

Research on the Mediate and Moderate Factors between Executive's Attitude and Investment Efficiency -- Taking the Software and IT Service Industry as an Example

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Abstract. Taking China's software and IT service industry from 2018 to 2021 as a sample, this study explores the mediator and moderator of enterprise strategic radicalization in the executive's positive attitude and investment efficiency. The findings show that when the chairman and general manager of a company are in one position, the strong positive impact of management on investment efficiency will have the opposite effect; Furthermore, the degree of enterprise strategic radicalization has a mediating effect between the positive attitude of management and inefficient investment, and this situation is particularly evident when the size of the company's board of directors is small. However, regardless of the size of the board of directors, it will play a positive regulatory role in the degree of strategic radicalization and investment efficiency. That is, when the degree of strategic radicalization is higher, the larger the board of directors will help improve investment efficiency. In addition, the degree of enterprise strategic radicalism has a mediating effect between management attitude and investment efficiency, but this situation is more pronounced when the proportion of male board members is low. Regardless of the proportion of male directors in a company, it will have a positive moderating effect on the degree of strategic radicalization and investment efficiency. Finally, the stronger the positive attitude and the higher the proportion of independent directors, the more likely it is for the enterprise to increase its strategic radicalization. However, this has no impact on investment efficiency.

Keywords: Executive's attitude; Strategic radicalization; Investment efficiency.

1. Introduction

We can receive the signals from the positive tone of the executive, and know the meaning of information increment, which can correctly predict the future performance and strategic direction of the enterprise (Xie and Lin, 2015). Huang et al. (2014) suggest that the development status of the enterprise and the motivation intention of the executive jointly determine the enthusiasm of the tone of the executive. When the executive is optimistic about the future of the enterprise, they will declare the positive information of the enterprise to outside through the enthusiasm of the tone of the executive and are more willing to carry out innovative activities. According to these research results, the first research hypothesis can be summarized as H1: there is a positive relationship between the executive's positive attitude and the enterprise's strategic radicalization.

There are researches suggest the executive's positive attitude and incentive are positively related to investment efficiency (Zhan and Wang, 2013; Zhou et al., 2020). Lin et al. (2021) found that companies with high corporate social responsibility participation tend to over invest. Based on this, the second research hypothesis can be summarized as H2: the positive attitude of executive is positively related with investment efficiency.

Wang et al. (2016) showed that corporate strategy has a significant impact on over investment. Compared with defensive corporate strategy, aggressive corporate strategy has a more significant positive relationship with over investment. Guo and Zhang (2021) found that strategic radical enterprises have a higher degree of information asymmetry, and have more decentralized internal control mechanisms, leading to lower investment efficiency. Zhang and Feng (2021) argued that enterprise strategic differences would significantly aggravate over investment. According to this, we summarize the third research hypothesis as H3: the degree of enterprise strategic radicalization is negatively related to investment efficiency.

We also referred to related literature, most of them found the characteristics of board affect the enterprise strategy model and investment efficiency (Li et al., 2022; Wang and Wu, 2022). So this study will take specific characteristics of board as the moderators.

2. Methodology

According to the above research hypothesis, we establish the model as Figure 1.

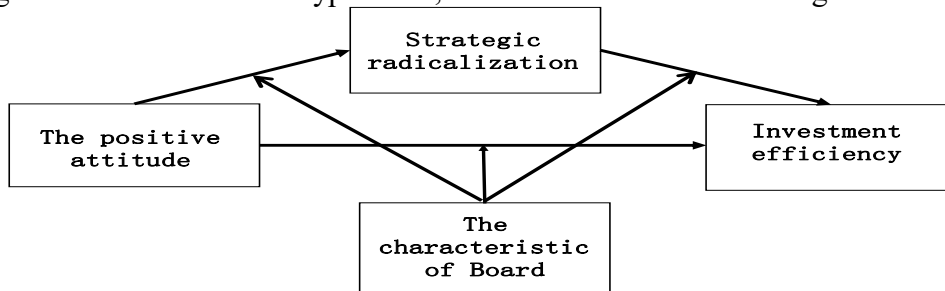


Fig. 1 the relationship among the management's positive attitude, strategic radicalization, the characteristic of board and investment efficiency

