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Research on the Application Strategies of Short-Term Cost Curves in the Field of Economics

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Abstract: This paper deeply explores the application strategies of short-term cost curves in the field of economics. Firstly, it elaborates on the basic theories and constituent elements of short-term cost curves. By drawing and analyzing the short-term cost curve graphs, it presents the internal relationship between costs and output. Then, it focuses on researching its application strategies in multiple aspects such as enterprise production decisions, market pricing, and industry competition analysis.

Keywords: Short-term cost curves; Application strategies; Production decisions; Market competition

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1. Introduction

In the complex and ever-changing arena of economic activities, cost is undoubtedly a core and key factor that affects the direction of enterprise decisions and the operation trend of the market. The short-term cost curve, as an important tool that accurately reflects the relationship between costs and output in the short term, is like a key, opening the door for enterprise managers and economic researchers to understand the changing laws of costs and helping them formulate more reasonable and scientific decisions. In-depth research on the application strategies of short-term cost curves has extremely important practical significance for enterprises. It can help enterprises keenly observe market dynamics, accurately grasp the delicate balance between costs and output to better adapt to changes in the market environment and achieve the long-term goal of sustainable development.

2. Theoretical basis of short-term cost curves

2.1. Concepts and classifications of short-term costs

The short term refers to a period in which producers have no time to adjust the quantities of all production factors, and at least the quantity of one production factor remains fixed. In the short term, costs can be divided into fixed costs (TFC) and variable costs (TVC) [1].

Fixed costs (TFC) are like the cornerstone of enterprise operations. They are costs that do not change with the

change in output. For example, the production equipment purchased by an enterprise is depreciated according to a certain depreciation method over time, and this part of the depreciation expense also belongs to fixed costs and does not change with the increase or decrease in output.

Variable costs (TVC) are costs that change correspondingly with the change in output. Taking a manufacturing enterprise as an example, the procurement cost of raw materials will increase with the increase in output because more products require more raw materials to be consumed.

The total cost (TC) is equal to the sum of fixed costs and variable costs, that is, TC = TFC + TVC.

2.2. Derivation and shapes of short-term cost curves

2.2.1. Total cost curve (TC)

The fixed cost curve (TFC) is presented uniquely. It is a straight line parallel to the horizontal axis [2]. This is because regardless of how the output changes, the fixed cost always remains constant and will not be affected by output fluctuations. The variable cost curve (TVC) starts from the origin and rises as the output gradually increases. In the initial stage, due to the relatively high utilization efficiency of production factors, the rising speed of variable costs is relatively slow; however, as the output continues to expand, the production factors gradually become saturated, and the rising speed of variable costs will gradually accelerate.

The formation of the total cost curve (TC) is the result of the superposition of the fixed cost curve and the variable cost curve. It starts from the intercept of the fixed cost on the vertical axis and rises steadily with the increase in output. Its shape is very similar to that of the variable cost curve. This is because the fixed cost is only vertically translated based on the variable cost and does not change the basic trend of cost changing with output (**Figure 1**).

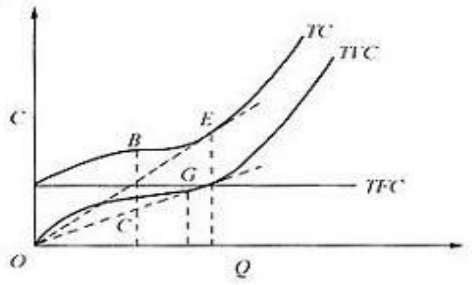

Figure 1. Short-term cost curves

2.2.2. Average cost curves

The average fixed cost (AFC) curve is like a hyperbola approaching both axes, vividly showing the trend that the average fixed cost continuously decreases with the continuous increase in output.

The average variable cost (AVC) curve presents a unique U shape. In the early stage of production, due to the relatively small production scale, the enterprise can fully utilize the potential of production factors to effectively control costs, and the average variable cost decreases accordingly; however, when the output exceeds a certain limit, the marginal return of production factors begins to decline, resulting in the gradual increase of the average variable cost.

