance its own value and achieve differentiated development. Service capability is the best way for companies to increase the value of their products and implement differentiated development strategies. High-quality services help increase consumer satisfaction and purchase rates of products and reduce sensitivity to prices. Eventually, the goal of increasing the sales volume of the company's products will achieve obtaining large gains. It is said that service factors play a vital role in implementing product pricing strategies [26–29].

However, based on the current situation of Chinese companies implementing product pricing strategies, service quality and market environment factors are often overlooked. This situation leads to unreasonable product pricing. Therefore, how to incorporate service factors into the product's dynamic pricing strategy and then formulate a more scientific and reasonable product price. Analyzing through reasonable pricing theory makes the research have strong practical significance. Wood text is based on dynamic pricing theory and service theory, using dynamic programming, road complex game, and other theories and methods to conduct research from two perspectives: service quality and market environment [30–33], then take the enterprise service quality as decision-making dizziness, and construct the product service function and product demand function. The research applies the product dynamic pricing model to two different market environments: monopoly and competition. The model was simulated through an example, and the following conclusions were obtained. In a monopolistic market environment, the dynamic pricing of enterprise products shows a certain regularity over time. The specific results are as follows: product pricing has the characteristic of oscillating. In the short term, product prices fluctuate up and down. The research logical structure of this article is shown in Figure 1.

2. Existing Research Results and Literature Review

2.1. Research on Dynamic Pricing of Single Product and Multiproduct Revenue Management. For a long time, the products produced by enterprises will have an average price in the market. This price will remain largely flat as it measures its value. The price of the product remains constant, and with the extension of the period, the price of the product will be infinitely close to the price recognized by the market. The cost of the product has a greater impact on the price of the product, and the decline in the cost of the product will cause the price of the product to drop. The trend of product price changes is declining along the curve. In a competitive market environment, the dynamic pricing of
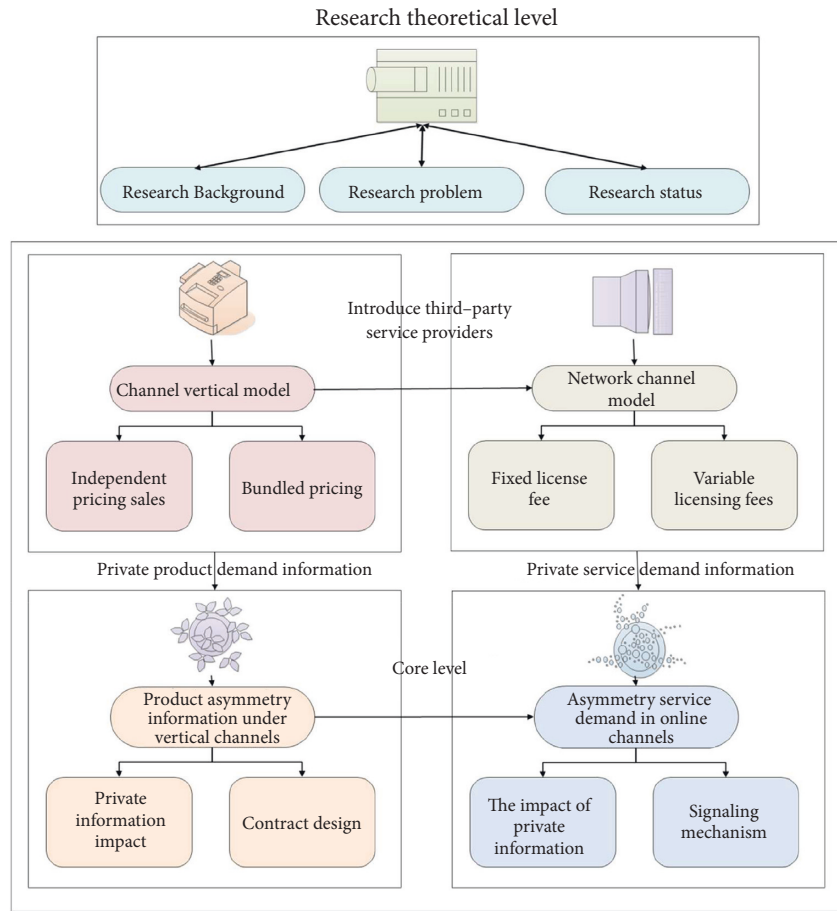
Figure 1: The research logical structure of this article.

enterprise products shows a certain degree of regularity with time. The specific characteristics are as follows: there is no competition with the highest quality of service between two competing enterprises, and the equilibrium service level of enterprises increases with the increase of the intensity of price competition. Product prices decrease with increasing competition intensity, and there is service quality competition between two competing companies. Model analysis results are shown in Figure 2.

2.2. Research on Dynamic Pricing of Consumption and Durable Goods Revenue Management.

The equilibrium service level and equilibrium price of the enterprise will be affected by the enterprise service cost, initial service water, and initial product price. While comparing service costs, initial service levels, and initial product prices, product prices also tend to fluctuate generally. Product price is a very sensitive and difficult to control factor in the marketing mix. It directly affects the market's acceptance of the product and affects market demand and corporate profits. The price factor involves the interests of producers, sellers, consumers, and other aspects. Therefore, product pricing strategy has become one of the most important components of a company's management decision-making. Dynamic pricing technology originated in the American airline passenger industry in the 1970s. After more than 40 years of development, it has become an important branch of corporate revenue management method. With the development of the Internet and information technology, the cost of corporate decision-makers collecting and processing information and implementing product price strategy. At the same time, as the number of data analysis tools and decision support management tools has increased and become more complete, dynamic pricing technology can be widely used. At present, dynamic pricing is not only applied to traditional fields such as aviation, hotels, and car leasing but also has developed into industries such as manufacturing, financial services, retail, and e-commerce. With the continuous expansion of the application scope of dynamic pricing and the increase of its role in the normal operation and management of enterprises, dynamic pricing theory has become a research hotspot in academia.

