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Dynamic pricing research based on customers' limited rational behavior in a competitive environment

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Abstract: In a competitive environment, a firm manages revenue through dynamic pricing, and customers obtain purchasing knowledge from previous customers through multiple channels before making purchasing decisions. This behavior, which can improve customers' bounded rationality level to choose when and which type to purchase, has a great influence on a firm's profit. This paper assumes that two companies produce products with different properties (green and regular properties) and that the payment preferences of customers for these products are heterogeneous and obey a uniform distribution. We build a two-period dynamic pricing model according to customers' boundedly rational behavior. We discuss how the property difference and bounded rationality level impact the profit of a company by comparing the Nash equilibrium obtained from static pricing and dynamic pricing, and we discuss this under the situation of only exiting myopic customers. This paper concludes that decision makers should survey information about customers' bounded rationality levels, payment preferences and product differences before implementing a dynamic pricing strategy.

Keywords: Dynamic pricing; Boundedly rational customer; Green product; Competition.

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1. Introduction

Since the 1960s and 1970s, green consumption has gradually become popular, the power of green consumption continues to increase, and consumers are willing to pay an environmental premium for green products. This induces some socially responsible enterprises to produce green differentiated products with higher green attributes, while many enterprises still maintain the status quo and produce only traditional products with functional attributes. The enterprise product market can be divided into a green market and a traditional market. A product differentiation strategy is an effective way for companies to find niche markets in a competitive environment and is commonly applied to the sales of daily consumer goods such as food. On the other hand, some companies will systematically change prices over time to better manage demand and increase profits. This behavior is known as intertemporal price discrimination, where customers with a green and environmentally friendly inclination (high payment preference) will purchase the product at a higher price in the early stages, whereas customers with a product functionality inclination (low payment preference) will wait until later to purchase the product at a lower price. In a competitive market, companies can manage revenue through dynamic pricing, and customers with bounded rationality can also learn about their previous purchasing experience through various channels (Weibo, WeChat, verbal communication, etc.) and receive feedback information. In this way, customers can obtain market information on product prices and supply quantities, compare the consumer surplus that the company can obtain at different price stages, and finally make purchasing decisions. The purchasing experience of early customers involves product prices and supply information, which can affect their current purchasing decisions. In reality, most consumers have bounded rationality. Therefore, in a competitive market environment, companies

need to consider both the degree of bounded rationality of customers and the sustainability of intertemporal demand when making dynamic pricing decisions.

Some products sold on the market, such as food and appliances, have substitutes with different attributes, and over time, consumers' expected payments gradually decrease. Companies will lower prices to maintain their reasonable profits until the products are replaced or withdrawn from the market. Facing the threat of competitors, how to dynamically adjust prices and respond to customers' bounded rational behavior over time is the primary goal for companies to achieve high profits. This article divides product sales into two stages, the normal sales and product clearance stages, and studies how the differences in product attributes between the two stages and customers' bounded rationality behavior affect a company's dynamic pricing.

This article considers two companies in the market that produce green products with green attributes (green products in this article refer to healthy or environmentally friendly products, such as product shelf life, updates, etc.) and traditional products with functional attributes. There is heterogeneity in customers' preferences for products with different attributes. Both companies simultaneously set prices at each stage to maximize their respective profits. Customers have rational expectations for the prices set by the company in the future, but they cannot accurately predict the supply of future products. They weigh the payment preferences and supply situations of products purchased from different companies at different stages and choose when to purchase with which products to maximize individual consumer surplus.