The average total cost (AC) curve also has a U shape. It is formed by the superposition of the average fixed cost curve and the average variable cost curve. Since the average fixed cost is always positive, the average total cost curve is always above the average variable cost curve, and the vertical distance between them is exactly equal to the average fixed cost (**Figure 2**).

2.2.3. Marginal cost curve (MC)

The marginal cost curve also has a U-shaped feature. It intersects the average variable cost curve and the average total cost curve at their lowest points [3]. This intersection point has extremely important economic significance. When the marginal cost is less than the average cost, it means that the increase in cost brought by each additional unit of output is less than the current average cost, and at this time, the average cost will decrease with the increase in output; conversely, when the marginal cost is greater than the average cost, the average cost will increase with the increase in output (**Figure 2**).

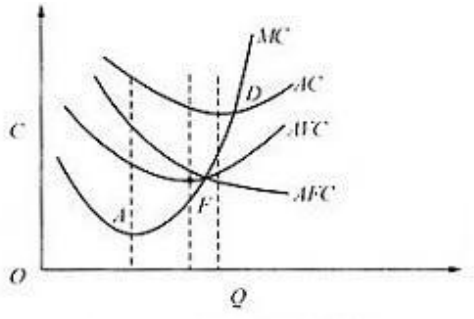

Figure 2. Short-term cost curves

3. Analysis of short-term cost curve graphs

3.1. Short-term cost curves and their interrelationship

Taking output as the horizontal axis and cost as the vertical axis, draw the short-term cost curve graph (**Figure 2**). In the graph, we can see the trends and interrelationships of various cost curves. For example, the marginal cost (MC) curve has specific intersection points with the average total cost (AC) curve and the average variable cost (AVC) curve. When MC is less than AC and AVC, the AC and AVC curves decline; when MC is greater than AC and AVC, the AC and AVC curves rise. The MC curve intersects the lowest points of the AC curve and the AVC curve, respectively.

3.2. The slope of the cost curve reflects the rate of change of cost

For example, the slope of the marginal cost curve represents the increase in cost for each additional unit of output [4].

3.3. Positional relationship and internal connection of cost curves

The positional relationship among various cost curves reflects the internal connection among costs. For example, the average total cost curve is always higher than the average variable cost curve, and the vertical distance between them is the average fixed cost.

3.4. Significance of the intersection of marginal cost and average cost curves in determining optimal production scale

The intersection point of the marginal cost curve and the average cost curve is a key node of cost change. At the intersection point, the average cost reaches the minimum value, which is of great significance for enterprises to determine the optimal production scale.

4. Application strategies of short-term cost curves

4.1. Application in enterprise production decisions

4.1.1. Determining the optimal output

In the game of the market economy, the core goal of an enterprise is to maximize profits [5]. The key principle to achieve this goal is that marginal revenue (MR) equals marginal cost (MC). In a perfectly competitive market environment, an enterprise is a price taker, and marginal revenue equals the market price (P). Therefore, an enterprise needs to accurately determine the optimal output based on the market price and the marginal cost curve.

When the market price P equals the marginal cost MC, the enterprise reaches the ideal state of maximizing profits. At this time, the revenue brought by each additional unit of output of the enterprise is exactly equal to the increase in cost caused by adding this unit of output, and the enterprise's profit reaches the maximum value; when the market price P is less than the marginal cost MC, it means that the increase in cost caused by each additional unit of output of the enterprise is greater than the revenue obtained, and continuing to increase output will lead to a reduction in profits. Therefore, the enterprise should decisively reduce output to avoid further expansion of losses; when the market price P is greater than the marginal cost MC, the revenue obtained by the enterprise for each additional unit of output is greater than the increase in cost caused by adding this unit of output. At this time, the enterprise should seize the opportunity to increase output to obtain more profits.

