The Investment Always Will Get Gains?
Advertising Expenditure and Enterprise Performance based on Corporate Life Cycle

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ABSTRACT

Based on the concept of advertising expenditure, manufacturing firm performance, and enterprise life cycle, this research conducts the listed Chinese manufacturing listed in 2016-2018 as the research sampling and divides these listed companies into three periods: growth, maturity, and decline. Next, this paper conducts empirical research from three aspects: advertising expenditure or investment and manufacturing firm performance, lag effect of advertising expenditure, and outcome effect and lag effect of advertising investment. It is found that in different stages of manufacturing enterprises, different advertising expenditures will have different impacts on the performance of manufacturing enterprises. In the growth stage, the advertising investment of manufacturing enterprises will significantly affect the performance results of the current period, and there will be the long-term lag effect. In contrast, the mature stage of enterprises' advertising investment has a shorter period of lag effect, while in the recession stage, the mature stage of manufacturing enterprises' advertising investment will have a shorter period of lag effect. The empirical results are not significant. This study provides a reference for manufacturing enterprises in different stages in the decision-making of advertising investment.

Keywords Corporate Life Cycle; Corporate Performance; Advertising Expenditure

1. Introduction

The advertising investment decision is an important part of modern corporate management and the mass communication process. With residents' income and primary material conditions improved, the resident's consumption concept has also changed. Consumers tend to put their personal preferences the first when choosing products. In the traditional consumer market, the market does not have enough choosing products. Still, now with the globalization and market economy competition, more and more products flow into the market, the competition between enterprises is very competed, how to maintain the sustainable development of enterprises in the competitive environment is essential. The current market emphasizes consumers first. Facing the same group of potential consumers, enterprises producing similar or identical new products will face competition, manufacturing enterprises, in particular, this situation will be more obvious. Thus, each firm will enhance its corporate reputation and brand equity influence through advertising (Lou et al. 2010)

Advertising communicates innovative products or corporate images to consumers through various media, introduces product information, stimulates and guides, and educates consumer behavior, and produces its communication, promoting, and sales effect (Assaf et al. 2015). And consumers through a variety of advertising, understanding of the product,advertising effect can let consumers have a specific concept of the reputation, a good impression of the product. Finally, enterprises enhance brand awareness through advertising. So that the value of the brand goes beyond the product itself. More specifically, advertising spending ultimately expands corporate reputation and visibility by establishing reputation and publicizing product performance, thus improving corporate performance. Therefore, advertising can actively promote enterprises to promote the dissemination of products. As of 2019, the total size of China's advertising market has reached nearly 900 billion yuan, and the market activity has further increased compared with the previous year. In terms of market size, China has reached second place globally.

As can be seen from the above, the importance and advantages of advertising investment are obvious, but there are still many manufacturing enterprises awareness advertising investment decision is wrong, and the wrong advertising investment decision can cause losses for enterprises; some enterprises in the advertisement investment and the output of the product itself is not consistent, the large of advertising investment can not gain or achieve the manufacturing enterprise performance, in addition, there are some enterprises in advertising spending without planning, often caught up in the advertising investment, The more you invest in advertising, the more your product will sell, and blindly advertising investment makes enterprises have to heavy costs, and even affects the enterprise capital chain lost, bankruptcy.

One of the company as an example: as early as 1995, one of the companies once bought CCTV's prime-time advertisement at a high price of 66.66 million yuan and won the "champion". The little-known company quickly into the attention of everyone, the company product has doubled in a short period, its market share is also rapidly improving. In 1996, that company again won the title with 320 million yuan, but the company's market share and profit fell sharply, production and management soon got into difficulties. However, significant advertising expenditure can bring promoting effect to enterprises and bring business risks.