This study takes the listed companies of software and information technology service industry from 2018 to 2021 as the sample. All data are taken from the CSMAR database. After downloading all samples, the samples with incomplete data are removed, and then the extreme values are deleted. A total of 537 samples are obtained. The research method is Ordinary Least Square (OLS) with SPSS V24.0 and PROCESS V3.5. The regression model and variable description are as follows:

$$STRG_{it} = \alpha_0 + \alpha_1 PNP_{it} + \alpha_2 MODERATOR_{it} + \alpha_3 PNP * MODERATOR_{it} + \alpha_4 SCALE_{it} + \alpha_5 FCF_{it} + \alpha_6 AGE_{it} + \alpha_7 SOE_{it} + \alpha_8 CYEAR_{it} + \epsilon_{it} \dots \dots \dots (1)$$

$$ININV_{it} = \alpha_0 + \alpha_1 STRG_{it} + \alpha_2 PNP_{it} + \alpha_3 STRG * MODERATOR_{it} + \alpha_4 MODERATOR_{it} + \alpha_6 PNP * MODERATOR_{it} + \alpha_7 SCALE_{it} + \alpha_8 FCF_{it} + \alpha_9 AGE_{it} + \alpha_{10} SOE_{it} + \alpha_{11} CYEAR_{it} + \epsilon_{it} (2)$$

Among them, there are four moderate variables, namely, DUAL, BSIZE, Male and INDEP. The model (1) and model (2) are executed once for each moderator variable. The variables are described as follows:

2.1 Dependent variable

This study selects Inefficient Investment (ININV) as the dependent variable, and takes the residual in the investment efficient model constructed by Richardson (2006) as the alternated variable. The model is listed as follows:

$$Invest_{i,t} = \beta_0 + \beta_1 Cash_{i,t-1} + \beta_2 TobinQ_{i,t-1} + \beta_3 Lev_{i,t-1} + \beta_4 Roa_{i,t-1} + \beta_5 Age_{i,t-1} + \beta_6 Size_{i,t-1} + \beta_7 Return_{i,t-1} + \beta_8 Invest_{i,t-1} + \sum year + \sum industry + \epsilon_{i,t}$$

Where Invest represents the investment level; Cash is the cash holding ratio; Tobin'Q is Tobin'Q value; Lev is the debt ratio; ROA is the return on total assets; Age is the number of years of listing; Size is the company scale; Return represents the stock yield; Year is the annual dummy variable; Industry is an industry dummy variable; ϵ is the residual. The larger the residual is, the higher the degree of over investment is. The dependent variable in this study is the residual of this model as an alternated variable.

2.2 Independent variable

The independent variable is the degree of executive's positive attitude (PNP). We take the value of positive words divided by negative words as the substitute variable. The higher the value, the more positive the executive's attitude is.

2.3 Mediator

we take the strategic radicalization (STRG) that evaluated by Bentley et al.'s (2013) strategic radicalization model as the mediator. This model evaluates the degree of strategic radicalization

from six dimensions of the R&D tendency, production efficiency, growth, expansion tendency, stability of organizational structure and capital intensity. The scores of the six indicators are summed up will obtain a score between 6 and 30 points. The higher the score, the more aggressive the strategy.

2.4 Moderator

This study selects if the chairman and the general manager are the same person (DUAL), the board size (BSIZE), the proportion of male director (MALE) and the proportion of independent director as the moderator.

2.5 Control variables

This study selects company's scale (SCALE), free cash flow (FCF), age(AGE), company's state of equity(SOE) and if the sample belongs to year 2020(CYEAR) as control variables.

3. Results

Table 1 the empirical results of Model (1) and Model (2) (N=537)

MODERATOR	DUAL		BSIZE		MALE		INDEP	
	Model (1)	Model (2)	Model (1)	Model (2)	Model (1)	Model (2)	Model (1)	Model (2)
Con_	7.589	0.126** *	1.559	0.091*	8.302	0.079	27.039* **	0.257** *
STRG (Mediate effect)	—	-0.000	—	0.004**	—	0.005**	—	-0.003
PNP (Direct effect)	1.114**	-0.005	5.585***	-0.019	1.346	-0.018	-6.448* **	-0.017
MODERATOR	2.956*	-0.009	1.569***	0.007	2.501	0.073	-41.564 ***	-0.293* *
PNP* MODERATOR (Moderate effect)	-0.821	-0.006	-0.585**	0.001	-0.609	0.015	19.081* **	0.025
STRG* MODERATOR (Moderate effect)	—	0.001**	—	-0.001**	—	-0.006**	—	0.008
SCALE	0.487**	-0.004* *	0.241	-0.005** *	0.420*	-0.004**	0.379* **	-0.005* **
FCF	-0.001	0.000	-0.001	0.000	-0.002	0.000	-0.002	0.000
AGE	-0.132* **	-0.000	-0.146** *	-0.000	-0.143** *	-0.000	-0.142* **	-0.000
SOE	-2.846* **	-0.010* *	-3.259** *	-0.011** *	-3.006** *	-0.010**	-2.963* **	-0.011* **
CYEAR	0.132	-0.002	0.197	-0.002	0.089	-0.002	0.152	-0.001
F Value	8.527** *	3.243** *	8.734***	3.268***	7.268***	3.167***	8.482** *	3.611** *