2.3. Dynamic Pricing Theory and Research Status at Home and Abroad.

Competition between enterprises and products is becoming more and fiercer; the profit margins of the products of enterprises are relatively narrow. There is a competitive relationship between the products produced by different companies. When the product category is relatively consistent, the competition for the same product will
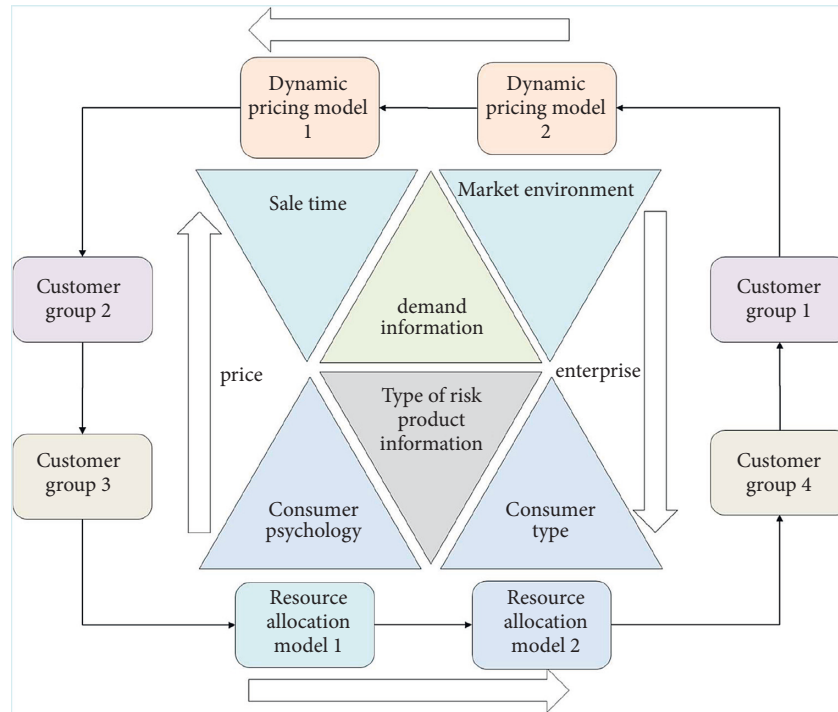
Figure 2: The relationship diagram of the research on dynamic pricing of a single product and multiproduct revenue management.

become more intense, and the profit margin of the product will be relatively compressed. When consumers buy commodities, they will not only pay attention to the use value of the commodity itself but also be affected by the service quality of the commodity salesperson. Consumers are very concerned about the brand value and psychological identity value of products. At the same time, with the rapid development of high-tech enterprises, the differences between modern enterprises have gradually disappeared, and the saturation of the product market has become higher and higher. Therefore, the competition among enterprises has also changed from the original product competition to the service competition. For example, in the automotive industry, many car manufacturers have fought a "service war." Service content and service quality have been regarded as the most important factors to improve the competitiveness of enterprises, and they have received extensive attention from enterprise decision-makers. The model proposed in this article obtains the optimal solution for model pricing by learning the iterative profit function. The results of the model analysis can directly guide the pricing behavior of enterprises. At the same time, the article summarizes the dynamic pricing model and dynamic pricing method. Specifically, the sensitivity analysis is carried out on the main factors affecting the pricing. The specific reasons are as follows.

First, the service quality of an enterprise is related to the perceived value and satisfaction of customers. The higher the service quality of an enterprise, the higher the consumer perceived value and satisfaction with the enterprise's products and the higher their loyalty. Consumers' repeated consumption rate is also higher, resulting in increased

product sales. The higher the consumer's satisfaction and loyalty, their sensitivity to product prices will decrease twice, and the impact of prices on production and sales will decrease. Secondly, the service content and service quality of enterprises most influence consumers' purchasing decisions. When consumers purchase a company's products for the first time, they only have to consider the current product prices and product service quality. Consumers will consider corporate product prices and services.

2.4. Service Theory and Research Status at Home and Abroad. Revenue management should be based on market segmentation and predict consumer behavior in different market segments and take corresponding measures in response to different forecast results to increase corporate profit margins. At present, the application of the concept of income management mainly adopts the 4R theory proposed by the marketing theory and, at the right time and at the right place, proposes the right price and sells the right products or services to the right customers. Domestic and foreign scholars have defined four implementation strategies for it: namely, demand forecasting, dynamic pricing, inventory control, and overbooking. In the research of each implementation strategy, there are correspondingly different fields. As one of the important strategies of revenue management, dynamic pricing strategy plays a significant role in improving profitability. This method has received strong attention for academia and management. The interrelationships between model elements are shown in Figure 3.

In the actual use process, enterprises adopting traditional pricing methods will bring many drawbacks, and there will
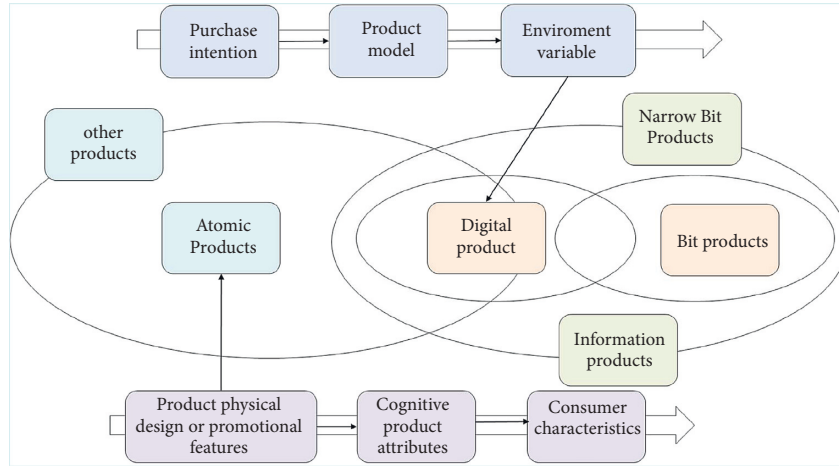
FIGURE 3: Schematic diagram of the dynamic pricing of consumption and durable goods revenue management.

be many loopholes in the traditional commodity-pricing model. The influencing factors and considerations of traditional pricing models are relatively fixed, and it is impossible to accurately predict changes in consumer demand at the current stage. For the potential consumer groups in the market, the current consumer-pricing model cannot fully cover their needs. Therefore, these models cannot provide feedback on enterprise products according to consumer demand, thereby failing to maximize enterprise profits. The above-mentioned many problems have become several major problems in enterprise income management. With the increasingly fierce market competition, dynamic pricing methods have shown great advantages in solving these problems. Scholars have successively proposed to start from practical problems, solve the income problems faced by enterprises, and provide enterprises with theories and methods to increase sales and profits. However, in the actual process, different industries are also facing changes in the macro- and microenvironments, for example, some service industries, such as housekeeping, beauty, and other businesses. When using pricing decisions, scholars must improve their own service levels to increase the basic price of their products. In addition, companies do not have a unified pricing standard for products, which makes it impossible to accurately measure the value of labor in the service industry. This article proposes a specific and applicable dynamic pricing model for the service product industry.

