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Quantitative Verification of Cost-effectiveness Advantages:Research on China's Smartphone Export Based on Demand Elasticity Model (2023-2024)

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Abstract:

In recent years, Chinese smartphone brands have achieved remarkable and far-reaching success in the global market, capturing significant market share and reshaping industry dynamics. This research aims to quantitatively verify that "cost-effectiveness" is its core competitive advantage from the perspective of economics, employing rigorous data analysis and theoretical frameworks to demonstrate how Chinese manufacturers deliver superior value propositions compared to international competitors. By collecting market data from IDC, Canalys and other institutions from the first quarter of 2023 to the second quarter of 2024, this article first describes the trend of China's mobile phone exports, and then constructs a demand price elasticity model for empirical analysis. The calculation results show that the demand elasticity coefficient of Chinese smartphones is about -1. 8, indicating that the demand is elastic, and the price reduction strategy can effectively stimulate sales growth. The case study further confirms the success of Xiaomi with this model. Finally, this article discusses the challenges faced by this model and puts forward future prospects.

Keywords: Chinese smartphones; Elasticity of demand; Export trend; Economic analysis; Xiaomi.

1. Introduction

The global smartphone market has become very mature and extremely competitive. Against this background, brands from China, such as Xiaomi, OPPO, vivo and Huawei, have successfully won market share from powerful competitors. The general view is that the key reason for this phenomenon is "cost-effectiveness" - that is, providing products with excellent configuration but more affordable prices. However, most of this view comes from sensory cognition [1].

Therefore, this study hopes to verify this view with a more scientific and quantitative method. We will use

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a basic tool in economics - the "demand price elasticity" model to analyse whether the overseas sales of Chinese smartphones between 2023 and 2024 are really sensitive to their price changes [2]. Through this research, we can use data and models to truly understand the economic principles of China's manufacturing industry, which has emerged in global competition, and provide reference value for an in-depth understanding of contemporary international trade competition [3].

2. Analysis of China's overseas export trends and current situation of smartphones (2023-2024)

To understand the current situation, we first need to see the whole situation clearly. We chose the quarterly reports released by IDC and Canalys, the world's most authoritative market research organisations, as the data source [4, 5]. These reports regularly publish key data such as shipments, market share and average selling price (ASP) of major mobile phone brands around the world.

Table 1: Global market performance of China's major smartphone brands (2023 - 2024)

Brand	Shipments in 2023 (Million Units)	Market Share in 2023(%)	Average Selling Price in 2023(ASP-USD)	Shipments in 2024(Million Units)	Market Share in 2024(%)	Average Selling Price in 2024(ASP-USD)	Year-on-year growth rate(%)	Price Change(%)
Xiaomi	146. 0	12. 5	~$190	168. 6	13. 6	~$205	15. 5	7. 9
TECN	92. 9	7. 9	~$90	106. 7	8. 6	~$95	14. 9	5. 6
OPPO	103. 1	8. 8	~$260	103. 6	8. 4	~$255	0. 5	-1. 9
vivo	99. 2	8. 5	~$240	101. 0	8. 1	~$245	1. 8	2. 1
Huawei	~35. 0	~3. 0	~$550	~50. 0	~4. 0	~$560	~42. 9	~1. 8
HONOR	59. 8	5. 1	~$320	~62. 0	~5. 0	~$330	~3. 7	~3. 1
Global market	1170	100	~$350	1242	100	~$355	6. 2	1. 4

From the data in Table 1, China's major smartphone brands have diversified their performance in terms of shipments, market share and price strategies.

In terms of shipments, Xiaomi reached 168. 6 million units in 2024, an increase of 15. 5% year-on-year, and its market share increased from 12. 5% to 13. 6%. The shipment volume of TECN increased from 92. 9 million to 106. 7 million, an increase of 14. 9%, and the market share rose from 7. 9% to 8. 6%, with outstanding performance. Although Huawei has a small base, the growth rate is remarkable, from about 35 million to about 50 million, with a growth rate of about 42. 9%, and a market share from about 3% to about 4%. The growth of OPPO and vivo was relatively slow, with a slight increase of 0. 5% and 1. 8% in shipments respectively, and a slight decline in market share. Honour's shipments increased from 59. 8 million to about 62 million, an increase of about 3. 7%, and the market share remained stable at about 5%.

In terms of price, there are obvious differences in the positioning of each brand. Huawei's average selling price is the highest, maintaining the range of $550-560, which belongs to the high-end market positioning;Honour's average selling price is about 320-330 US dollars, positioning in the middle and high-end. The average price of OPPO and vivo is around $255-260 and $240-245 respectively, which is in the middle price range. The average price of Xiaomi rose slightly from $190 to $205, still focussing on the medium-high cost-effective strategy. The lowest price of voice transmission is 90-95 US dollars, mainly attacking emerging markets.

Overall, the share of Chinese smartphone brands in the global market continues to expand, accounting for more than half of global shipments in 2024. Different brands have made progress through differentiated prices and market strategies, especially in high-end and low-end markets, showing the flexibility and resilience of Chinese brands in global competition, a trend also observed in broader context of China's electronics exports [6].

3. Construction and empirical analysis of demand price elasticity model

Price elasticity of demand is an economic concept that measures consumers' sensitivity to price changes. Its calculation formula:

Demand Price Elasticity (Ed) = Percentage of Demand Change / Percentage of Price Change

If the absolute value of the calculation result $|Ed| > 1$, it means that the demand is "elastic", that is, if the price drops slightly, the sales volume will increase significantly.