4.1.2. Short-term shutdown decision

In the case of market price fluctuations, an enterprise also needs to make short-term shutdown decisions [6]. When the market price is lower than the average variable cost, if the enterprise continues to produce, it will not only be unable to cover the fixed costs but also further exacerbate losses. At this time, the enterprise's sales revenue cannot even fully cover the variable costs, and each unit of product produced will bring additional losses. In this case, the wise choice for the enterprise is to stop production to reduce unnecessary losses.

When the market price is higher than the average variable cost, although the enterprise may still be in a loss state, continuing to produce can cover part of the fixed costs. At this time, the enterprise's sales revenue, after deducting the variable costs, still has a part left that can be used to offset the fixed costs. Therefore, the enterprise should continue to produce to reduce the overall loss level.

4.2. Application in market competition analysis

4.2.1. Cost advantage analysis

By analyzing short-term cost curves [7], an enterprise can understand its cost advantages and disadvantages. Compared with competitors, if an enterprise's average total cost is lower, it has a price advantage in market competition and can obtain more market share at a lower price.

4.2.2. Market entry and exit decisions

Potential entrants can evaluate the feasibility of entering the market by studying short-term cost curves [8]. If they can control costs within a reasonable range after entering and the expected revenue is greater than the costs, they can consider entering; for incumbent enterprises, if they face long-term losses and cannot improve the situation by adjusting the cost structure, they may need to consider exiting the market.

4.3. Application in market pricing

4.3.1. Cost-plus pricing method

The cost-plus pricing method is a commonly used pricing strategy by enterprises [9]. An enterprise can determine the minimum price of a product according to the short-term cost curve. Specifically, the product price is

determined by adding a certain profit margin based on the average total cost.

4.3.2. Competition-oriented pricing

In the fierce market competition, it is far from enough for an enterprise to only consider costs. It also needs to pay attention to the price strategies of competitors. By deeply analyzing short-term cost curves, an enterprise can clearly understand its cost advantages and disadvantages and then make a detailed comparison with the costs of competitors to formulate a more competitive price strategy.

5. Case analysis

5.1. Case background

Select a certain automobile manufacturing enterprise as the case object for in-depth study. In the short term, the enterprise faces fixed production equipment and factories, which makes its cost structure show obvious characteristics, including two important components: fixed costs and variable costs [10].

5.2. Cost data analysis and curve drawing

Based on the detailed cost data of the enterprise, use professional drawing methods and tools to carefully draw the short-term cost curve graph (**Figure 2**). After in-depth analysis of the curve, it is found that in the stage of low output, due to the low utilization efficiency of production equipment, the marginal cost and the average cost are relatively high. With the gradual increase in output, the production equipment is more fully utilized, the specialization degree of labor is continuously improved, the production efficiency is greatly improved, and the marginal cost and the average cost gradually decline. However, when the output reaches a certain level, due to factors such as the limitation of the production site, the aging of equipment, and the increase in management difficulty, the marginal cost and the average cost start to rise again.

5.3. Application strategy analysis

5.3.1. In terms of production decisions

The enterprise closely adjusts the output according to the market price and the marginal cost curve [11]. When the market price is high, which means that the market demand for automobiles is strong, the enterprise should promptly increase output to obtain more profits. When the market price drops, the enterprise realizes that the market demand may have shrunk. Therefore, the enterprise should decisively reduce output to avoid unnecessary losses and maintain its financial health of the enterprise.

5.3.2. In terms of market pricing

The enterprise skillfully combines its own costs and market competition situation and adopts a combination of the cost-plus pricing method and the competition-oriented pricing method [12]. On the one hand, the enterprise determines the basic price of the product according to its own average total cost plus a reasonable profit margin to ensure that the enterprise can achieve profitability in the production process. On the other hand, the enterprise closely monitors the price changes of competitors, analyzes the differences between itself and competitors in terms of costs and product characteristics. If it is found that competitors reduce prices, the enterprise will, according to its own cost advantages and market positioning, decide whether to follow the price reduction or maintain the price by improving the added value of products, etc., to maintain market competitiveness.

