

IMPACT OF LIFE CYCLE THEORY ON THE MANAGEMENT OF ZHIBANG TECHNOLOGY GROUP INFORMATION PRODUCTS ORIGINAL EQUIPMENT MANUFACTURER ENTERPRISES

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Abstract: The life-cycle theory posits that enterprises go through different stages of growth, maturity, and decline during their development, with each stage having a distinct impact on their competitive advantage. Enterprises should formulate development strategies according to their life-cycle stage to enhance competitive advantage and achieve long-term development goals. Therefore, it is meaningful to study and improve the management practices of enterprises at different life-cycle stages. This study aims to explore, analyze, study, and verify the management practices of Taiwan's electronic information product original equipment manufacturer enterprises across their introduction, growth, mature, and decline periods.

The objectives of this study are fourfold: 1) To explore the management practices of Taiwan's electronic information product original equipment manufacturer enterprises during the introduction period. 2) To analyze the management practices of Taiwan's electronic information product original equipment manufacturer enterprises during the growth period. 3) To study the management practices of Taiwan's electronic information product original equipment manufacturer enterprises during the mature period. 4) To verify the management practices of Taiwan's electronic information product original equipment manufacturer enterprises during the decline period.

This study adopts a quantitative research method and designs a questionnaire based on the four stages of the life-cycle theory as independent variables. Taiwan's electronic information product original equipment manufacturer enterprises are the research objects, with Taiwan's ZhiBang Technology Group as a typical case. The study examines the impact of these stages on the competitive advantage of enterprises. A total of 260 data samples were collected through the questionnaire survey, with an effective rate of 99.9%. The study analyzes the market performance and competitive advantages of ZhiBang Technology Group during different stages of the product life cycle, as well as its strategies and measures in product life-cycle management. Quantitative analysis reveals that the four stages of the life-cycle theory significantly affect the competitive advantage of enterprises. The research results indicate that ZhiBang Technology Group adopted different market strategies and management measures during the four stages of the product life cycle to maintain competitive

advantage and sustain development. Specifically, the competitive advantages of the enterprise exhibited different characteristics at each life-cycle stage, thereby influencing the development and growth of the enterprise. This finding helps enterprises make corresponding strategic plans at different stages to enhance their competitive advantage.

Keywords: Original Equipment Manufacturer, Life -Cycle Stage Theory, Management Practices

Introduction

In today's world, under the background of global economy, the world is more integrated (Ibitz et al., 2020). In such an environment, if enterprises want to gain greater competitive advantages and achieve better development, they must develop and expand their core businesses, which requires outsourcing relatively low-tech jobs, which gradually derives the original equipment manufacturer industry (Tai et al., 2024). Under this model, multinational companies can be freed from production and manufacturing, and by allowing professional production and manufacturing units to complete production and manufacturing tasks according to their own requirements, multinational companies can concentrate limited resources and energy, focus on improving core competitiveness, and achieve the ultimate goal of global operations (Cheng et al., 2023).

In recent years, with the advent of the Internet era, information technology has developed rapidly, and computers and transmission facilities are no longer independent units, but have gradually developed into supporting products for the Internet. In particular, according to Moore's Law, the processing level of computers will double every eighteen months (Siyue et al., 2021). Therefore, if electronic companies want to lead the market, they must develop new types of products as soon as possible. Under this background, the life cycle of hardware products in the electronics industry has been greatly reduced (Li et al., 2019). This has led to key changes in the international operation strategies of global electronic companies, especially multinational groups. More and more multinational electronics companies are shifting their focus to core technology research and development (Ibitz et al., 2020). Correspondingly, non-core businesses will be outsourced, thus forming a global original equipment manufacturer business.

In Taiwan, due to its high level of manufacturing and high-quality R&D personnel, it has been able to develop, produce and distribute products in the electronics industry, and has won the position of the world's key hardware supplier in just a few decades. Because Taiwan's internal demand is limited, many Taiwanese electronics companies have gradually moved their factories and R&D teams to mainland China and Southeast Asia, and Taiwan's electronic information product original equipment manufacturer companies have grown rapidly. As the center of the global electronic information product original equipment manufacturer industry, Taiwan has many well-known original

equipment manufacturer companies, among which Zhibang Technology Group, as one of them, has always been in a leading position in the industry. The product life cycle theory is an important theoretical basis for corporate marketing strategies and management decisions. By studying the development stage and characteristics of products in the market, it can help companies better formulate product strategies and management measures and enhance market competitiveness. This paper will take Taiwan's electronic information product original equipment manufacturer companies as the research object, take Zhibang Technology Group as a typical case, and use the product life cycle theory to study and analyze its product life cycle through questionnaire surveys.