Enterprises at different stages will face many problems, such as initial operation, operating costs, sales, promotion, etc. Therefore, manufacturing enterprises need to improve corporate performance through various strategies. This requires us to consider the following questions: at different life cycle stages of the enterprise, what impact will advertising expenditure or investment bring to the enterprise efficiency? And what are the differences between different stages? From the enterprise life cycle perspective, there are no sufficient reference materials for different stages and different types of manufacturing enterprises to carry out advertising investment. Therefore, from the perspective of enterprise life cycle theory, this paper will discuss the correlation between advertising investment and enterprise performance at different stages and provide a theoretical basis for the investment strategy of enterprise advertising and the sustainability of enterprise performance.

This paper is arranged as follows: The second part: is the research hypothesis. The third part is research design, including the research model and data description, and empirical analysis. Finally, the conclusion and suggestions.

2. Research Hypothesis

2.1 Advertising Spending and Manufacturing Firm Performance

The word "advertise" is derived from Latin Advertere, both meanings attracts attention, which has reflected the meaning and purpose of advertisement. According to the definition of China's Advertising Law, advertising is an activity that delivers relevant information to specific groups in a certain way to promote firm reputation promotion and product performance promotion so that the public can deepen product impression and understand product information, and finally promote corporate publicity and improve corporate performance. Explore the relationship between corporate advertising investment and corporate performance. And about this question, Pitelis (1991) analyzed the data of the European market and believed that advertising expenditure could bring positive performance to manufacturing enterprises.

Regarding the influence of advertising investment on enterprise value, Erickson and Jacobson (1992) believed that advertising investment can bring many benefits to enterprises, including creating high visibility and generating profits. In addition, advertising investment can distinguish the enterprise from other enterprises of the same type to a certain extent. The enterprise can gain interest except the price of raw materials. Through marketing communication, some scholars suggested that advertising can enhance company value.

In the research on the influence of advertising investment on manufacturing enterprise profit, foreign scholars point out that advertising investment positively affects firm profit. Chauvin et al. (1993) argued that advertising investment has a clear positive impact on business performance, which is greater for large firms. Srinivasan (2009) found a positive correlation between advertising investment and corporate earnings. However, Sun and Huang (2013) analyzed the relevant data of listed companies and found that there was a significant positive relationship between advertising investment and corporate performance. In terms of enterprise size, there is an apparent linear relationship between advertising investment and enterprise income in large enterprises. In addition to exploring the relationship between corporate advertising investment and corporate performance, it will also discuss the factors that may affect the relationship between advertising investment and corporate performance, and the corporate life cycle.

The enterprise life cycle theory was proposed by Ichak Adizes, an influential American management scientist. It describes the dynamic trajectory of an enterprise's stages, divided into ten periods. This theory accurately describes the characteristics of enterprises at different stages and puts forward corresponding management strategies according to their characteristics. This theory shows in the enterprise development process and suggests the dynamic relationship between development and enterprise growth. We can conclude the relationship between advertising investment and enterprise performance through enterprises' different advertising investment intensity in different development stages.

This study proposes the hypothesis:

Hypothesis: There is a lag effect of advertising investment in manufacturing enterprises, and it will be more significant in the growth and maturity of enterprises.

3. Method and Empirical Analysis

3.1 Enterprises Lifecycles

In different life cycles, enterprises will have different characteristics; thee companies included in the study were divided into growth, maturity, and decline periods. There is no initial stage in the division of the business cycle, mainly because the sample companies selected in this paper are listed

in the A-share market. This paper suggests that enterprises that can be listed in the A-share market have generally passed the initial stage. Thus this paper only divides enterprises into the three stages mentioned above.