2. Literature Review

The literature on strategic customer behavior has focused on how strategic customer behavior affects a company's operational decisions, including dynamic pricing (Wang and Xu, 2022; Qi et al., 2025; Wang and Xu, 2024), capacity allocation (Liu and Ryzin, 2011; Tan et al., 2025), and rapid response strategies (Cachon and Swinney, 2009). Besanko and Winston (1990) first considered consumers' strategic behavior in dynamic pricing and noted that considering strategic consumers would increase the profits of monopolistic firms. Elmaghraby et al. (2003) considered inventory and concluded that consumer strategic behavior affects manufacturers' pricing. Liu et al. (2009) studied the inventory and pricing decisions of manufacturers facing consumer strategic behavior under both deterministic and uncertain demand. Dasci and Karakul (2009) considered strategic customer behavior, studied the dynamic pricing problem of two cycles and two retailers, and noted that dynamic pricing may lead to lower equilibrium prices. Bi et al. (2014) considered consumer strategy behavior and studied the dynamic pricing of companies in the presence of substitutes. Man Yu et al. (2016) considered the product quality information generated by consumers and studied how companies can dynamically adjust prices to achieve maximum revenue. Most existing studies focus on the relationship between strategic customers and a single seller buying and selling a product in a monopolistic market, and the premise assumption of these studies is that customers are completely rational. Therefore, to make research theories more realistic, some scholars have proposed bounded rational behavior in dynamic systems (Bischi and Kopel, 2001; Huang and Liu, 2015). The bounded rationality model used in this study is based on the model S (K) proposed by Osborne and Rubinstein (1998). Before making a purchase decision, customers use various channels (Weibo, WeChat, verbal communication, etc.) to understand the previous customer's purchase information to determine the probability of future product supply. On the basis of this model, this article studies the impact of customers' bounded rationality on dynamic competitive pricing and company profits.

In the literature on competitive dynamic pricing under customer choice behavior, two main aspects are involved: which products customers choose to purchase and how dynamic pricing in a competitive environment can increase company profits (Martínez-de-Albéniz and Talluri 2011; Lin and Sibdari, 2009; Cen, 2025). The bounded rationality

behavior of customers can help them better evaluate products (Hu and Milner, 2015), choose better purchasing stages, and achieve maximum consumer surplus. Enterprises can also obtain limited rational information from customers to better adjust product prices at different sales stages and maximize profits. This study assumes that customers with bounded rationality not only need to choose which product to purchase but also need to decide when to make the purchase. Owing to the bounded rationality of customers considering future price expectations and product supply when making purchasing decisions, compared with static pricing, considering customers' bounded rationality behavior causes greater damage to company profits, and the greater the degree of rationality is, the greater the degree of damage. This study focuses on cross-period pricing in the presence of customers with bounded rationality and product differentiation.

3. Model Building

This article assumes that there are two companies in the market, Company a and Company b, selling green products and traditional products, respectively, with a green level that meets the requirements $e_a > e_b$. Without loss of generality, this article standardizes (e_a,e_b) as (1,β), where $0 < \beta < 1$. This article assumes that the degree of greenness is an exogenous variable and that customers have heterogeneous preferences u for product attributes, following a uniform distribution of [0,1]. For two companies and customers, this distribution belongs to common knowledge. The sales cycle of the product is divided into two stages, and in different stages, the product prices set by the two companies are $p_1 = (p_{1,a}, p_{1,b})$ or $p_2 = (p_{2,a}, p_{2,b})$. The stage discount factor for each company is α ($0 < \alpha \leq 1$), and at the beginning of each stage, both companies simultaneously set prices to maximize their respective total profits. The consumer surplus of a product purchased by a customer can be expressed as $\theta_t e_i - p_{i,t}$, where i =a,b, t =1, 2 (the same applies below). Customers can also choose not to purchase, and the remaining amount will be 0. This article assumes that the linear unit costs of products a and b are $c$and βc, respectively, where $c < 1$ and $\theta_t \geq c$.

This article standardizes the total number of customers to 1, with a maximum purchase of one product per customer. Customers are cross-period utility maximizing users and choose when and what products to purchase. This article uses the $S(K)$ model (Osborne and Rubinstein 1998) to reflect the degree of bounded rationality of customers, where K represents the sample size of customers who purchased the product before making the purchase decision. Before a product is purchased, customers can understand the inventory situation of the product in the second sales stage through their previous purchasing experience. The more samples a customer receives, the higher the degree of bounded rationality. If customers learn that the probability of the company's product supply in the second stage is low, they may increase their willingness to purchase in the first stage. In the $S(K)$ model, $B_{i,k}$ represents a binary random variable, and $B_{i,k}$=1 or 0 represents whether sample k in the previous stage had stock or not when purchasing product i in the second stage. Sum the sample information obtained by customers and take the average, that is, $\frac{1}{K}\sum_{k=1}^{K} B_{i,k}$, used to represent the probability of bounded rational customer expectations for the company's product supply in the second stage. $\sum_{k=1}^{K} B_{i,k}$ follows a binomial distribution with parameters k and p_k, where p_k=$P(B_k = 1)$. Customers can use $\frac{1}{K}\sum_{k=1}^{K} B_{i,k}\,(p_{i,k}, k)$ to calculate the consumer surplus in the second stage and compare the surplus obtained from current and future purchases of products. K =0 indicates that no previous customers or customers consider future product information. As long as the consumer surplus is greater than 0, the customer will make a purchase. This type of customer is called an impulse customer.