3. Product Dynamic Pricing Strategy Based on Service Quality in a Monopolistic Environment

Supported by the theory of revenue management, this article defines the corporate goal as the maximization of corporate profits. The purpose of this article is to find a dynamic pricing model based on current analysis methods. The research pursues the maximization of profit for the enterprise, and through parameter adjustment, the model can adapt to the actual environmental changes. Research and using each variable no longer have fixed definitions and constraints.
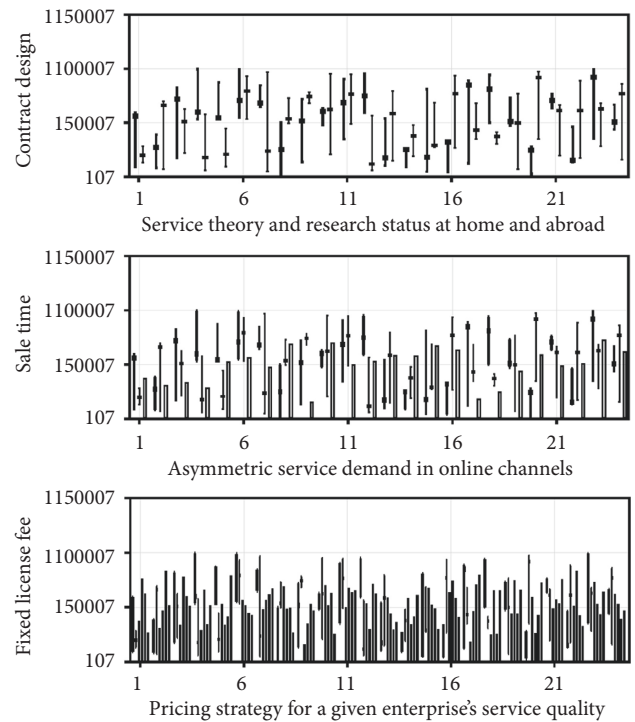

FIGURE 4: Dynamic pricing theory and research status at home and abroad.

Through the accumulation of empirical data, the research automatically finds the internal connections between variables. In the process of multiple improvements, the model continuously adjusts the influencing factors to meet the needs of the actual production process.

3.1. Pricing Strategy When Service Quality Is a Decision Variable. Therefore, the use of dynamic pricing methods for pricing in revenue management can help companies accurately predict consumer demand. Companies quantify their needs every day, which is conducive to the company's resource allocation and optimal asset allocation. By dynamically adjusting product price fluctuations, a lever that can
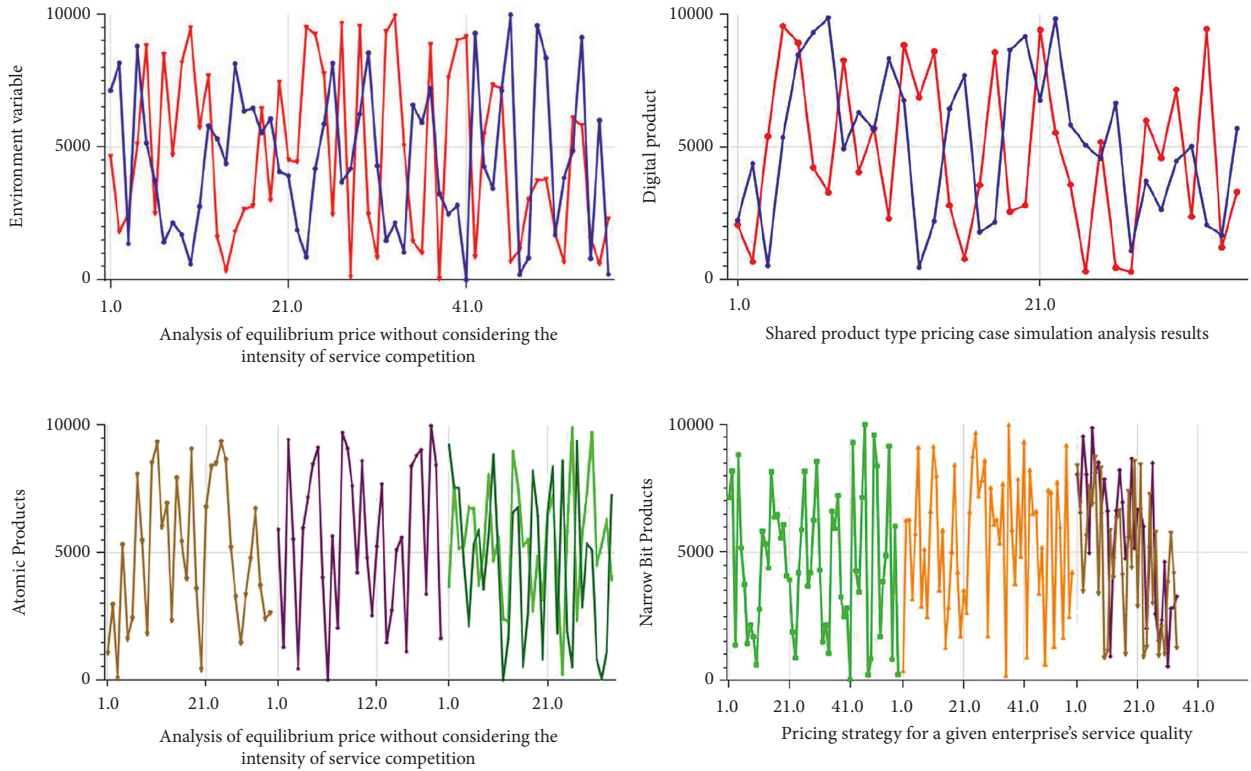
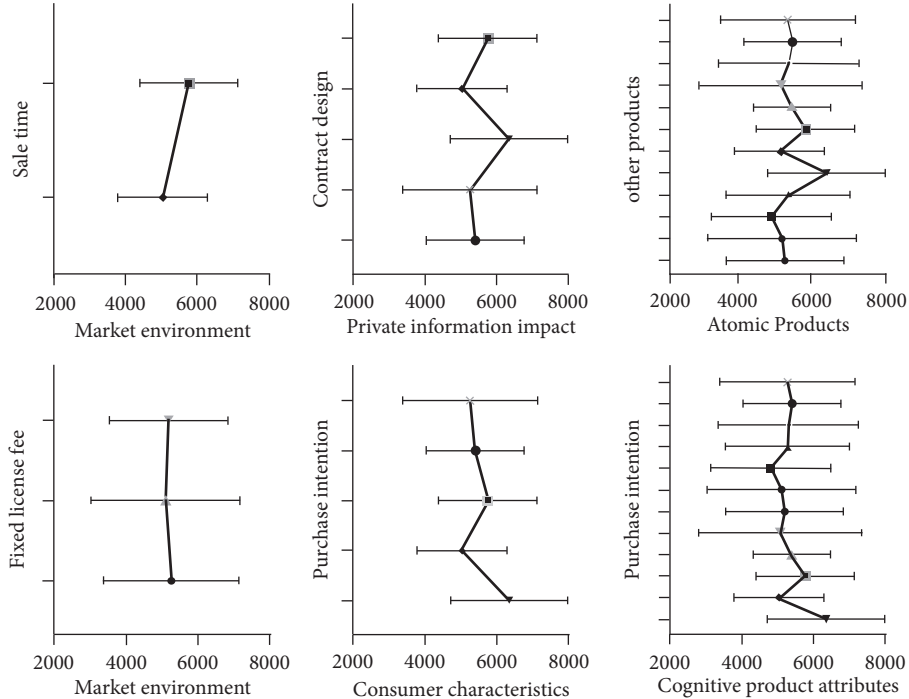FIGURE 5: Model of service theory and research status at home and abroad.