As an important part of the electronic information industry, the original equipment manufacturer production of electronic information products plays an important role in the general trend of the transformation from labor-intensive to technology intensive. Although there are a large number of original equipment manufacturing enterprises, many enterprises are completely under the control of multinational companies in terms of production and operation, resulting in limited profits. With the continuous increase of employment cost and land cost in recent years, the profit space of electronic information product original equipment manufacturer has been squeezed, and the business environment is no longer loose in the past, and the living situation is not optimistic. Therefore, what kind of strategy to make the electronic information product original equipment manufacturer enterprises can change the inferior position in the value chain and enhance the core competitiveness is the urgent problem to be solved.

Research Objectives

- 1) To explore the management of Taiwan's electronic information product original equipment manufacturer enterprises during the introduction period;
- 2) To analyze the management of Taiwan's electronic information product original equipment manufacturer enterprises during the growth period;
- 3) To study the management of Taiwan's electronic information product original equipment manufacturer enterprises during the mature period;
- 4) To verify the management of Taiwan's electronic information product original equipment manufacturer enterprises during the decline period.

Literature Review

Overview of original equipment manufacturer

Original equipment manufacturer, that is, original equipment manufacturer (Tai et al., 2024). This situation refers to a way in which upstream manufacturers do not directly participate in production, but are only responsible for R&D and design, control the sales network, and authorize

production tasks to professional manufacturers for original equipment manufacturer production. Under this cooperation framework, the two parties are independent of each other and have no subordinate relationship (Lin et al., 2019). original equipment manufacturer companies only need to strictly follow the drawings or relevant requirements provided by the brand companies to produce products that meet the specifications of the brand companies, without considering R&D, marketing and other links (Borazon et al., 2022). During the production process, original equipment manufacturer companies will also receive guidance from brand companies on technology and management, so this model is highly popular among original equipment manufacturer companies. However, under this model, original equipment manufacturer companies have no say in the distribution of benefits.

Life cycle Theory

This theory was proposed by Raymond Vernon and refers to the entire process from the emergence to the decline of a product (Ye et al., 2023). In fact, in a different competitive environment, the entire process of the life cycle from the emergence stage to the growth stage to the maturity stage and even the decline stage of the product is different. Even affected by the economic development level and technological development level of countries, the demand for products in the life cycle is also different. Products are divided into four stages in their entire life cycle. At different stages, their profits and turnover are also different.

Enterprise Life Cycle Theory

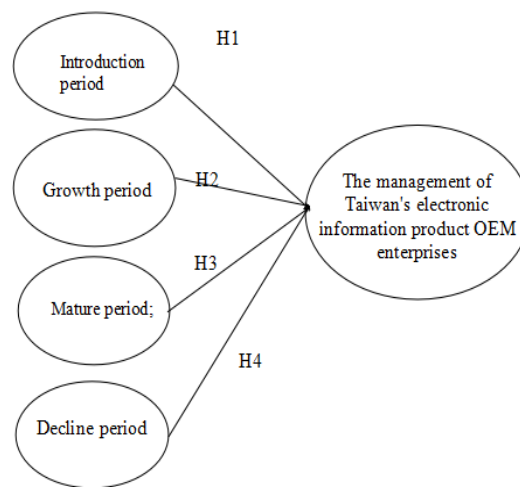
This theory holds that everything in the world has its life cycle, and enterprises are no exception. The enterprise life cycle is divided into investment period, growth period, maturity period and decline period. At different stages of development, different development characteristics will be presented. These characteristics help enterprises to objectively locate their own development stage, choose the appropriate enterprise organizational form or development strategy, and achieve sustainable development of enterprises.

Methodology

Through the questionnaire of quantitative research method, combined with the product life cycle theory, state technology group as a typical case, the four stages of life cycle theory as an independent variable, the product life cycle of management research and analysis. Through the data collected from the questionnaire survey, the market performance and competitive advantage of Zhibang Technology Group in different stages of product life cycle are analyzed, as well as its strategies and measures in product life cycle management. The research results show that Zhibang Technology Group has adopted different marketing strategies and management measures in different stages of the product life cycle to maintain its competitive advantage and sustainable development.

Conceptual Framework

To explore its influence on the competitive advantage of enterprises. Through quantitative research and analysis, it is found that the four stages of life cycle theory have significant effects on the competitive advantage of enterprises. A total of 260 data samples were collected through the questionnaire survey, with an effective rate of 99.9%. This finding helps enterprises to make corresponding strategic planning at different stages and enhance their competitive advantage. Therefore, the life cycle theory has a certain guiding significance for enterprise management practice. The study framework and study hypotheses are as follows:



Picture 1: Conceptual Framework

Hypothesis

H1: Zhibang Technology Group can effectively manage operations during the introduction period.

H2: Zhibang Technology Group implements successful management strategies during the growth period.

H3: Zhibang Technology Group maintain effective management measures during the maturity period.

H4: Zhibang Technology Group effectively adjusted management measures during the decline period.

Results

1) Introduction to Zhibang Technology Group, Taiwan

In 1988, Zhibang Technology Group was established in Hsinchu Science Park, Taiwan. With the rise of the Internet boom, the company quickly grew into a major original equipment manufacturer/ODM partner of world-class manufacturers (Fofou et al., 2021). Today, the group's subsidiaries and R&D centers have spread all over the world, becoming the Zhibang Technology Group with several affiliated companies.