In general, the longer an enterprise is established, the more likely it will be in a declining period. The lower the establishment year, the more likely it is to be in a growing period. Generally, the capital expenditure of enterprises in the growth stage will be relatively large. In contrast, the capital expenditure of enterprises in the recession stage may be relatively low due to the lack of worthwhile projects. Companies in the growth period will invest more in advertising than those in recession. And the growth rate of operation revenue, enterprises in the growth period will have a higher growth rate of operation revenue than enterprises in the recession period, in the high growth stage; Enterprises in the growth stage are short of capital. Thus, they generally do not carry out high dividend policy. Therefore, this paper chooses the following ways to divide the life cycle of enterprises:

$$\text{Number of years of establishment} = \text{date of establishment to the end of sample period(2020-4-18)}$$

$$\text{Advertising intensity} = \frac{\text{Current Advertising investment}}{\text{Sales revenue for the current period}}$$

$$\text{Return on capital investment} = \frac{\text{Current period capital expenditure}}{\text{Sales revenue for the current period}}$$

$$\text{Increase rate of business revenue} = \frac{\text{Current period operating revenue - Previous period operating revenue}}{\text{Previous period operating revenue}}$$

$$\text{payout ratio} = \frac{\text{Cash dividend per share for the current period}}{\text{Earnings per share for the period}}$$

Capital investment rate = Current capital expenditure /Current sales revenue

The growth rate of operating revenue = (Operating revenue in the current period - Operating revenue in the previous period)/Operating revenue at an earlier period

For the number of years of the establishment of the company, adopt an increasing way to divide the three subdivisions, from low to high, respectively, given "0", "1" and "2" points; Advertisement intensity is divided into three parts in a decreasing way, with "0", "1" and "2" points from high to low. The capital investment rate is divided into three categories in a descending way, with "0", "1"

and "2" points, respectively, from high to low. The increase rate of business revenue is divided into three categories in a descending way, with "0", "1" and "2" points, respectively, from high to low. The dividend payout rate is increasingly divided into three parts, with "0", "1" and "2" point,s respectively, from high to low. The scores of the above five indicators were summed up and then sorted. The score of 0-3 was the growth stage, the score of 4-7 was the maturity stage, and the score of 8-10 was the decline stage. According to the above classification, there are 105 companies in the growth stage, 362 in the maturity stage, and 30 in the decline stage.

3.2 Research Model and Sampling

The following table is the definition of variables in this paper and the calculation method of variables. The industry data is the average value of pharmaceutical, IT, and food industries in the WIND database. To ensure the effectiveness of regression results, we conduct five control variables: the rate of capital expenditure, operating cash flow, the ratio of liabilities to assets, capital input, and labor input.

Table 1. Variable definitions

Types of variables	Variable name	Label	Variable definition
Explained variables	Adjusted Operating Profit	AGR	Central business profitability-Profit margin of the main business of the industry
	Adjusted Net Profit Margin on Sales	AROS	Net profit on sales - Industry net profit on sales
	Adjusted Prime operating revenue	AGS	Main business revenue/Industry index
	Adjusted Operating Profit	AGP	Main business profit/Industry index
Explanatory variables	Advertisement intensity	LNAdv	Advertisement investment/sales revenue
	Total Advertisement input	K	Accumulated advertising input from 2016 to 2017 and 2018, respectively
Control variables	Capital expenditure	CAPT	capital expenditure to total assets
	Operating cash flow	CASH	Net cash flow from operations/Total assets
	liability/asset ratio	LEV	Total liabilities/total assets
	capital input	C	The 3-year average of total assets
	labor input	L	The average number of employees in 3 years

In this paper, multiple linear regression model and modified Copulglas production function model are used to verify different research hypotheses：

Model 1：$P_{it}=\beta_0+\beta_1 LNAdv_{it}+\beta_2 LEV_{it}+\beta_3 CAPT_{it}+\beta_4 CASH_{it}+\varepsilon_{it}$

Model 2：$P_{it}=\beta_0+\beta_1 LNAdv(_{i,t-j})+\beta_2 LEV_{it}+\beta_3 CAPT_{it}+\beta_4 CASH_{it}+\varepsilon_{it}$