FIGURE 6: Product dynamic pricing strategy based on service quality in a monopolistic environment.

adjust the relationship between supply and demand is formed. Prices will affect consumer demand. At the same time, prices may also enable operators to achieve the purpose of encouraging demand by manipulating prices in the short term. More effective in providing services for the company is the marketing plan. In the service industry, service-oriented products lack measurable and measurable competitive prices.
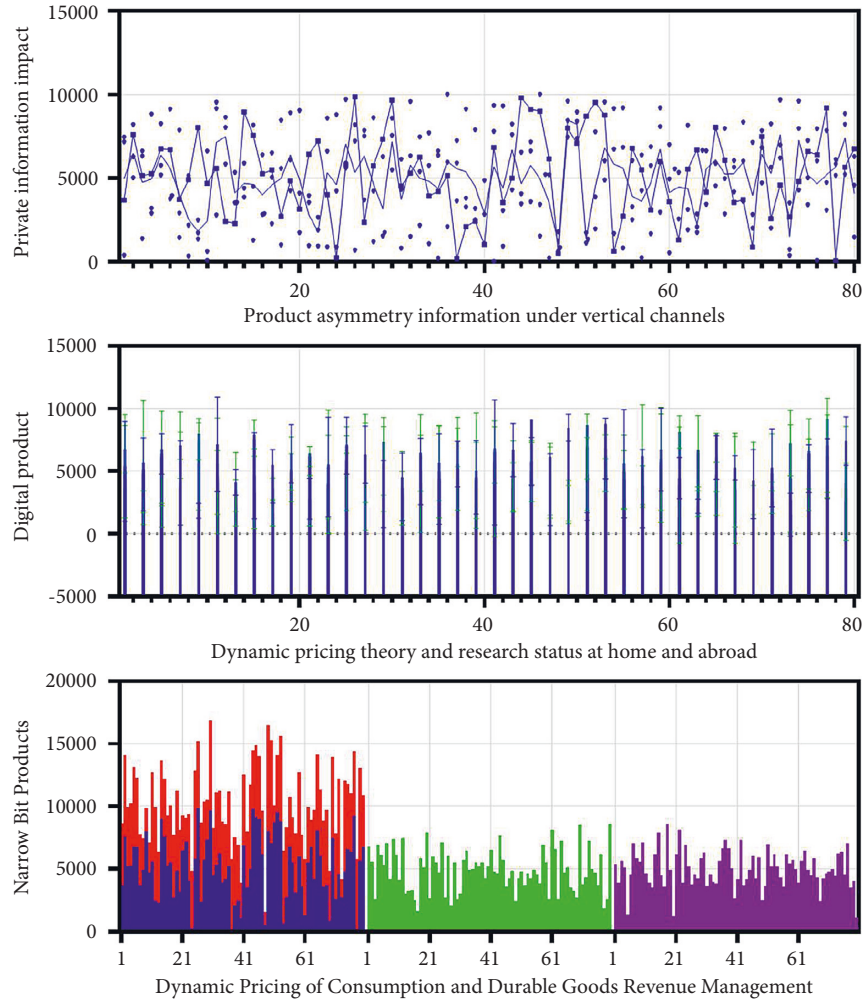
Figure 7: Pricing strategy when service quality is a decision variable.