In the model presented in this article, the key factors determining customer purchasing behavior are the degree of environmental differences (represented by the ratio of traditional products to green products) and the degree of bounded rationality of customers

(solved through samples of previous customer purchasing information). This study assumes that the ratio of environmental differences is greater than the bounded rationality of customers; that is, if the net present value of two product prices is equal, customers tend to choose to purchase traditional products in the first stage rather than waiting until the second stage to purchase green products. In other words, if $\beta > \frac{1}{K}\sum_{k=1}^{K} B_{i,k}(p_{i,k}, k)$, $p_{1,R} = p_{2,a}\frac{1}{K}\sum_{k=1}^{K} B_{a,k}(p_{a,k}, k)$, the customer will immediately purchase product b and receive more surplus than if they wait until the second stage to purchase product a.

4. Equilibrium Analysis

This article studies the pure strategic Nash equilibrium pricing strategy of two-stage dynamic games and uses reverse induction to solve it. Assuming that $\beta > \frac{1}{K}\sum_{k=1}^{K} B_{i,k}(p_{i,k}, k)$, company b will set appropriate prices to capture bounded rational customers with lower payment preferences, who will not wait until the second stage to purchase product a. However, boundedly rational customers with the highest payment preferences will purchase product a in the first stage. In equilibrium, the sales of both companies are positive in both stages. This result is reflected in Proposition 1.

Proposition 1: Assume that $\beta > \frac{1}{K}\sum_{k=1}^{K} B_{i,k}(p_{i,k}, k)$. If a bounded rational customer with a payment preference v' chooses to purchase product i in the first stage, then a bounded rational customer with a payment preference higher than v' will also choose to purchase product i in the first stage, without considering the latter price p_2. If $\beta \leq \frac{1}{K}\sum_{k=1}^{K} B_{i,k}(p_{i,k}, k)$ and $p_{1,R} = p_{2,a}\frac{1}{K}\sum_{k=1}^{K} B_{a,k}(p_{a,k}, k)$ are satisfied, then bounded rational customers are more inclined to wait until the second stage to purchase product a rather than choosing to purchase product b in the first stage.

Only when the bounded rational customer's payment preference v' satisfies inequality (1) will the customer purchase product a in the first stage, that is,

$$v' - p_{1,a} \geq max\{\frac{1}{K}\sum_{k=1}^{K} B_{a,k}(p_{a,k}, k)(v' - p_{2,a}), \frac{1}{K}\sum_{k=1}^{K} B_{b,k}(p_{b,k}, k)(\beta v' - p_{2,b}), \beta v' - p_{1,b}, 0\} \quad (1)$$

Only when the payment preference v' of boundedly rational customers satisfies inequality (2) will they purchase product R in the first stage, that is,

$$\beta v' - p_{1,b} \geq max\{\frac{1}{K}\sum_{k=1}^{K} B_{a,k}(p_{a,k}, k)(v' - p_{2,a}), \frac{1}{K}\sum_{k=1}^{K} B_{b,k}(p_{b,k}, k)(\beta v' - p_{2,b}), v' - p_{1,b}, 0\} \quad (2)$$

If K =1, that is, customers obtain product allocation information through a channel (such as verbal communication), inequalities (1) and (2) can be transformed into:

$$v' \geq max\{\frac{p_{1,a} - Bp_{2,a}}{1 - B}, \frac{p_{1,a} - Bp_{2,b}}{1 - B\beta}, \frac{p_{1,a} - p_{1,b}}{1 - \beta}, p_{1,a}\} \quad (3)$$

$$\frac{p_{1,a} - p_{1,b}}{1 - \beta} \geq v' \geq max\{\frac{p_{1,b} - Bp_{2,a}}{\beta - B}, \frac{p_{1,b} - Bp_{2,b}}{\beta - B\beta}, \frac{p_{1,b}}{\beta}\} \quad (4)$$

If $K \to \infty$, the customer becomes a completely rational customer, then $\frac{1}{K}\sum_{k=1}^{K} B_{i,k}(p_{i,k}, k)$ represents the probability that the customer truly expects company i to supply products in the second stage.