Model 3：$lnQ_t=A+\alpha LNK_t+\beta LNL_t+\gamma LNC_t+\mu_t$

Model 1 Examine the relationship between advertising investment and current performance, model 2 Examine enterprise advertisement investment and enterprise performance lag effect. P_{it} is the explained variable. A measure representing the company's performance in year T, In addition, this study chose the adjusted profit margin of the main business of the industry as the measurement index to eliminate the impact of industry differences on performance；INAdv is ethexplanatory variable. Namely ,enterprise advertising investment intensity; LEV, CAPT, CASH are the control variables. β_0 is constant term, β_i is the regression coefficient of the model, ε is a random variable, represents other variables that affect enterprise performance. i = 1,2,3, N, represents the i_{th} listed company; t = 1,2,3 represents the year in which the sample belongs; j = 0,1,2 represents sample lag. Model 3 examines the lag impact of corporate advertising investment on corporate performance; Q is the explained variable, meaning the output level of the enterprise. In addition, we use the primary business revenue adjusted by the industry in 18 years to eliminate the influence caused by industry differences in the measurement index. K is the explanatory variable and represents the lag advertising expenditure of the enterprise. This paper adopts the advertising investment in 2016, the two-year lag advertising investment in 2016 and 2017, and the three-year lag advertising investment in 2016, 2017, and 2018 as the measurement indexes. C is the control variable, representing the capital input of the enterprise. The average total assets of the enterprise in 2016, 2017, and 2018 are used as the measurement index. L is the control variable and represents the labor input of the enterprise. This paper adopts the average number of employees of the enterprise in 2016, 2017, and 2018 as the measurement index.

3.3 Samplings

This paper studies the relationship between advertising investment and corporate performance based on the life cycle of enterprises and selects the panel data of 500 listed A-share companies in the pharmaceutical, IT, and food industries from 2016 to 2018. The medicine, Internet, and food industry are the top three advertising investment industries. Therefore this article selects the medicine, the IT and the food industry of listed companies as research samples; this paper due to the shorter time to market, Internet companies consider choosing the period is too long, which can lead to the small sample size. Therefore this article selects the last three years of data to study. To ensure the validity of the data, this paper processed the data as follows :(1) deleting missing values. For companies with missing values, this paper deleted them. (2) For enterprises with ST sign excluded, the financial indicators of enterprises with ST sign may have outliers. Therefore, this

paper excluded all ST companies and obtained a total of 497 sample companies, with 1491 observed values in 3 years. All the data of this study came from the WIND database, statistical software was used in this paper for data modeling, and EXCEL was used for data processing.

3.4 Descriptive Statistics

Through the variables of descriptive statistics analysis, this paper from the following table shows that enterprise's advertising investment intensity from the growth and maturation to decline gradually decreasing trends, enterprise's advertising investment intensity in the three years of average growth and development average more than 6%, and in the enterprise's advertising investment intensity of recession in 2016 only 3.58%, This figure suggests that advertising spending is relatively low during the recession. In addition, we can see that the adjusted primary business profit rate, adjusted sales profit rate, capital expenditure rate, cash strength, and other indicators of enterprises in the growth period, mature period, and recession period show a trend of gradual decline. Therefore, enterprises in the growth stage have a relatively high competitiveness among China's A-share listed enterprises. On the contrary, although enterprises are in the mature stage, their competitiveness is gradually weakening, and in the recession stage, enterprises will face the dilemma of survival and operation.

Table 2. Descriptive statistics of samplings

Stage	Growth Period			Mature Period			Decline Period		
Year	2016	2017	2018	2016	2017	2018	2016	2017	2018
Adv	5.17%	6.05%	7.56%	5.47%	6.66%	7.65%	3.58%	5.11%	7.53%
AGR	14.15%	14.26%	18.31%	9.82%	10.68%	13.80%	1.24%	2.10%	7.18%
AROS	6.48%	7.03%	6.33%	2.92%	0.72%	5.71%	0.96%	2.76%	1.01%
CAPT	6.63%	5.90%	6.62%	5.10%	4.74%	4.85%	2.90%	2.92%	2.33%
CASH	8.43%	7.34%	7.40%	7.66%	5.83%	6.19%	5.42%	4.67%	5.77%
LEV	31.86%	30.48%	31.94%	32.18%	32.09%	32.99%	34.44%	35.14%	36.17%

The following table is the descriptive statistics of the absolute index. The lag advertising investment of enterprises is relatively high in the growth and mature stages and relatively low in the recession stage. After industry adjustment, the natural logarithm of prime operating revenue, the mean value of total assets in three years, and the mean value of the number of employees in three years showed a gradually increasing trend from the growth stage to the recession stage.

