

Multi-Dimensional Analysis of the Impact of Equity Incentive System on Apple's Operation (2020-2022)

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Abstract. From 2020 to 2022, the company equity incentive spending continued to increase, rising from \$6.829 billion to \$9.028 billion, a 32.2% increase over three years. This strategic investment is not simply a consumption cost but permeates the core links of the company's human resource management, long-term development, market value maintenance, and layout. In the context of fierce competition in the global technology industry, intensified fluctuations in the industrial chain, and accelerated demand iteration in the consumer electronics market, Apple has strengthened its equity incentive system to form a synergistic effect in three dimensions: human cost optimization, market value improvement, and long-term performance growth, providing solid support for the company's sustainable development. Based on Apple's public financial data and operational dynamics from 2020 to 2022, this paper further analyzes the practical value of the equity incentive system from three dimensions and reveals its core role in the strategy of science and technology enterprises.

Keywords: equity incentive, Apple, Labor costs, Market value, Long-term performance.

1. Introduction

As an important tool of enterprise strategic management, equity incentive plays an increasingly key role in modern technology enterprises [1]. Especially during the special period from 2020 to 2022, when the global technology industry faced multiple challenges such as supply chain disruptions and talent competition due to the pandemic, how to maintain enterprise competitiveness through effective incentive mechanisms has become an important research topic [2].

Apple, as the world's most valuable technology company, has typical research value in the evolution and practice of its equity incentive system. According to the company's financial reports, between 2020 and 2022, the company's equity incentive spending continued to grow. This phenomenon reflects the company's in-depth considerations behind talent management, value creation, and long-term development strategy [3]. Existing research focuses on the single effect of equity incentives on corporate performance and lacks a multidimensional systematic analysis of their impact on operations [4]. Based on the resource-based view and incentive theory, this paper constructs a three-dimensional analytical framework including human cost optimization, market value enhancement, and long-term performance growth analysis framework to systematically investigate the effect of the implementation of Apple's equity incentive system. The study not only enriches the research on equity incentives but also provides references for the optimization of governance structures in similar science and technology enterprises.

2. Organization of the Text

2.1. Reduce Hidden Labor Costs

Brain drains in technology companies is often accompanied by three hidden costs: increased costs due to the adaptation period for new recruits filling core positions, investment in training new staff, and efficiency losses caused by poor project handover [5]. Since 2020, the average tenure of global R&D talents has shortened to 2.5 years. To compete for talents in fields such as chip research and development, software ecosystem construction, and other areas, leading technology enterprises often offer salary premiums of 30%-50% higher than the average market price.

Apple's equity incentive system centers on "Restricted Stock Units (RSUs)", deeply binding equity ownership with performance targets and service tenure. This design effectively reduces the hidden costs of brain drain. From an operational data perspective, between 2020 and 2022, the turnover rate of Apple's core R&D teams, including the iOS ecosystem R&D department and chip development department, remained below 3%, well below the industry average of 8% [6].

Meanwhile, equity incentives replace part of "real-time compensation" with "future earnings", optimizing the structure of human costs. From 2020 to 2022, Apple's employee cash compensation growth remained at 5%-8%, while equity incentive spending grew by 15% to 20%. By converting some short-term labor costs into long-term equity payments, the company has eased the pressure on current-period cash spending (Table 1).

Table 1. Changes in Labor Cost Structure of Apple from 2020 to 2022

| Years | Equity incentive expenses (\$100 million) | Growth rate of equity incentive | Percentage of cash compensation | Turnover rate of core R&D team |
|-------|---|---------------------------------|---------------------------------|--------------------------------|
| 2020 | 68.29 | - | 72% | 2.8% |
| 2021 | 79.13 | 15.9% | 70% | 2.5% |
| 2022 | 90.28 | 14.1% | 68% | 2.7% |

2.2. Stimulate Endogenous Motivation of Employees

The core value of equity incentive is not only to "retain employees" but also to "motivate employees". When employees become "quasi-shareholders" of the company, their personal interests are deeply bound to the company's development, and their work enthusiasm and creativity will be significantly stimulated, thus promoting overall operational efficiency. From 2020 to 2022, the per capita income of Apple employees increased from \$1.83 million in 2020 to \$2.46 million in 2022, an increase of 34.4% [7].

From the perspective of R&D, equity incentives make R&D personnel more inclined to invest in innovation projects with higher long-term value. The performance appraisal of Apple's R&D team includes not only short-term product iteration indicators but also links to the long-term goal of equity unlocking. From 2020 to 2022, Apple's R&D spending increased from \$18.75 billion to \$26.25 billion, with an average annual growth rate of 18.9%, and the R&D conversion rate (the proportion of R&D spending driving revenue growth) rose from 8.3 times in 2020 to 9.6 times in 2022.

