

# Executive Political Connections, Strategic Behavior and Industrial Upgrading - Empirical Research Based on the Pearl River Model in China

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**Abstract:** Based on top talents bottleneck problem in the processing of industrial upgrading of the Pearl River Model and the importance and decisive role of political connections and strategic behavior in industrial upgrading in Small and Medium-sized Enterprise(SME), from the angle of microscopic investigation, the article regards political connections and strategic behavior as the main influence factors research object, and uses Logistic regression model and probability statistic to measure influence degree of various influencing factors of executives in the Pearl River Model industrial upgrading. The result shows that executives' political connections, strategic behavior, and the inherent characteristics effect significantly on the industrial upgrading of SME in Pearl River Delta, and the executive's higher political connections may stimulate the probability of enterprise process upgrading and supply chain upgrading, the product upgrading is more influenced by executive's radical strategy in strategy behaviors, furthermore, the research shows that the supply chain upgrading needs executives some personal traits such as higher education, longer working years etc. In the environment of limited top talents resources, enterprises need to make effective structural talents matching according to the content of industrial upgrading and improve the success rate of industrial upgrading.

**Keywords:** Political Connections, Strategic Behavior, Logistic Model, Industry Upgrading

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## 1. Introduction

Industrial transformation and upgrading was put forward in the Forth Conference of the Eleventh National People's Congress (2011) in China. The agitation that boss of SME "ran road" has been regarded as a most difficult crisis of industry transformation and upgrading since more than 30 years of reform and development in China. At the same time, which brings many challenges and opportunities for (SME) in the Pearl River Delta. On the one hand, it is more difficult to operate for the SME such as labor-intensive, processing and trading enterprises in the initial period under the complex and changeable economic forms such as the new standard and the sharing economy, On the other hand, the traditional reversed transmission mechanism has been pushing SME to accelerate their transformation and upgrading. The Pearl River Pattern is recognized as one of five types of

transformation and upgrading of enterprise model (Jiangsu, Wenzhou and Pearl River, Zhoucun and Zhucheng), and is also development pattern of SME in the Pearl River Delta [1]. The pattern is dominated by export-oriented economy, and oriented to the international market, and takes the road of rural urbanization driven by organization evolution and external force (Hailong Jiang, 2006). The pattern proves that the degree of market development is strictly positive related to the level of economic development in China. Under the condition that market economy development being more mature, one of the important problems that industry upgrade process presents "the high-end talent bottleneck" problem. Senior executives, an important part of high-end talent, are the main designer and policymakers of industrial upgrading, their political connection and strategic behavior determine the direction and success of industrial upgrading to a certain extent.

Industrial upgrading is a complex process, Zibin Li (2014) [2] argues that, at present, SME industrial upgrading in China is mainly manifested in three aspects: first, technical innovation, mainly including production equipment renewal and production process improvement, referred to as upgrade of equipment and production process; Second, supply chain efficiency innovation, short for supply chain upgrade; Third, the main business area of SME is upgraded from the low end of the industrial chain to the high-end, and constantly improves the added value and profit of products, namely product upgrade. Executive ability cannot cover all aspects of industrial upgrading, it is necessary to make a scientific and effective structural match with all aspects of industrial upgrading according to the characteristics of senior executives, which gives full play to the internal and external resources of executives and realizes the talent dividend of executives, under limited human resources.

## 2. Literature Review

Political connection and strategic behavior is important components of the entrepreneurial spirit, and is the basis of determining performance of an enterprise, and is a major determinant of corporate executives' decision to make industrial upgrading strategy (ZiBin Li, 2014) [2]. In China, most scholars do the indirect relation research about political relation and strategic behavior impact on the performance and independent innovation of enterprise, and further impact industrial upgrading; there is less direct correlation research between the two. Tang Song's (2014) [3] research the enterprise with different property rights, result shows strong political connection helps to raise executive pay, and has strong ability of rent-seeking for non-state-owned enterprise, and can't effectively improve the performance of state-owned enterprise. XinJian Huang(2014) [4] further researches and shows, in area where political environment system is imperfect, high political connection executives can get higher pay in the private enterprise, and has the higher promotion function to the enterprise performance. The sustainability of enterprise performance is closely related to the existence and development of enterprise, is the main aspects of evaluation of enterprise transformation and upgrading (ZiBin Li, 2014) [2], political connection, through the enterprise performance, indirectly impact on industrial upgrading. Meanwhile, some scholars (Cyert and March [5], 1963) think that the political connection, strategic behavior and innovation spirit from the founders and senior executives of enterprise are the main driving force for upgrading of enterprises' industry, and agree that keen insight, advancing with the times, innovative and passionate entrepreneurship can help enterprises to establish their own development strategies, and accelerate industrial upgrading.