5.3.3. In terms of industry competition analysis

By making a detailed comparison with the cost curves of other enterprises in the same industry, the enterprise recognizes that it has cost advantages in some production links [13]. For example, in terms of parts procurement and production processes, the enterprise has reduced production costs by establishing long-term cooperative relationships with high-quality suppliers and continuously optimizing production processes. Based on this advantage, the enterprise further increases investment in these links, optimizes the production process, and improves production efficiency, thereby further consolidating its cost advantage and occupying a more favorable position in market competition.

6. Conclusions and prospects

6.1. Research conclusions

The short-term cost curve, as an important analytical tool in the field of economics, provides strong support for enterprise production decisions, market pricing, and industry competition analysis. By reasonably applying the application strategies of short-term cost curves, enterprises can better adapt to market changes, optimize resource allocation, and improve economic benefits.

6.2. Deficiencies and prospects

Although this study has conducted a relatively comprehensive and in-depth analysis of the application strategies of short-term cost curves, it cannot be ignored that in actual economic activities, the factors affecting cost curves are complex and diverse, far beyond the scope covered by this study. For example, fluctuations in the macroeconomic environment have a profound impact on cost curves [14]. During periods of economic prosperity, when the market demand is strong, enterprises expand the production scale and may enjoy the cost reduction brought by economies of scale; during the economic recession, when the demand shrinks and the enterprise has excess production capacity, the cost will rise.

Given the above deficiencies in the research, the future research direction should focus on further expanding the application scope of short-term cost curves and incorporating more complex factors into the research framework [15]. On the one hand, in-depth exploration of the long-term impact of the macroeconomic environment on cost curves, construction of more accurate economic models, and quantification of the relationship between factors such as economic cycles and inflation and cost curves. On the other hand, detailed analysis of the specific action mechanism of policy and regulation adjustments on the cost structure of enterprises and provision of strategic suggestions for enterprises to respond to policy changes. Through more in-depth research, more accurate and reliable decision-making support will be provided for enterprises and economic decision-makers to help the healthy and sustainable development of the economy.

Disclosure statement

The author declares no conflict of interest.

References

[1] Gao H, 2018, Microeconomics: Part of Western Economics, China Renmin University Press, China.

[2] Mankiw NG, 2019, Principles of Economics: Microeconomics Volume, Peking University Press, Beijing.

[3] Pindyck RS, Rubinfeld DL, 2015, Microeconomics, China Renmin University Press, China.

[4] Obstfeld M, Rogoff K, 2019, International Economics: Theory and Policy, China Renmin University Press, China.
[5] Varian HR, 2016, Microeconomics: A Modern Approach, Shanghai Sanlian Bookstore, Shanghai.
[6] Zhang W, 2019, Game Theory and Information Economics, Shanghai People's Publishing House, Shanghai.
[7] Jiang D, 2017, Advanced Microeconomics, Peking University Press, Beijing.
[8] Varian HR, 2015, Microeconomic Analysis, Shanghai Sanlian Bookstore, Shanghai.
[9] Huang Y, Yu Y, 2018, Microeconomics, Higher Education Press, China.
[10] Nicholson W, Snyder C M, 2015, Microeconomic Theory: Basic Principles and Extensions, Peking University Press, Beijing.
[11] Mishkin FS, 2016, The Economics of Money, Banking, and Financial Markets, China Renmin University Press, China.
[12] Krugman P, Wells R, 2018, Microeconomics, Peking University Press, Beijing.
[13] Dornbusch R, Fischer S, 2017, Macroeconomics, China Renmin University Press, China.
[14] Stiglitz JE, 2017, Economics: Micro Part, China Renmin University Press, China.
[15] Robert JB, 2018, Macroeconomics: A Modern Approach, Shanghai Sanlian Bookstore, Shanghai.