The calculation formula of single-sample statistics is as follows:

$$t = \frac{\overline{X} - \mu}{\delta_x / \sqrt{n-1}}. \tag{1}$$

The calculation of the statistics of the hypothesis of the single-body sample is as follows:

$$t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2 / n_1 + n_2 - 2(1/n_1 - 1/n_2)}}. \tag{2}$$

Set two random sequences X and Y; Pearson's correlation coefficient between the two sequences is r; then,

$$r = \frac{\text{cov}(X, Y)}{\sqrt{\sigma_x^2} \sqrt{\sigma_y^2}}$$

$$= \frac{\sum_{i=1}^{n} (x_i - \overline{x})(y_i - \overline{y})}{\sqrt{\sum_{i=1}^{n} (x_i - \overline{x})^2 (y_i - \overline{y})^2}}. \tag{3}$$

The constraint conditions are (3)–(5):

$$f(x_i, \omega) - y_i \le \xi_i + \varepsilon, \quad i = 1, 2, \ldots, l, \tag{4}$$

$$y_i - f(x_i, \omega) \le \xi_i + \varepsilon, \quad i = 1, 2, \ldots, l. \tag{5}$$

PSO is initially a group of random particles, and the optimal solution is found through iteration. In d-dimensional space, the position of the i particle is $x_i = (x_{i1}, x_{i2}, \ldots, x_{i\,d})$, and the velocity $v_i = (v_{i1}, v_{i2}, \ldots v_{i\,d})$.

$$\xi_i, \xi_i^* * \xi_i \xi_i^* \ge 0, \quad i = 1, 2, \ldots, l. \tag{6}$$

In each iteration, the particle updates its position by tracking two optimal solutions: one is the individual extremum Pbest, $p_i = (p_{g1}, p_{g2}, \ldots, p_{g\,d})$, and the other is the global optimal solution Gbest, $p_g = (p_{g1}, p_{g2}, \ldots, p_{g\,d})$. Each particle updates its position and velocity according to the following:

$$v_i^{k+1} = \omega v_i^k + c_1 r_1 \left(p_i^k - x_i^k\right) + c_2 r_2 \left(p_g^k - x_i^k\right). \tag{7}$$

$$x_i^{k+1} = x_i^k + \beta v_i^{k+1}. \tag{8}$$

The price not only represents the amount of RMB that is exchanged for a product but also represents the level and utility of a certain service. Therefore, through dynamic pricing, it is very necessary to set a price that can take into account multiple factors. Research believes that price can reduce the surplus of enterprise products and fully expand the profit margin of marketable products, thereby reducing inventory costs, increasing the company's sales and profits. Model analysis results are shown in Figure 4.

By considering the sales period and the types of consumer strategies, the sales price has dynamically adjusted in different cycles. In addition, compared with the traditional fixed price strategy of unified sales, the current sales model is conducive to maximizing the company's sales. Companies use different sales models and sales pricing in different regions. Different price strategies in different periods are also helpful for enterprises to seek new consumer groups, increase the market share of enterprise products, and improve the profitability of enterprises. It seen that the dynamic pricing model plays a relatively prominent role in enterprise revenue management. Based on the current popular revenue management theory, this paper conducts dynamic pricing research on revenue management models. The research hopes to find a dynamic pricing method for service-oriented products, seek the optimal pricing strategy for enterprises, and further maximize profits. Model analysis results are shown in Figure 5.

The research results of this dissertation mainly focus on the following aspects. (1) Document collection and sorting: this article conducts an in-depth analysis of relevant Chinese and English documents in the past five years and summarizes the contents of the documents according to different keywords. The research further distinguishes time and research objects and then sorts and connects the research literature. In recent years, with the increasing requirements of enterprises to reduce losses and increase profits, the theory of revenue management has been continuously developed and practiced. The application of revenue management theory in my country is more and more diversified, and more and more industries have carried out related applications. Research and analysis have drawn the important influencing factors used in the dynamic pricing of service products and built a dynamic pricing model based on these factors. (2) Strengthening the study of related theories: this article analyzes the main results of existing research by reading the well-known focus and case information in this field. Through the analysis of classic theoretical textbooks and practical cases in related fields, the research selects practical methods that are most suitable for the application scenarios of this article. Model analysis results are shown in Figure 6.

3.2. Pricing Strategy for a Given Enterprise's Service Quality.
This article further verifies the validity and convergence of the model analysis results. According to the final data results, this article summarizes the content of the article. The specific results of the research are as follows: first, starting from the dynamic pricing model proposed in this article, by analyzing the relationship between prices and products, specific corresponding relationships are obtained. In addition, by
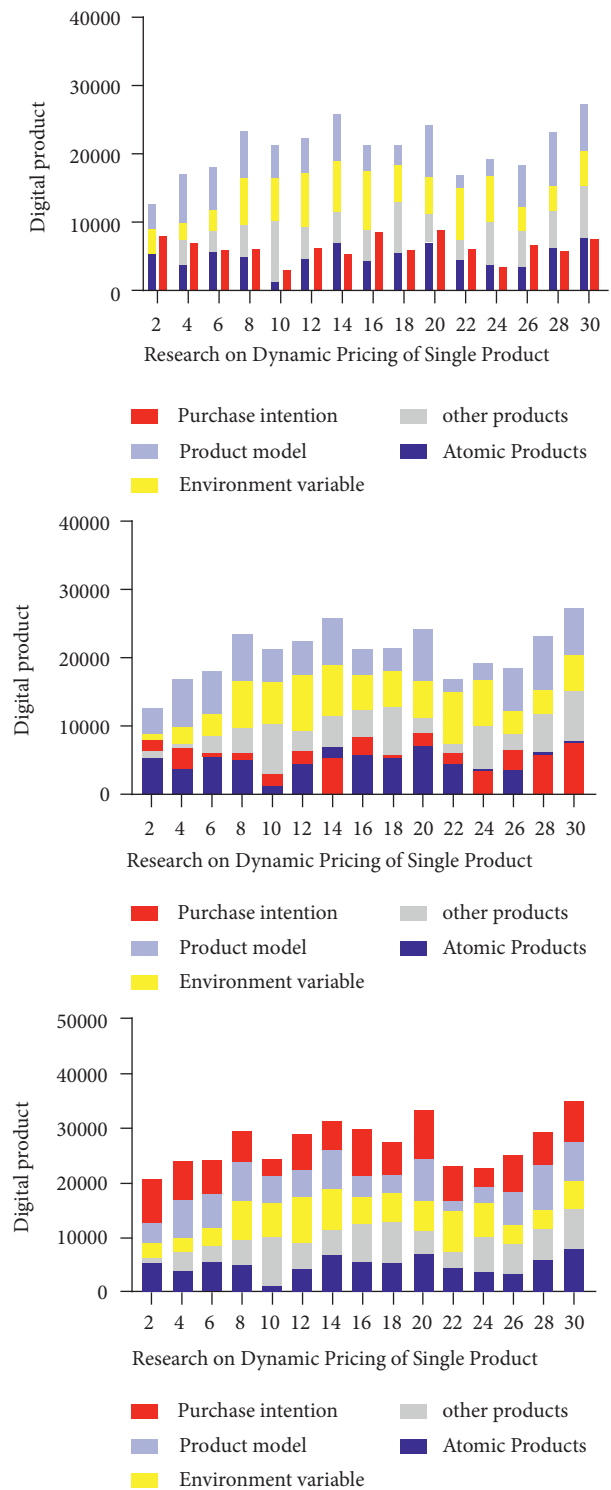