Table 3. Descriptive statistics of samplings

Stage	Growth Period			Mature Period			Decline Period		
	minimum	maximum	average	minimum	maximum	average	minimum	maximum	average
Ln C	19.12	24.31	21.58	18.89	25.63	21.77	19.29	25.34	22.09
lnL	4.80	9.85	7.33	4.99	10.91	7.55	5.95	10.68	7.77
lnK0	11.79	22.42	16.87	9.96	23.12	17.23	11.06	22.21	17.61
lnK1	12.06	22.85	17.50	10.19	23.68	17.88	11.54	22.58	18.19
lnK2	12.81	23.09	17.85	10.57	24.01	18.22	11.68	22.78	18.53
lnAGP	18.36	23.82	20.68	17.46	25.31	20.48	18.36	23.82	20.68
lnAGS	18.93	25.83	21.87	17.60	25.67	21.35	18.93	25.83	21.87

3.5 Empirical Results

3.5.1 Regression of advertising investment and corporate performance in a different state

The following table shows the empirical results of multiple linear regression between corporate advertising investment in different life cycles from 2016 to 2018 and the adjusted profit margin of the leading business in the same period. From the perspective of significance level, the models in the growth and maturity stages are significant at the significance level of 1%, while the enterprise performance in the recession stage shows an obvious downward trend or even becomes insignificant. The analysis shows that, from a statistical point of view, the factors in the model can have a significant joint impact on enterprise performance during the growth and maturity of enterprises. In contrast, when enterprises are in the recession stage of the cycle, the collective effect of these factors on enterprise performance will become insignificant.

From the perspective of the significance of the single variable regression coefficient model, chips are companies; their advertising investment and corporate performance are 5% or 10% significance level. The advertising investment and firm performance are significantly under the 1% significance level in the mature stage. In the recession phase of the enterprise, the advertising investment and enterprise performance relationship are: It was significant at the level of 10% in 2016, but not in 2017 and 2018. As can be seen from the regression coefficient of the model, the coefficient of advertising investment and corporate performance is positive, indicating that advertising investment is positively correlated with corporate performance. If other variables remain unchanged, the increase in corporate advertising investment will lead to increased corporate performance, which is the same as hypothesis 1 in the previous paper and verifies that hypothesis 1 is correct. And in the stage of growth and maturation in the cycle of enterprises, advertising investment and enterprise benefit correlation are significant, and enter the decline stage of the enterprise's advertising investment significance of the correlation between corporate

performance and lower even was not significant, which verified the hypothesis 1, at the different stage of the enterprise, advertising investment is different to the influence degree of the enterprise performance.

Table 4. Regression results

Stage	Growth Period			Mature Period			Decline Period		
Year	2016	2017	2018	2016	2017	2018	2016	2017	2018
β_0	0.137**	0.176***	0.201***	0.166***	0.2***	0.203***	-0.026	-0.031	0.151
LNAdv	0.626**	0.318*	0.184	0.611***	0.44***	0.327***	1.22*	0.501	0.099
CAPT	-0.192	-0.681*	-0.432	-0.097	-0.372*	-0.439*	0.108	-0.913	-2.174
CASH	0.459**	0.866***	1.131***	0.535***	0.596***	0.897***	0.414	1.05*	1.7***
LEV	-0.168	-0.251*	-0.272**	-0.426***	-0.435***	-0.377***	-0.09	0.012	-0.37*
R2	0.131	0.194	0.236	0.253	0.233	0.168	0.21	0.228	0.382
F-text	3.78	6.035	7.733	30.154	27.067	18.062	1.659	1.854	3.861