Mediate effect Analysis	DUAL	Conf. Int.	BSIZE	Conf. Int.	MALE	Conf. Int.	INDEP	Conf. Int.
STRG	—	—	7	0.000 ~ 0.003	0.667	0.000 ~ 0.002	—	—
STRG	—	—	8	-0.000 ~ 0.001	0.778	-0.000 ~ 0.001	—	—
STRG	—	—	9	-0.001 ~ 0.000	0.882	-0.001 ~ 0.000	—	—
Moderate effect Analysis	DUAL	Conf. Int.	BSIZE	Conf. Int.	MALE	Conf. Int.	INDEP	Conf. Int.
PNP	—	—	7	0.808 ~ 2.176	—	—	0.333	-0.014 ~ -0.003
PNP	—	—	8	0.341 ~ 1.474	—	—	0.375	-0.012 ~ -0.003
PNP	—	—	9	-0.375 ~ 1.020	—	—	0.429	-0.012 ~ -0.000
Moderate effect Analysis	DUAL	Conf. Int.	BSIZE	Conf. Int.	MALE	Conf. Int.	INDEP	Conf. Int.
STRG	0.000	-0.001 ~ 0.000	7	-0.014 ~ -0.003	0.667	0.000 ~ 0.002	—	—
STRG	—	—	8	-0.012 ~ -0.003	0.778	-0.000 ~ 0.001	—	—
STRG	1.000	-0.000 ~ -0.002	9	-0.011 ~ -0.001	0.882	-0.001 ~ 0.000	—	—

Note 1: the definition of each variables refer to 3. Methodology.

Note 2: when $p \leq 0.01$, the significant is “***”, when $0.01 < p \leq 0.05$, the significant is “**”, when $0.05 < p \leq 0.1$, the significant is “*”.

3.1 The moderator is DUAL

When the chairman and general manager of a company hold two positions in one, the more positive the attitude of the management, the company will tend to adopt a more aggressive strategic model. However, in the case of two positions in one, the effect of the positive attitude of the management on improving investment efficiency will decrease as the degree of strategic radicalization increases. This situation is most severe when the chairman and general manager are one person.

3.2 The moderator is BIZE

The more positive the attitude of the company's board of directors and supervisors, or the larger the board size (BSIZE), the more likely it is for the company to adopt a more aggressive strategic model. However, a more aggressive strategic model has a negative impact on investment efficiency; at this point, the larger the size of the board of directors, the more aggressive the enterprise's strategy can be, thereby improving investment efficiency. Through the analysis of intermediary effects, we can see that under the moderating effect of board size, the degree of enterprise strategic radicalism has a mediating effect between positive management attitudes and inefficient investments, and this situation is particularly evident when the board size of the enterprise is small.

As the board size of the enterprise increases, the mediating effect will be weakened. In the analysis of regulatory effects, we can know that regardless of the size of the board of directors, it will play a negative regulatory role between the degree of strategic radicalization and inefficient investment. That is, when the degree of strategic radicalization is higher, the larger the board of directors will help improve investment efficiency.

3.3 The moderator is MALE

The positive attitude of management and the gender of directors have no significant impact on the degree of strategic radicalization in enterprises. However, when the degree of strategic radicalization is higher and the proportion of male directors is also higher, it will actually improve investment efficiency. Through the analysis of intermediary effects, it can be seen that under the premise of considering the gender of directors, the degree of enterprise strategic radicalization has a mediating effect between management attitude and investment efficiency, but this situation is more obvious when the proportion of male directors is low. In the analysis of regulatory effects, it is shown that regardless of the proportion of male directors in a company, there is a negative moderating effect on the degree of strategic radicalization and inefficient investment. That is, the higher the degree of strategic radicalization and the higher the proportion of male directors, the better the investment efficiency of the company.

3.4 The moderator is INDEP

The stronger the positive attitude and the higher the proportion of independent directors, both of which individually reduce the degree of strategic radicalization. However, the stronger the positive attitude combined with the higher proportion of independent directors, the higher the degree of strategic radicalization of the enterprise. However, this has no impact on investment efficiency. From the analysis of regulatory effects, we can know that regardless of the proportion of independent directors, there is a moderating effect between the positive attitude of management and the degree of strategic radicalization. However, this moderating effect does not affect investment efficiency when the enterprise's strategic radicalization is higher or the attitude of the directors and supervisors is more positive.