FIGURE 8: Pricing strategy for a given enterprise's service quality.

studying the overall relationship between price, lead-time, and inventory, the current product price trends are analyzed. In order to ensure the relative stability of prices, companies should maintain this strategy when setting prices. This article has carried out detailed research on the aspects of enterprise price adjustment and pays attention to the singular value of price influencing factors and put forward corresponding

Pricing strategies for different service competition intensities

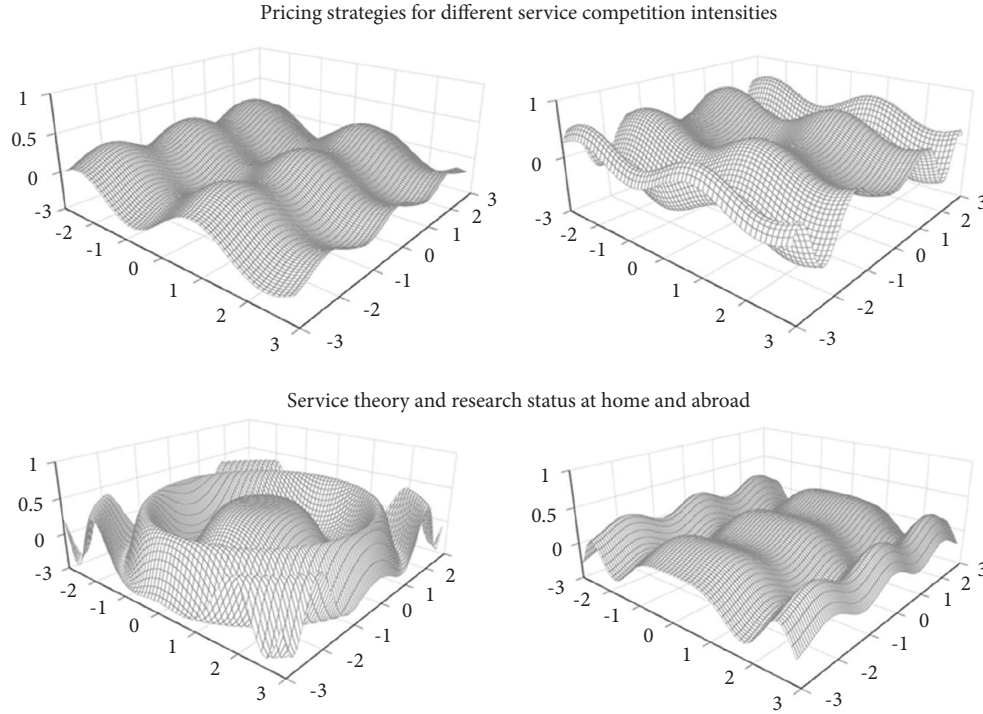Service theory and research status at home and abroad

FIGURE 9: Product dynamic pricing strategy based on service quality in a competitive environment.

management suggestions. On the other hand, in order to increase sales, it will further help consumers control their own consumption within a reasonable range. Enterprises manage the expectations of consumers to achieve relatively stable product prices. Second, the adjustment effect of price on demand is clearly seen in model calculations.

The adjustment interval for slack (S_n^x, S_p^y) is defined based on the calculation of the extreme differences $[\max(x_{nj}) - \min(x_{nj})]$ and $[\max(y_{pj}) - \min(y_{pi})]$ for each input-output in all evaluated provinces.

$$R_n^x = \frac{1}{(N + P)[\mathrm{Max}(x_{nj}) - \mathrm{Min}(x_{nj})]},$$

$$R_p^y = \frac{1}{(N + P)[\mathrm{Max}(y_{pj}) - \mathrm{Min}(y_{pj})]}. \tag{9}$$

The calculation method is as follows:

$$O_t = \sigma(W_o \cdot [h_{t-1}, x_t] + b_o),$$
$$h_t = o_t * \tanh(C_C). \tag{10}$$

Constructing a mathematical model for quantifying quantitative attributes For the dimensionless value v_c' of attribute c_j, it can be expressed as follows:

$$v_j' = \begin{cases} 1, & v_j \le v_{\min j}, \\ \dfrac{v_{\max} - v_j}{v_{\max j} - v_{\min j}}, & v_{\min j} < v_j < v_{\max j}, \\ 0, & v_j \ge v_{\max j}. \end{cases} \tag{11}$$

At the macro level, our proposed model is most sensitive to market feedback. Generally, market demand and product supply can be adjusted through price factors. As the direct link of consumers, enterprises can directly maintain the relationship between consumers and production institutions, thereby ensuring the stability of social commodity production and circulation. The earnings management model used in this article was first put forward by scholars in developed countries and applied to the American aviation industry in the early days. The researchers significantly improved the profitability of the airline industry at the time by implementing earnings management and dynamic pricing. On the other hand, from the perspective of the micro field, the decision-makers of the enterprise need to make full use of the commodity-pricing model as the actual control method. In order to maximize corporate profits, corporate managers need to fully evaluate their own production capacity plans and formulate more reasonable marketing strategies. When the sales performance of the product market is unsatisfactory, the company needs to reduce the price accordingly, thereby boosting the market's consumer confidence. Reasonable and effective prices are conducive to enterprises occupying market segments and seizing consumers. Model analysis results are shown in Figure 7.