3. Equity Incentive and Market Value Increase

3.1. Capital Market Signal Transmission

In the capital market, an enterprise's equity incentive policy is often regarded as a "confidence endorsement" by management in the company's future development [8]. From 2020 to 2022, Apple continued to increase spending on equity incentives, sending a clear signal to the market of "attaching great importance to talent and strategic stability." This signal not only enhanced investors' confidence but also helped the company secure better financing conditions.

From the perspective of financial data, this signal directly promoted synchronous growth of the company's performance and value. Between 2020 and 2022, Apple's revenue grew from \$274.5 billion to \$394.3 billion, with an average annual growth rate of 19.8%; net income grew from \$57.411 billion to \$99.803 billion, an average annual growth rate of 31.2%; net profit margin increased from 20.9% to 25.3%, with profitability continuing to improve [9].

In addition, institutional investors' stake in Apple continued to rise, further verifying market confidence. In 2020, institutional investors held 60.2% of Apple's shares, increasing to 65.8% in 2022. Many renowned investment institutions clearly stated in their performance analyses that "Apple's equity incentive intensity for core talent is an important guarantee for maintaining product innovation and market competitiveness."

3.2. Optimization of Financing Cost

Enhanced investor confidence directly translates into the company's financing advantage in the capital market. From 2020 to 2022, Apple issued corporate bonds several times, with financing interest rates lower than both U.S. Treasury bond yields and the industry average during the same period. For example, in 2021, Apple issued 10-year bonds with a coupon rate of only 1.55%, compared to the 10-year Treasury yield of 1.63% and the tech industry's similar average interest rate of 2.1% [10].

It is estimated that from 2020 to 2022, Apple saved over \$1.2 billion in financial expenses through low-interest rate financing. These funds can be further invested in research and development or equity incentives, forming positive interaction between capital operation and business development. In addition, lower financing costs supported Apple's share repurchase program, which totaled \$180 billion from 2020 to 2022.

3.3. Brand Value Enhancement

The "strategic stability" signal conveyed by equity incentives to the market not only affects investors' decision-making but also penetrates consumers' brand perception. The appeal of Apple products to consumer electronics users lies not only in hardware performance but more in long-term software ecological support and product iteration commitments.

From 2020 to 2022, Apple's brand value and market share increased in tandem, confirming the strengthening of brand trust. According to the Interbrand Global Brand Value Report, Apple's brand value rose from \$241.2 billion in 2020 to \$355 billion in 2022, ranking first globally for consecutive years [11]. At the product market level, iPhone global shipments increased from 192 million units in 2020 to 225 million units in 2022, with its global smartphone market share rising from 14.8% to 17.3% (Table 2).

Table 2. Apple Inc. Market Value & Brand Performance, 2020-2022

| Metrics | 2020 | 2021 | 2022 | Changing trends |
|----------------------------------|-------|-------|-------|--------------------|
| Brand value (\$100 million) | 2412 | 3007 | 3550 | Continued rise |
| Global smartphone share | 14.8% | 16.7% | 17.3% | Steady improvement |
| Market share of premium phones | 57% | 61% | 65% | Lead widens |
| Institutional shareholding ratio | 60.2% | 63.5% | 65.8% | Continued growth |

4. Equity Incentives and Long-term Performance Growth

4.1. Stability Guarantee of R&D Team

R&D innovation has the characteristics of long cycle, high risk and lagging return. If the R&D team is not stable, it will easily lead to the interruption of R&D projects and the loss of technical achievements, ultimately affecting the long-term competitiveness of enterprises. Apple's equity incentive system for R&D has formulated differentiated unlocking rules, which include not only the service period but also key R&D project milestones such as technological breakthroughs and product production.

From 2020 to 2022, the size of Apple's R&D team increased from 25,000 to 32,000, and the retention rate of core R&D personnel (engineers and designers who lead key technology projects) remained consistently above 95%. The stable R&D team provided the foundation for continuous growth in R&D investment—the company's R&D expenditure increased from \$18.75 billion to \$26.25 billion, with an average annual growth rate of 18.9%, and R&D intensity (R&D expenditure as a percentage of revenue) increased slightly from 6.8% to 6.9% [12].

Chip research and development, for example, Apple has launched the A series of chips since 2010, always maintaining an annual iteration rhythm, and 2020-2022 was the fastest stage of chip technology breakthroughs: 2020 M1 5nm technology chip, achieving a 3.5 times increase in CPU performance; 2021 M1 Pro/Max chip, with up to 10 cores, meeting the needs of professional users; In 2022, the M2 chip further optimized the power consumption ratio and improved performance by 18% compared with M1.