Therefore, any bounded rational customer who satisfies $v > v'$ will purchase product i in the first stage.

This article first studies the general problems when a product has only one stage in Section 4.1 and then expands to two-stage problems in Section 4.2.

4.1. Static Problem Analysis (benchmark)

Owing to the lack of future purchasing opportunities, customers' strategic behavior becomes ineffective ($K = 0$). Assuming that the customer's payment preference satisfies $v \in [0, u]$, $u \in [c, 1]$. If $p_b/\beta \leq p_a \leq p_b + (1 - \beta)u$, then there exists a Nash equilibrium between two companies. Otherwise, if one of the companies has a profit of 0, there is no Nash equilibrium. **Table 1** shows the profit of Company i.

Table 1. Profit of the Company i.

profit p_a	$[c, p_b/\beta)$	$[p_b/\beta, p_b+(1-\beta)u)$	$[p_b+(1-\beta)u, 1]$
Π_a	$(p_a-c)(u-p_a)$	$(p_a-c)(u-\frac{p_a-p_b}{1-\beta})$	0
Π_b	0	$(p_b-\beta c)(\frac{p_a-p_b}{1-\beta}-\frac{p_b}{\beta})$	$(p_b-\beta c)(u-\frac{p_b}{\beta})$

On the basis of the profits in the table, taking the partial derivative of the price yields the equilibrium price, equilibrium marginal profit, and profit:

$$p_a *= \frac{2(1-\beta)}{4-\beta}(u-c)+c, p_b *= \frac{\beta(1-\beta)}{4-\beta}(u-c)+\beta c$$

$$m_a *= \frac{2(1-\beta)}{4-\beta}(u-c) = p_a *-c, m_b *= \frac{\beta(1-\beta)}{4-\beta}(u-c) = p_b *-\beta c$$

$$\Pi_a *= \frac{4(1-\beta)}{(4-\beta)^2}(u-c)^2, \Pi_b *= \frac{\beta(1-\beta)}{(4-\beta)^2}(u-c)^2$$

4.2. Two-stage Problem Analysis

This article assumes that two companies price simultaneously at each stage, where $\tilde{u}_2$ represents the indifferent payment preference of customers for purchasing products in the first and second stages.

Proposition 2: The payment preference $\tilde{u}_2$ of customers for the product in the second stage depends on the surplus of consumers in both stages.

If the demand for product b by customers in the first stage is greater than 0, then $\tilde{u}_2$ will depend on the comparison of consumer surplus between the two stages, that is, comparing the surplus of consumers who purchased product b in the first stage with the surplus of consumers who purchased product a in the second stage, that is, meeting $\beta\tilde{u}_2 - m_{1,b} - \beta c = (\tilde{u}_2 - m_{2,a} *-c)\frac{1}{K}\sum_{k=1}^{K} B_{a,k}(k, p_{a,k}) = (1-\frac{2(1-\beta)}{4-\beta})(\tilde{u}_2 - c)\frac{1}{K}\sum_{k=1}^{K} B_{a,k}(k, p_{a,k})$, obtaining $\widetilde{u_2} = \frac{m_{1,b}}{\beta - \frac{(2+\beta)}{(4-\beta)K}\sum_{k=1}^{K} B_{a,k}(p_{a,k},k)} + c$. Otherwise, $\tilde{u}_2$ depends on the comparison of consumer surplus when purchasing product a in the first and second stages, resulting in $\tilde{u}_2 = \frac{m_{1,a}}{1-\frac{(2+\beta)}{(4-\beta)K}\sum_{k=1}^{K} B_{a,k}(p_{a,k},k)} + c$.