Third, theoretical models of reinforcement learning are generally used in automation and communication disciplines. However, the reinforcement learning method model can still be applied to many other application areas. The theoretical algorithm provides a good idea and model for solving many difficult problems. This model has a little bit more. In addition, researchers have also made people realize
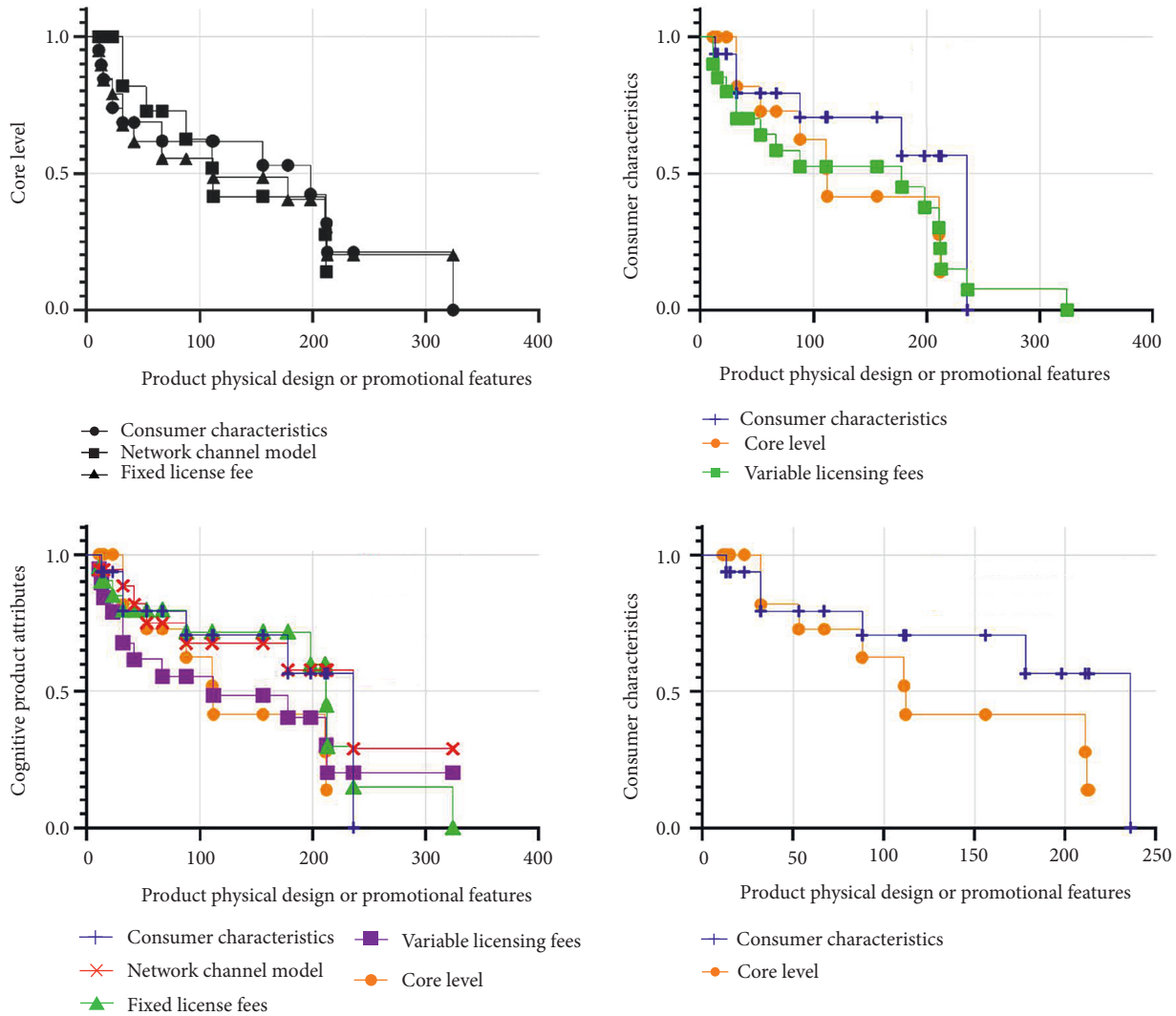
Figure 10: Analysis of equilibrium price without considering the intensity of service competition.

the important role of revenue management by combining this theory. This article further compares the results of the dynamic pricing model with the traditional pricing method and finds that the dynamic pricing method is superior to the traditional pricing method. In a relatively complex environment, it is only necessary to appropriately modify the corresponding parameters of the model to simulate the effect of each dimension variable on the dependent variable under complex environmental conditions. In a complex environment, it is only necessary appropriately change the dimensions of the model to achieve the operation of complex relationships. In the environment of a nonlinear relationship, the model is divided into peak period and trough period. As time has changed drastically, companies have also put forward solutions to problems. Decision-makers only need to simulate and calculate the raw data and then train the robot to make reasonable price choices in different periods. The model can make timely and reasonable price choices before large changes in demand. In addition, reinforcement learning theory emphasizes that the agent can traverse data. The model can make the best price choice for

the long-term benefits of the enterprise at different stages of the enterprise. The results of the model make it possible to calculate the pricing model in a limited period. Simplify the calculation process automatically through computer programming. This makes the optimal problem of high gentleness better solved and has good practicability. Model analysis results are shown in Figure 8.

Fourth, this article compares the profits brought by the dynamic pricing method and the traditional pricing method. In addition, this article finds that the method of dynamic pricing has a certain degree of influence on the sensitivity of market, inventory, cost, consumer price, and other factors. Some scholars have calculated the distribution of domestic revenue management literature in China in the past five years. Among them, the aviation industry literature is the most, accounting for 24.7%. The study found that dynamic pricing methods could significantly increase corporate profits and prompt consumers to purchase idle resources through price strategies and products that may have a backlog. This method not only increases the utilization efficiency of service resources but also ensures that different

resources are converted into corresponding profits. This method has good applicability in the real environment. Model analysis results are shown in Figure 9.