Note: *, ** and *** mean significant at the significance level of 10%, 5% and 1% respectively

3.5.2 Lag Effect Analysis

To verify whether the advertising investment of enterprises under different life cycles has the lag effect and whether the advertising investment in lagged phase and lagged phase has an impact on the enterprise performance in the current period. Therefore, this section selects the intensity of advertising investment in 2016, 2017, and 2018, respectively, to conduct multiple linear regression with the adjusted profit margin of the main business in 2018 to verify hypothesis 2. Among them, the current period is the regression result of the enterprise advertising investment intensity in 2018 and the adjusted profit margin of the leading business in 2018. The lag period is the regression result of the enterprise advertising investment intensity in 2017 and the adjusted profit margin of the leading company in 2018. The second lag is the regression result of the advertising investment intensity in 2016 and the adjusted profit margin of the leading business in 2018. The regression result is shown in the table below.

As can be seen from the overall significance of the model, the coefficient of enterprises in the growth stage is significant at the significance level of 5%, and 10%, the coefficient of enterprises in the mature stage is substantial at the significance level of 1%. The regression coefficient of enterprises in the recession stage is not significant except for the advertising investment coefficient of the two lag periods. It indicated that the significance level was relatively high in the growth and maturity stage, but low or even insignificant in the decline stage.

From the significance of the single model, for enterprises in the growth stage, the regression coefficient of advertising investment in the current period of 2018 on the performance of 2018 is

not significant, indicating that the advertising investment in the current period of 2018 has no impact on the performance of 2018, while the coefficient of advertising investment in the lagging period on the performance of 2018 is 0.362. And it is significant at the significance level of 10%, indicating that advertising investment one period behind has a positive effect on enterprise performance in 2018. And lag of phase ii of the advertising investment for enterprise performance coefficient was 0.6 in 2018 and is significant under the 5% significance level, the lag phase ii of the advertising investment for 2018 has a role in promoting enterprise performance, thus for enterprise growth, lag one period and the second phase lag of advertising investment has influence on enterprise performance, It shows that advertising investment has a lag effect. The result of the second lag is greater than that of the first lag.

For enterprises in the mature stage, the regression coefficient of advertising investment in 2018 and corporate performance in 2018 is significant at a 1% confidence level, indicating that advertising investment in 2018 has an impact on corporate performance in 2018, and the coefficient is 0.327, showing a positive impact. The coefficient of advertising investment lagging one period on enterprise performance in 2018 is 0.515, which is significant at the significance level of 1%, indicating that advertising investment lagging one period can promote enterprise performance in 2018. Lag phase ii of the advertising investment for enterprise performance coefficient was 0.751 in 2018 and is significant under the 1% significance level; the information lag phase ii of the advertising investment for enterprise performance has to promote effect in 2018 for a mature enterprise. Therefore, the current lag one period and the second phase lag of advertising investment an influence enterprise performance, It shows that advertising investment has a lag effect. The influence of current, first, and second lag advertising investment on enterprise performance is increasing.

For enterprises in the recession stage, the regression coefficient of advertising investment in 2018 and corporate performance in 2018 is not significant, indicating that advertising investment in 2018 has no significant impact on corporate performance in 2018. The coefficient of advertising investment lagging one period on enterprise performance in 2018 is not significant at the significance level of 10%, indicating that advertising investment lagging one period has no significant impact on enterprise performance in 2018. Lag phase ii of the advertising investment for enterprise performance coefficient was 0.866 in 2018 and is significant under 5% significance level, that lag phase ii of the advertising investment for 2018 has a role in promoting enterprise performance, therefore for the recession of the enterprise, the current, the lag issue of advertising investment has no impact on business performance, The investment that only lags behind the second phase affects enterprise performance, indicating that the influence of advertising investment on enterprises in the recession period is not

obvious, but only lags behind the second phase.