If the channels through which bounded rational customers obtain prepurchase information increase, i.e., K increases, then $\tilde{u}_2$ first increases and then decreases. By learning from the purchasing experience of previous customers, customers with bounded rationality can more accurately anticipate the probability of product supply in the second stage $\frac{1}{K}\sum_{k=1}^{K} B_{i,k}(k, p_{i,k})$. Therefore, as the degree of bounded rationality increases, they make more accurate and reasonable purchasing decisions, that is, whether to purchase in the current period or delay the purchase. company b can always set a reasonable price for the expected price of product a so that customers with higher payment preferences tend to purchase product b in the first stage rather than waiting. Therefore, only when customers with higher payment preferences purchase product a and customers with lower payment preferences purchase product b do the two companies have a Nash equilibrium solution. In the first stage, the sales of companies a and b are both positive, namely, $u_1 - \frac{m_{1,a}-m_{1,b}}{1-\beta} - c$, $\frac{m_{1,a}-m_{1,b}}{1-\beta} - \frac{m_{1,b}}{\beta - \frac{(2+\beta)}{(4-\beta)K}\sum_{k=1}^{K} B_{a,k}(p_{a,k},k)}$. As a result, the payment preference of customers in the second stage becomes $\widetilde{u_2} = \frac{m_{1,b}}{\beta - \frac{(2+\beta)}{(4-\beta)K}\sum_{k=1}^{K} B_{a,k}(p_{a,k},k)} + c$. Therefore, the profits of the two companies are as follows:

$$\Pi_{1,a} = (p_{1,a}-c)(u_1 - \frac{m_{1,a}-m_{1,b}}{1-\beta} - c) + \frac{4\alpha(1-\beta)}{(4-\beta)^2}(\frac{m_{1,b}}{\beta - \frac{(2+\beta)}{(4-\beta)K}\sum_{k=1}^{K} B_{a,k}(p_{a,k},k)})^2$$

$$\Pi_{1,b} = (p_{1,b}-\beta c)(\frac{m_{1,a}-m_{1,b}}{1-\beta} - \frac{m_{1,b}}{\beta - \frac{(2+\beta)}{(4-\beta)K}\sum_{k=1}^{K} B_{a,k}(p_{a,k},k)}) + \frac{4\alpha\beta(1-\beta)}{(4-\beta)^2}(\frac{m_{1,b}}{\beta - \frac{(2+\beta)}{(4-\beta)K}\sum_{k=1}^{K} B_{a,k}(p_{b,k},k)})^2$$

Proposition 3 presents the Nash equilibrium results of two companies in the first stage.

Proposition 3: If $\beta > \frac{1}{K}\sum_{k=1}^{K} B_{i,k}\,(p_{i,k}, k)$, then in the first stage, the Nash equilibrium prices and profits of the two companies are as follows:

$p_{1,a} *= \phi_{1,a}(u_1 - c) + c,\ p_{1,b} *= \phi_{1,b}(u_1 - c) + \beta c$

$\Pi_{1,a} *= \mu_{1,a}(u_1 - c)^2, \Pi_{1,b} *= \mu_{1,b}(u_1 - c)^2$

where $\phi_{1,b} = \frac{(1-\beta)X_2^2}{\psi_2}$, $\phi_{1,a} = \frac{\phi_{1,b}+1-\beta}{2}$, $X_2 = \beta - \frac{(2+\beta)}{(4-\beta)K}\sum_{k=1}^{K} B_{a,k}\,(p_{a,k}, k)$, $\psi_2 = 3X_2^2 + 4(1-\beta)X_2 - 4\alpha\beta(1-\beta)^2/(4-\beta)^2$, $\mu_{1,b} = \frac{\phi_{1,b}(X_2^2+(1-\beta)X_2-\alpha\beta(1-\beta)^2/(4-\beta)^2)}{\psi_2}$, $\mu_{1,a} = \frac{(\phi_{1,b}+1-\beta)^2}{4(1-\beta)} + \frac{4\alpha X_2^2(1-\beta)^3}{((4-\beta)\psi_2)^2}$.