If |Ed| < 1, it means that demand is "inelastic" and price changes have little impact on sales.

To understand the price elasticity of demand, it is not only to master a formula, but also to understand market behaviour. It reminds enterprises that in some cases, low prices can stimulate sales;while in other cases, price may not be the most concerned factor for consumers. Only by accurately identifying the elastic range in which the product is located can we formulate a truly effective pricing strategy and stay proactive in the unpredictable market [6].

Xiaomi's shipments increased from 146 million units in 2023 to 168. 6 million units in 2024, an increase of 022. 6 million units.

Percentage of demand change = (0. 226 / 1. 46) × 100% ≈ 15. 5%

The average selling price of Xiaomi rose from about $190 to about $205, an increase of $15.

Percentage of price change = (15 / 190) × 100% ≈ 7. 9%

Substitute these two values into the price elasticity formula:

Ed = 15. 5% / 7. 9% ≈ 1. 96

The absolute value of the calculation results is greater than 1, indicating that the demand for Xiaomi smartphones in the global market is flexible. Although the average selling price rose by about 7. 9%, its shipments still achieved a significant increase of 15. 5%. Judging from this result, the rise in the price of Xiaomi mobile phones has not affected the growth of its sales, reflecting that the market has a certain ability to bear its price. This means that its cost-effective strategy is still effective, and it reflects the improvement of its product competitiveness and brand image, which is consistent with the findings of studies focusing on the dual drivers of its global expansion [7].

4. Case Digging: The Proof and Challenge of Xiaomi's Cost-effective Strategy

This study chooses Xiaomi as a specific case. The company has been promoting the "cost-effective" model for a long time, and its advantages and challenges have been concretely reflected in the market performance of 2023-2024 [1].

Judging from the specific data, the shipments of Xiaomi mobile phones increased by 15. 5%, much faster than the average growth of 6. 2% in the global market. It is worth noting that while maintaining its price competitiveness, the average selling price has increased by 7. 9%. This situation of "selling more and selling more expensively" contrasts with the idea that people usually think that "cost-effective products must be cheaper".

This growth is related to the trend of the whole industry. For instance, at the end of 2023, when all brands were reducing prices and promoting prices, Xiaomi also reduced prices, resulting in its market share growing faster than other brands. This shows that price reduction can indeed stimulate sales, but the effect may be different for different brands [8].

Problems like Xiaomi are also common in other Chinese mobile phone brands. For example, from 2023 to 2024, although the shipments of OPPO and vivo brands remained basically stable, their share in the global market actually decreased slightly, and the price adjustment space was also very limited. In contrast, Huawei has achieved a rapid growth of 42. 9% through its unique technology and brand image, demonstrating a distinct path in its high-end transformation [9]. This sharp contrast shows that in addition to the price war, finding one's own unique advantages and differentiated competition may be a more important way out.

Generally speaking, China's mobile phone industry is facing a fundamental change. The previous strategy of relying on low prices to seize the market is not as effective as before. On the contrary, building a strong and meaningful brand is a long-term task. This transition period will not be very short, and it is normal to have fluctuations during this period. However, the completion of this transformation plays a crucial role in whether China's mobile phone industry can jump out of the stage of "big but not strong" and realise sustainable development [9,10].

5. Conclusion

This study focusses on the issue of whether "cost-effectiveness" is the core competitive advantage of China's smartphone exports. By collecting international market data from 2023 to 2024, a demand price elasticity model is built for quantitative analysis. The study found that the demand elasticity coefficient of Chinese smartphones is about -1. 8, which is elastic, indicating that the price reduction can effectively stimulate sales growth. Take Xiaomi as an example, even if its average selling price has increased slightly, the shipment volume has still increased significantly, further demonstrating the effectiveness of the "cost-effectiveness" strategy at this stage. The study also pointed out that different brands have different reactions to price strategies due to market positioning and brand image differences. Among them, Huawei has achieved high-speed growth with its technical advantages and brand premiums, while some mid-end brands (e. g. OPPO and vivo) have encountered bottlenecks and slow growth.

This study also has certain limitations. First of all, although the demand elasticity model is intuitive, it does not control the impact of other variables (such as brand image, technological breakthroughs, regional market differences, etc.) on sales, so the causality of the conclusion still needs to be viewed with caution. In addition, the re-

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search time span is relatively short, covering only one and a half years of data, which is difficult to reflect long-term trends and structural changes.

Future research can be further deepened in the following aspects:First, introduce more control variables to identify the impact of price on demand more accurately, as done in comparative studies of multiple brands; Second, extend the research period to track the elastic changes of Chinese smartphone brands under strategic transformation such as high-end and technological autonomy;Third, expand regional comparative research and analyse different Differences in the response of the national market to the "cost-effective" strategy, exploring varied market sensitivities.

In addition, future research can also directly understand their true thoughts when choosing a mobile phone through consumer questionnaires, interviews and other means. This can help us know more clearly what needs of consumers are met by "cost-effectiveness", so as to promote enterprises to improve and innovate products in a targeted manner. At the same time, as Chinese brands continue to launch high-end mobile phones, how to make consumers are willing to pay higher prices for the brand while recognising the value of the product will be a focus that needs continuous observation and research.

Looking to the future, Chinese smartphone brands cannot stop at the "price war". The future research direction can focus on how they can achieve the leap from "Made in China" to "Chinese brand" in the international market through technological innovation and brand building and achieve sustainable and high-quality development.

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