From the significance level of the model as a whole, most enterprises in the growth and mature stages are significant at the significance level of 5%. In contrast, the enterprise coefficient in the recession stage is almost not significant, indicating that the advertising investment of enterprises in the growth stage and the mature stage has a lag effect. In contrast, the lag effect is not evident in the recession stage. For enterprises in the growth stage, the coefficients of advertising investment lag phase I and phase II and enterprise performance are 0.362 and 0.6; for enterprises in the mature stage, the coefficients of advertising investment lag phase I and phase II and enterprise performance are 0.515 and 0.751, indicating that the longer the lag period, the greater the impact on enterprise performance. The lag effect of maturity is stronger than that of growth. The lag effect during the recession is not obvious.

Table 5. Regression results

Stage	Growth Period			Mature Period			Decline Period		
Year	Current period	1th lag	2th lag	Current period	1th lag	2th lag	Current period	1th lag	2th lag
$\beta 0$	0.201***	0.155**	0.123**	0.203***	0.196***	0.169***	0.151	0.039	0.043
LNAdv	0.184	0.362*	0.600**	0.327***	0.515***	0.751***	0.099	2.104	0.866**
CAPT	-0.432	-0.578	-0.476	-0.439*	-0.553**	-0.354	-2.174	-0.775	-1.914
CASH	1.131***	1.139***	0.757***	0.897***	0.929***	0.588***	1.700***	0.330*	1.170
LEV	-0.272**	-0.143	-0.010	-0.377***	-0.374***	-0.309***	-0.370*	-0.110	-0.041
R2	0.236	0.233	0.166	0.168	0.218	0.172	0.382	0.312	0.297
F-text	7.733	7.588	4.975	18.062	24.910	18.495	3.861	2.840	2.638

Note: *, ** and *** mean significant at the significance level of 10%, 5% and 1% respectively

3.5.3 Lag impact as advertising investment cumulative effect analysis

In order to verify hypothesis 3 of this paper, this section is based on the influence of accumulated advertising investment of enterprises in different life cycles on their primary business profits. In this paper, multiple regression analysis is conducted on the logarithm of the enterprise's advertising investment in 2016, the logarithm of the accumulated 2 years of advertising investment in 2016-2017, the logarithm of the accumulated three years of advertising investment in 2016-2018 and the adjusted main business profit of the enterprise in 2018. To verify the influence of advertising investment in the current period, lag 1 and lag two periods on enterprise performance.

As can be seen from the overall significance of the model, the model of enterprises in the growth stage and mature stage is significant at the significance level of 1%. In comparison, the

model of enterprises in the decline stage is significant at the significance level of 5%, indicating that the lag effect of advertising investment is significant in the growth stage and mature stage. In contrast, the significance is weak in the decline stage. And the coefficients are all positive, indicating that the increase in current and lag advertising investment can improve corporate performance.

From the point of a single model, for enterprise growth, the current the lag phase 1 and 2) advertising, with the total investment coefficient under 1% significance level, is significant, indicating the present the lag phase 1 and 2) advertising, with the total investment has an influence on firm's performance. The coefficient is positive, that is, the positive influence, on the premise of other variables constant. The increase in advertising investment in the current period, accumulated period one and accumulated period 2, can improve the business performance of enterprises. The coefficients of advertising investment in the cent period, accumulated period one, and accumulated period 2 are 0.115, 0.121, and 0.128, respectively, showing an increasing trend, indicating that the influence of advertising investment in the current period, accumulated period one, and accumulated period two on enterprise performance shows a growing trend.

From the point of a single model, for a mature enterprise, the current the lag phase 1 and 2) advertising, with the total investment coefficient is significant under 1% significance level, indicating the present the lag phase 1 and 2) advertising, with the total investment has an influence on firm's performance. The coefficient is positive, that is, the positive influence, on the premise of other variables constant. The increase in advertising investment in the current period, accumulated period one, and accumulated period two can improve the business performance of enterprises. The coefficients of advertising investment in the current period, the accrued period one, and the accumulated period two are 0.128, 0.130, and 0.128, respectively, showing an increasing trend, indicating that the influence of advertising investment in the current period, the accumulated period 1 and the accumulated period two on enterprise performance is increasing.