The group has a strong R&D team and has achieved ISO 9001 international certification standards in product design, production and manufacturing, and obtained ISO14000 international environmental management system certification (Fofou et al., 2021). This certification is the highest quality certification standard in the international network communication industry.

2) Taiwan Zhibang Technology Group 's response strategy

The research object, Zhibang Technology Group, has performed very well in these aspects. As a world-class professional design and original equipment manufacturer manufacturer of network communication equipment, Zhibang Technology Group provides customers with stable and efficient network communication equipment production services, adheres to the principle of quality first, and has passed the evaluation standards of many international network communication manufacturers (Lin et al., 2021; Hsiao et al., 2020). Zhibang Technology Group attaches great importance to quality in every stage of product development and manufacturing, while constantly improving the overall process to provide quality that exceeds customer expectations (Huang et al., 2022).

In order to achieve differentiated competition, Zhibang Technology Group has also invested in other emerging industries, such as investing in other companies to develop the cloud industry, and conducting relevant vertical integration, gradually evolving into a supplier that can provide complete system solutions. In order to effectively maintain customers without stimulating customers, and to prevent existing customers from thinking that Zhibang Technology Group's own brand will affect them, Zhibang Technology Group has also made relevant efforts and adjustments. As existing product technologies tend to be stable, new products and new technologies are becoming more and more complex, requiring more and more resources, and are updated frequently with high market risks (Huang et al., 2023).

Therefore, Zhibang Technology Group continues to invest in research and development, and through its advantages in technology, manufacturing, quality, and supply chain, it has launched independently developed products and brands.

3) Correlation Analysis

As shown in Table 1, this study conducted correlation analysis between various variables and found that there is a correlation between the variables. The dependent variables: customer, cost, convenience, and communication are positively correlated with the independent variables of brand image. Therefore, this study will further test the research hypothesis through regression analysis.

Table 1: Correlation Analysis of Various Variables

	Management	Introduction period	Growth period	Maturity period	Decline period
Management	260				
Introduction period	0.54**	0.52**			
Growth period	0.63**	0.53**	0.63**		
Maturity period	0.68**	0.51**	0.77**	0.62**	
Decline period	0.76**	0.59**	0.61**	0.72**	0.69**

Note 2: * $p < 0.05$, ** $p < 0.01$.

The results of correlation analysis show that there is a significant positive correlation between management and each life cycle stage, among which management and introduction period: the correlation coefficient is 0.54**, indicating that there is a significant positive correlation between management and introduction period ($p < 0.01$), growth period (0.63**), maturity period (0.68**), and decline period (0.76**)—as well as between life cycle stages themselves: introduction and growth period (0.53**), introduction and maturity period (0.51**), introduction and decline period (0.59**), growth and maturity period (0.77**), growth and decline period (0.61**), and maturity and decline period (0.72**), all statistically significant at $p < 0.01$.

Discussion

The data analysis results collected through the questionnaire survey show that Zhibang Technology Group has adopted corresponding market strategies and management measures in different stages of the product life cycle to maintain the market competitive advantage. During the product introduction period, Zhibon Technology Group focuses on product development and promotion to attract consumers and establish brand image; during the product growth period, the Group increases the marketing investment and product innovation to rapidly expand the market share; during the product maturity period, Zhibon Technology Group focuses on product quality and service, and establishes long-term cooperation with customers to stabilize the market share, the Group extends the product upgrading and diversified development to maintain its market position.

Through the study of the product life cycle of Zhibang Technology Group, it can be seen that it has adopted corresponding strategies and measures in different stages to maintain its competitive advantage and sustainable development. It is suggested that enterprises should flexibly respond to market changes in product life cycle management, timely adjust strategies and measures, and enhance product competitiveness.

Conclusions

This paper uses the life cycle theory, summarizes the overall situation of Taiwan's electronic

information product original equipment manufacturer enterprises, takes Zhibang Technology Group as a typical case, analyzes the development status and existing problems of Taiwan's electronic information product original equipment manufacturer enterprises, and finds some paths suitable for their transformation and development. Overall, it has achieved a scientific research process from theory to practice.

Quantitative research results: There is a significant positive correlation between each life cycle stage and between management. The correlation between management and the decline period is the highest at 0.76**, indicating the crucial role of management in the later stages of the enterprise life cycle; additionally, management shows a significant positive correlation with the introduction (0.54**), growth (0.63**), and maturity (0.68**) periods, and the correlation coefficients between each life cycle stage (introduction-growth: 0.53**, introduction-maturity: 0.51**, introduction-decline: 0.59**, growth-maturity: 0.77**, growth-decline: 0.61**, maturity-decline: 0.72**) are all statistically significant ($p < 0.01$). These results show that there is a strong correlation between management practices at different stages of the enterprise life cycle, and this correlation is statistically significant.

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