4. Conclusion

4.1 Findings

This paper takes the software and information technology service industry of Chinese listed companies from 2018 to 2021 as the research object, and explores the mediating effect of strategic activism on the positive positivity of management and investment efficiency. The moderating variable is the characteristics of directors, supervisors, and senior executives, and tests the moderating effect of management's positive positivity, strategic activism, and investment efficiency. The research findings are summarized into four points:

4.1.1 When the chairman and general manager of a company hold the same position, the strong positive impact of management on investment efficiency will have the opposite effect.

4.1.2 The degree of enterprise strategic radicalization has a mediating effect between the positive attitude of management and inefficient investment, and this situation is particularly evident when the size of the company's board of directors is small. However, regardless of the size of the board of directors, it will play a positive regulatory role in the degree of strategic radicalization and investment efficiency. That is, when the degree of strategic radicalization is higher, the larger the board of directors will help improve investment efficiency.

4.1.3 The degree of enterprise strategic radicalism has a mediating effect between management attitude and investment efficiency, but this situation is more pronounced when the proportion of male board members is low. Regardless of the proportion of male directors in a company, it will

have a positive moderating effect on the degree of strategic radicalization and investment efficiency.

4.1.4 The stronger the positive attitude and the higher the proportion of independent directors, the more likely it is for the enterprise to increase its strategic radicalization. However, this has no impact on investment efficiency.

4.2 Recommends

Based on the above empirical theoretical foundation, this paper then proposes some practical application suggestions.

4.2.1 Based on the spirit of power balance in corporate governance, the general manager should execute the company's business affairs according to the decision-making results of the board of directors. If the chairman and general manager are combined, it is easy to make decisions that are too impulsive and not rigorous due to a lack of supervision and constraints, resulting in a waste of enterprise resources. Referring to the descriptive statistics in Table 2 of this paper, currently, about 37.5% of listed companies in the software and information technology service industry in China hold the combined positions of chairman and general manager. It is suggested that enterprises should truly exert the spirit of corporate governance, respect and trust institutions and professionalism.

4.2.2 Due to the large number of directors, the efficiency of large-scale boards is low. Based on the research results of the software and information technology service industry in this paper, the larger the board size, the worse the investment efficiency indeed exists, and it can also lead to enterprises adopting more aggressive strategic models. However, empirical results also show that when the enterprise's strategy is more aggressive, the larger the board size is helpful for improving investment efficiency. The board of directors in the software and information technology service industry still have appropriate industry expertise and risk awareness. Although communication efficiency was poor during the initial stage of strategic expansion, resulting in a lack of investment efficiency, after significant expansion, they can still use their expertise to improve investment efficiency through good communication and cooperation. But if these issues can be noticed in the early stages, the enterprise will have higher operating profits. Therefore, it is suggested that enterprises should strengthen communication between directors in the early stages of expansion to improve decision-making efficiency, such as providing complete and timely meeting materials to directors, tracking reports on the execution results of meeting resolutions, and regular or irregular inspections of the company's operating conditions by directors.

4.2.3 Although there are many studies in the academic community that suggest that female directors are very helpful for business operations, including rigorous thinking and the advantage of good communication, each industry has different industry characteristics and cannot be generalized. For the software and information technology service industry, which is the research object of this paper, according to the descriptive statistics in Table 2, male directors account for up to 77.5% of the total, and the empirical results also prove that male directors have a positive moderating effect on the degree of strategic radicalization and investment efficiency. Therefore, it is recommended that companies need to have a more detailed understanding of the compatibility between personal characteristics and industry characteristics when hiring female directors.

4.2.4 According to the empirical results of this paper, although the proportion of independent directors alone has a positive impact on investment efficiency, independent directors cannot have any impact when there is a change in the attitude and strategic aggressiveness of directors, supervisors, and senior executives. This indicates that generally speaking, independent directors have not had in-depth communication with corporate directors, supervisors, and senior executives, which may hinder the exercise of their responsibilities to a certain extent. Although the responsibilities of independent directors have been clearly established in accordance with the spirit of corporate governance and the rules of independent directors of listed companies, many domestic studies have shown that independent directors generally do not exercise independence and

professionalism, but only adhere to the opinions of major shareholders or the chairman. This is also an issue that enterprises need to pay attention to at present.

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