From Proposition 3, it can be concluded that when the product attributes of two companies are more similar, perfect competition leads to market prices that are closer to product costs and company profits that are closer to 0, i.e., β tends to be closer to 1. Therefore, the profits of each company tend to be closer to 0, and the equilibrium prices of companies a and b in the two stages approach c and βc. If K tends to 0 or is large, the probability of bounded rational customer expectations for product supply in the second stage is low, the quantity of product b purchased by customers in the first stage increases, and $p_{1,a} *$ and $p_{1,b} *$ increase, resulting in an increase in profits in the first stage. By comparing the Nash equilibrium solution in this section with the equilibrium solution in Section 4.1, it can be concluded that customers' bounded rationality behavior will reduce company profits. If customers expect the price to increase in the second stage, they will choose to purchase in the first stage, so the price of the second-stage product is lower than that of the first-stage product, and the higher the degree of bounded rationality is, the higher the price in the first stage.

4.3. Equilibrium Solution in the Case of Impulsive Customers

Unlike customers with bounded rationality, impulsive customers only make decisions on the basis of current prices and ignore future purchasing opportunities (when $K = 0$). Proposition 4 provides the Nash equilibrium solution for this situation (derived from Proposition 3).

Proposition 4: In the presence of impulsive customers, the two-stage Nash equilibrium solution is as follows:

$\tilde{p}_{1,a} *= \frac{2\tilde{\phi}_1(1-\beta)}{4\tilde{\phi}_1-1}(u_1 - c) + c, \tilde{p}_{1,b} *= \frac{(1-\beta)}{4\tilde{\phi}_1-1}(u_1 - c) + \beta c$

$\tilde{\Pi}_{1,a} *= \frac{4\tilde{\mu}_1(1-\beta)}{(4\tilde{\phi}_1-1)^2}(u_1 - c)^2, \tilde{\Pi}_{1,b} *= \frac{\tilde{\phi}_1(1-\beta)}{(4\tilde{\phi}_1-1)^2}(u_1 - c)^2$

where $\tilde{\phi}_1 = \frac{1}{\beta} - \frac{\alpha(1-\beta)}{(4-\beta)^2}, \tilde{\mu}_1 = \tilde{\phi}_1^{\,2} + \frac{\alpha(1-\beta)^2}{\beta^2(4-\beta)^2}$

By comparing the equilibrium solution of Proposition 4 with the equilibrium solution in Section 4.1, it can be concluded that the company's prices and profits in the second stage are lower than those in the first stage. Compared with the equilibrium solution in Section 4.2, in the case of impulsive customers, the company's product prices and profits are higher than those in the case of bounded rational customers.

5. Conclusion

Through the analysis in this article, it is found that dynamic pricing can result in a loss of company profits, and the higher the degree of bounded rationality of customers is, the more profit the company loses. Therefore, when adopting a dynamic pricing strategy, companies should consider the degree of bounded rationality of customers and the degree of difference between the company's early product supply and the products of competing companies. Especially for traditional companies, customers' bounded rationality behavior should be treated with caution.

In the case where customers with bounded rationality tend toward green environmental protection, this paper studies the dynamic pricing of two-product differences in companies and concludes that the asymmetric impact of customers' bounded rationality behavior on company profits. Compared with impulsive customers, although customers'

bounded rational behavior may reduce the profits of both companies, companies producing traditional products suffer greater profit losses than those producing green products. In general, at each stage, impulsive customers decide only which product to purchase and ignore future purchasing choices. Therefore, at each stage, the competition between traditional enterprises and green enterprises will overlook cross-period demand substitution. However, customers with bounded rationality must decide not only what product to purchase but also when to purchase it, so there is competition between traditional and green enterprises in both the current and second stages. The greater the degree of bounded rationality of customers is, the greater the degree of profit loss of the company. In addition, as the degree of bounded rationality of customers increases, they can make more reasonable purchasing decisions, and the impact of cross-period demand substitution becomes stronger, resulting in greater profit losses for traditional enterprises than for green enterprises. Although this article establishes a pricing model based on customer bounded rationality in a competitive environment, it does not consider the impact of information asymmetry between two competing companies.