3.3. Product Dynamic Pricing Strategy Based on Service Quality in Competitive Environment.

Fifth, from the results, each factor has a lot of influence on prices. The degree of impact varies greatly. In the actual environment of an enterprise, enterprise decision-makers should take into account multiple factors and cannot afford to lose sight of one or the other. Enterprises need to let one factor affect the stability of the price system and deepen the thinking that multiple factors affect prices; change the thinking of setting prices for single cost and fixed profit in the past; avoid waste of resources and loss of profits. At the same time, business owners should also pay attention to the important factors affecting prices and always pay attention to the changes in these factors. When there is a singular value, the leadership should pay enough attention. It implies a drastic change in a certain state dimension. Decision-makers should take appropriate actions in a timely manner to deal with changes and prevent losses. Model analysis results are shown in Figure 10.

Generally speaking, companies will adjust their product supply in consideration of market demand, but companies generally seldom pay attention to the actual prices of commodities in the market, which require a certain period of time for feedback. In addition, the price of products is affected by many factors, such as the inventory of commodities, the market acceptance of commodities, and the durability of commodities. The management of commodities by enterprises also needs to consider a comprehensive analysis of various factors. Through price regulation and control of market demand, the company's backlog of inventories was reduced to a minimum. This method not only reduces management costs but also increases resource utilization and improves the company's future profitability. Model analysis results are shown in Figure 11.

3.4. Analysis of Equilibrium Price without considering the Intensity of Service Competition.

Dynamic pricing is the most in-depth, widely used, and effective management method in revenue management. Companies always try to apply dynamic pricing to actual production links. The model gains consumers by adjusting prices. Consumers have the highest price they can accept. While increasing profits, enterprises must also pay attention to the interests of consumers. Although in the use of dynamic pricing models, different scholars have given different methods and applicable conditions. However, there are still many limiting factors in the actual process, and most of the researches have more formal innovations than actual methods. In the current era of increasing competition, the role of dynamic pricing is more important for the sales of service-oriented products. The important significance of the research in this article is that the primary task of the dynamic pricing model is to establish an accurate demand function.
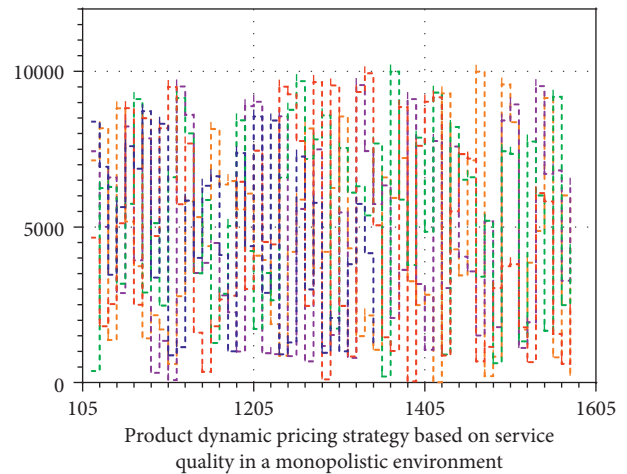

FIGURE 11: Analysis results of product dynamic pricing model based on revenue management.

4. Conclusion

This article studies the dynamic pricing problem in the revenue management of service products. Through the literature review method, the study sorted out the four major factors that affect the dynamic pricing of service-oriented products. The research builds a dynamic pricing model around these four factors and then uses reinforcement learning algorithms to derive and calculate the model. Since the model cannot find the analytical value, this article again uses two types of service-oriented products and nonreusable service-oriented products to carry out simulation experiments on the model. In this article, the optimal solution and maximum profit value of the existing model are obtained through MATLAB model programming. The model compares dynamic pricing methods with traditional pricing methods. The model analyzes the factors that affect dynamic pricing in the case and then draws the conclusion of this article.

At the same time, another factor that affects the profitability of a business is usually the demand price of a product. Enterprises generally control the output of their own products according to strong market demand. Enterprises seldom realize that product inventory will affect the market price of commodities and often lack the analysis of the relationship between product price and inventory. Therefore, business decision-makers should really see the relationship between inventory, price, and sales. Business owners should pay attention to the company's inventory planning and inventory management. The pricing of products in the market, largely, depends on changes in the market's demand for them. Enterprises need to focus on these factors. Enterprises should formulate guide prices and sales strategies for various products according to consumers' sensitivity to prices. When the price elasticity of a company increases, the company should lower prices to increase sales. However, price elasticity is an empirical value. Different types of products and different consumers

have different price elasticities. Therefore, business decision-makers should determine the size of price elasticity in light of different market segments, combining actual conditions and data. Business owners should skillfully use price elasticity to increase sales, increase profits or reduce inventory to reduce losses. At the same time, although this article studies product dynamic pricing in the context of revenue management, it focuses on how companies can reduce inventory and increase profits. While ensuring its own profitability, an enterprise must not violate its social responsibilities. In particular, this article positions the object as a service product, and the public value that the service product can bring cannot be ignored. The guiding role that a service-oriented enterprise should have in society cannot be ignored.

At the macro level, the model regards price as the most effective means of market regulation and transmits market and product value information through price. Enterprises maintain the stability of social production, consumption, and circulation by adjusting the interest relationships between buyers and sellers, producers, and consumers. At the micro level, as a corporate decision-maker, the model can make full use of price as a regulatory factor to achieve product price stability. Companies combine their own production capacity and inventory plans to formulate reasonable prices. In addition, companies use short-term price manipulation to encourage or curb demand, serve the company's sales plan more effectively, and obtain greater profits. For example, when a product enters a recession, companies can use low prices to promote sales. When demand increases sharply, companies raise prices to curb demand. Thereby reducing the opportunity cost when a large amount of demand met. At the same time, decision-makers should strengthen the price management of enterprise products.

In commercial banks, the relationship between the two can be further verified theoretically, and domestic research on the relationship between the two can be enriched. This article analyzes the problems of human resource management in our state-owned commercial banks and verifies the relationship between human resource management practices and corporate performance. The research shows that there is a significant positive correlation between the two. Therefore, to a certain extent, it can cause state-owned commercial banks to reflect on their own corporate human resource management practices and recognize them.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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