From the point of a single model, the recession of the enterprise, the current, the lag phase 1 and 2) advertising, with the total investment coefficient is significant under 5% significance level, indicating the present, the lag phase 1 and 2) advertising, with the total investment has an influence on firm's performance. The coefficient is positive, that is, the positive influence, on the premise of other variables constant. The increase in advertising investment in the current period, accumulated period one, and accumulated period two can improve the business performance of enterprises. The coefficients of advertising investment in the recent period, accumulated period one, and accumulated period 2 are 0.112, 0.111, and 0.120, respectively,

showing an increasing trend, indicating that the influence of advertising investment in the current period, accumulated period 1, and accumulated period two on enterprise performance shows a growing trend.

Therefore, there is a lag effect for enterprises in the growth, mature, and declining stages. Still, the significance is higher for enterprises in the growth stage and mature stage and weaker for enterprises in the declining stage. Moreover, the advertising investment of the current period, the accumulated period one, and the accrued period 2 has a positive influence on the business performance of enterprises and presents an increasing trend.

Table 6. Regression results of hypothesis

Stage	Growth Period			Mature Period			Decline Period		
Year	Current	1th lag	2th lag	Current period	1th lag	2th lag	Current period	1th lag	2th lag
$\beta 0$	8.118***	8.000***	7.908***	5.577***	5.413***	5.252***	4.375*	4.283*	4.066*
lnK	0.115***	0.121***	0.128***	0.128***	0.130***	0.128***	0.112**	0.111**	0.120**
lnC	0.374***	0.372***	0.369***	0.468***	0.471***	0.480***	0.525***	0.534***	0.543***
lnL	0.322***	0.319***	0.32***	0.358***	0.354***	0.349***	0.376**	0.356**	0.334**
R2	0.715	0.718	0.720	0.794	0.791	0.788	0.845	0.843	0.844
F	84.269	85.579	86.527	456.395	448.875	441.209	47.416	46.405	46.766

3.5.4 Robustness Test

In this paper, the robustness test is carried out. AROS (industry adjusted net profit margin on sales) is replaced by AGR (industry adjusted profit margin on main business) as the performance measurement index. The regression analysis is conducted again, and the results are like those above. Ln AGR (industry adjusted main business profit) was replaced by ln AGS (industry changed primary business income) to conduct a regression analysis on lag impact again, and the results were consistent.

4. Research Conclusions and Implications

This study is based on enterprise life cycle, the advertising investment, enterprise performance theory, from advertising spending and investment in the current performance of the enterprise, the influence of the performance impact of lag and cumulative effect three perspectives, explores the at different stages of the enterprise, advertising investment for corporate performance and efficiency, the influence of other reveals in various stages, Enterprise advertising investment ultimately affects the difference of enterprise performance and benefit.

Based on the above theoretical analysis and model empirical results, this paper draws the following inspiration: advertising investment plays an important role in the company's benefit and development. The continuity of advertising investment is particularly important for enterprise efficiency. Advertising investment has a cumulative and lags effect if the intermittent enterprise investment affects the development of the enterprise and may lose the cumulative and lag effect of advertising investment. At the same time, appropriate advertising investment for any enterprise period is a positive effect. Enterprises should make different advertising expenditures and investments to enterprises at different stages according to their financial situation, new product innovation, and industry conditions.

Authors Contributions

Liang Li: Writing-original draft, reviewing, and editing. Bouirig Amine: Writing-reviewing and editing. Yuxin Pang: Methods the data and Writing-original draft-review and editing and supervision. Minxing Jiang: Writing and editing and supervision. All authors have read and agreed to the published version of the manuscript.

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