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References

1. Besanko, D., & Winston, W. L. (1990). Optimal price skimming by a monopolist facing rational consumers. *Management Science*, *36*(5), 555-567. https://doi.org/10.1287/mnsc.36.5.555
2. Bi, G., Li, L., Yang, F., & Liang, L. (2014). Dynamic pricing based on strategic consumers and substitutes in a duopoly setting. *Discrete Dynamics in Nature and Society*, *2014*(1), 694568. https://doi.org/10.1155/2014/694568
3. Bischi, G. I., & Kopel, M. (2001). Equilibrium selection in a nonlinear duopoly game with adaptive expectations. *Journal of Economic Behavior & Organization*, *46*, 73-100. https://doi.org/10.1016/S0167-2681(01)00188-3
4. Cachon, G., & Swinney, R. (2009). Purchasing, pricing, and quick response in the presence of strategic consumers. *Management Science*, *55*(3), 497-511. https://doi.org/10.1287/mnsc.1080.0948
5. Cen, W. (2025). Gaining the Initiative: User Entrepreneurial Process Driven by Innovation. *Management & Innovation*, *3*(1), 1-15. https://doi.org/10.61187/mi.v3i1.166
6. Dasci, A., & Karakul, M. (2009). Two-period dynamic versus fixed-ratio pricing in a capacity constrained duopoly. *European Journal of Operational Research*, *197*, 945-968. https://doi.org/10.1016/j.ejor.2007.12.039
7. Elmaghraby, W., & Keskinocak, P. (2003). Dynamic pricing in the presence of inventory consideration: Research overview, current practices, and future direction. *Management Science*, *49*(10), 1287-1309. https://doi.org/10.1287/mnsc.49.10.1287.17315
8. Hu, M., Milner, J., & Wu, J. (2015). Liking and following and newsvendor: Operations and marketing policies under social influence. *Management Science*. https://doi.org/10.1287/mnsc.2015.2160
9. Huang, T., & Liu, Q. (2015). Strategic capacity management when customers have boundedly rational expectations. *Production and Operations Management*, *24*(12), 1852-1869. https://doi.org/10.1111/poms.12420
10. Lin, K. Y., & Sibdari, S. Y. (2009). Dynamic price competition with discrete customer choices. *European Journal of Operational Research*, *197*(3), 969-980. https://doi.org/10.1016/j.ejor.2007.12.040
11. Liu, Q., & van Ryzin, G. (2011). Strategic capacity rationing when customers learn. *Manufacturing & Service Operations Management*, *3*(1), 89-107. https://doi.org/10.1287/msom.1100.0306
12. Liu, X., & Huang, P. (2009). The optimal strategy of the consumer purchase decision. *Journal of Management in Engineering*, *23*(4), 182-186. https://doi.org/10.13587/j.cnki.jieem.2009.04.013
13. Man, Y., Debo, L., & Kapuscinski, R. (2016). Strategic waiting for consumer-generated quality information: Dynamic pricing of new experience goods. *Management Science*, *62*(2), 410-435. https://doi.org/10.1287/mnsc.2014.2134
14. Martínez-de-Albéniz, V., & Talluri, K. (2011). Dynamic price competition with fixed capacities. *Management Science*, *57*(6), 1078-1093. https://doi.org/10.1287/mnsc.1110.1337
15. Osborne, M. J., & Rubinstein, A. (1998). Games with procedurally rational players. *American Economic Review*, *88*, 834-849.
16. Qi, W., Li, Z., & Luo, X. (2025). Research on pricing strategies for product lines considering experiential services and customer choice behavior. *China Management Science*, *33*(2), 207-220. https://doi.org/10.16381/j.cnki.issn1003-207x.2022.2769
17. Tan, X., Tang, J., & Li, T. (2025). Pricing strategy of multi proportion fixed commission mode for O2O waimai platforms considering limited rational behavior and order value distribution. *Journal of Systems Management*, *34*(3), 620-636.
18. Wang, R., & Xu, X. (2022). Research on customer behavior and pricing of "service intelligence" queuing system. *China Management Science*. https://doi.org/10.16381/j.cnki.issn1003-207x.2022.2463

19. Wang, R., & Xu, X. (2024). Research on customer behavior and pricing strategy of vacation queuing system with elastic service mechanism. *Systems Engineering Theory and Practice*, *44*(8), 2625-2644.