4.2. Accelerating the Transformation of Innovation Achievements

The R&D power stimulated by equity incentives is eventually transformed into product competitiveness through innovation achievements. From 2020 to 2022, Apple's innovations in chips, hardware and software ecological products were converted into market advantages for flagship products, directly driving revenue and profit growth.

In the field of chips, the performance advantage of self-developed chips has become the key to product differentiation and competition. The A15 chip in the iPhone 13 series scored 1734 points in Geek bench, far higher than Qualcomm Snapdragon 888 (1135 points) during the same period. The MacBook Pro with M1 Pro chips demonstrated 2-3 times better performance than Intel chip models in professional scenarios such as video editing and 3D rendering.

In the software ecosystem field, equity incentives have promoted the R&D team to continuously optimize iOS and macOS systems to enhance user experience. Continuous optimization of the software ecosystem has significantly increased Apple's user stickiness—active ecosystem users reached 2 billion in 2022, up 43% from 2020; App Store revenue rose from \$64 billion in 2020 to \$85 billion in 2022, with an average annual growth of 16.7%, becoming an important profit growth point for the company (Table 3).

Table 3. Apple's R&D and Innovation Achievements, 2020-2022

| Year | R&D spending (\$) | R&D intensity | Core innovation achievements | R&D staff size (ten thousand) |
|------|-------------------|---------------|------------------------------|-------------------------------|
| 2020 | 187.5 | 6.8% | M1 chip, iOS 14 | 2.5 |
| 2021 | 219.5 | 6.9% | M1 Pro/Max, iOS 15 | 2.8 |
| 2022 | 262.5 | 6.9% | M2 chip, iOS 16 | 3.2 |

4.3. Construction of Long-term Growth Barriers

Innovation achievements have improved product competitiveness, not only promoted current earnings growth but also helped Apple build long-term growth barriers that are difficult to replicate. Such barriers are reflected in three aspects: first, technical barriers. Self-developed core technologies such as chips and software ecology require long-term R&D investment and talent accumulation, making it difficult for competitors to catch up in a short period of time; second, brand barriers: continuous product innovation strengthens Apple's user awareness of "leading technology" and enhances its brand premium ability; third, ecological barriers, where the deep integration of hardware and services creates unique user experience and increases user switching costs.

It is worth noting that Apple's equity incentive system itself is constantly innovating to better serve its long-term strategic goals. In 2021, Apple introduced ESG indicators in its executive compensation system as an adjustment factor for cash bonuses, directly linking executive compensation with sustainable development goals such as environmental protection and social responsibility. This innovation makes equity incentives not only focus on financial performance but also incorporate non-financial indicators, promoting the company's transformation to a more sustainable development model.

5. Conclusion

Through the multi-dimensional analysis of Apple's equity incentive system from 2020 to 2022, this study draws the following important conclusions:

The equity incentive system is the core tool for Apple to realize the structural optimization of human cost. By transforming part of short-term cash compensation into long-term equity income, Apple not only effectively reduces the pressure of current labor cost but also significantly improves the stability and enthusiasm of core talents through equity binding. Data show that from 2020 to 2022, the turnover rate of Apple's core R&D team has always been controlled within 3%, far lower than the industry average level. Meanwhile, the per capita income of employees has increased from \$1.83 million to

\$2.46 million, an increase of 34.4%, which lays a solid talent foundation for the company's continuous innovation.

At the same time, the equity incentive system serves as an important signal mechanism for Apple to enhance the confidence of capital market and brand value. The continuous growth of equity incentive expenditure conveys the firm confidence of the company in long-term development to the market and effectively enhances the trust of investors. This signaling effect is directly translated into the company's capital market advantage, which is reflected in the low financing cost and stable stock price performance. Notably, the stability of talent guaranteed by equity incentives also strengthens consumers' trust in Apple's ability to continue innovating, thus enhancing brand loyalty and market share.

Most importantly, the equity incentive system constitutes Apple's strategic engine to drive long-term performance growth. By closely linking the unlocking conditions of equity with R&D milestones and innovation achievements, Apple ensures that the R&D team focuses on long-term value creation, which directly drives breakthroughs in core technologies such as chip self-development and software ecological optimization. In 2021, Apple further incorporated ESG indicators into the equity incentive system for executives. This innovation made the equity incentive focus not only on financial performance but also included non-financial indicators, reflecting the deep integration of the equity incentive system and the company's long-term sustainable development strategy.

To sum up, Apple's equity incentive system has gone beyond the traditional compensation incentive function and developed into the core link connecting human capital management, market value maintenance and long-term development strategy, providing a key support for the company to maintain continuous innovation ability and market leadership in the fiercely competitive technology industry.

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