Hong Cheng [6, 7] (2015, 2016)'s investigation of SME for the transformation and upgrading in Guangdong province shows, at present, a large number of the transformation and upgrading enterprises in the Pearl River Delta in China is still in the speed and profit model, and stronger dependence on

the government's macroeconomic control policy, and the biggest constraint facing the transformation and upgrading is institutional entrepreneurship, entrepreneurship couldn't adapt to the requirements for enterprise development under the new normal, the lack of entrepreneurship is an important reason for the incline in the operating performance of manufacturing enterprises in Guangdong province under the new standard, and further restricted ability of enterprise to innovate independently, and the power of industrial upgrading is insufficient.

All in all, political connection and strategic behavior respectively is the main internal and external characteristics of innovative entrepreneurship and have important indirectly influence to the industry upgrade in Pearl River Model in China, few scholars have studied the indirect impact of industrial upgrading, both inside and outside.

On the basis of statistical investigation, article will combine the current research results, and breaks through the problem that factors such as strategic behavior are difficult to quantify and limited research angle, and subdivides the content of the industrial upgrading, and analysis quantitatively and in-depth the direct impact of political connection and strategic behavior on industrial upgrading of SME in the Pearl River Delta in China.

## 3. Phenomenon and Relationship Hypothesis

### 3.1. Political Connection and Industry Upgrade

At present, There are three main ways to measure political connections: the political background of executives [8] (Faccio, 2006), the political donation (Claessens, 2008) [9] and the relationship with politicians (Siegel, 2007) [10]. In China, the political background of senior executives mainly includes serving some duties as deputies to the National People's Congress and members of the CPPCC etc. These duties political connection can alleviate the financing constraints (Jian Ping Deng. etc. 2011) [11], to increase the value of the company (Xing Qiang Du, 2011, Jian Li, 2012) [12, 13], get more legal protection (Lian Xing Xu, etc., 2013) [14], affect production safety(ZhenHua Gu (2017) [15], improve enterprise performance (li li, 2013) [16] and enhance innovative activities (such as Chun Tao Li, 2010) [17], also have the negative such as reducing enterprise performance (Jian Ping Deng, 2009), distorting credit resources configuration efficiency (Min Zhang, etc., 2010) [18]. Therefore the influence of political connection on enterprise performance and innovation activities is uncertain. Further research by scholars (Xiao Gang He et al., 2013 [19], Li Hui Tian, 2013 [20]) shows that political connections can curb the destructive production of state-owned enterprises, and promote the innovative production activities, improve difficultly the operating performance of enterprises, On the other hand, political connections can lead to destructive activities of private enterprises, improve the enterprise management benefit and curb their innovative production

activities, the impact of innovative production activities on business efficiency of the enterprise is no significant different contribution in various enterprises, for SME with transformation and upgrading, industrial upgrading is an important component of enterprise performance or innovative activities. Therefore, political connection of executives can promote the industrial upgrading activities of SME.

In many studies, Few scholars have single studied the relationship between political connection and industry upgrade that is an important business activity of SME, on the one hand, the effect of industrial upgrading of enterprises is more integrated into the enterprise performance and innovation activities, which makes it difficult to use the relevant indicators to quality the assessment; on the other hand, a series of enterprise databases provide relevant data such as political connection and the corporate performance of listed company, and related items of SME are rarely involved, the lack of data restricts scholars to single in-depth study on it. The article hopes to break through the constraints of difficult quantification of indicators and insufficient data, and use the method of statistical investigation to micro-study the relationship between political connection of senior executives and industrial upgrading in SME.

Referring to the study of Fisman (2013) [21], Ming Jia (2010) [22], and Ming Gui Yu (2008) [23] and drawing on the measure of political connection of Jian Guo Yuan (2015) [24], the survey will regard executive as Deputy to People's Congress, member of CPPCC, industry association director and also executive of another company as measure basis of political connection, based on the current trade union's stability to employees, the trade union membership of executive is also studied as a auxiliary factors of political connection.

### 3.2. Strategic Behavior and Industrial Upgrading

Analysis from the perspective of enterprise management, strategic behavior is mainly involved in technology transfer, inter-enterprise cooperation, scale economy and scope economy etc. What Bohman and Lindfors (1998) [25] call learning process and behavior of "strategic actor" (namely, the enterprise's senior management team) is necessary for enterprise strategic change during the depression. At present, knowledge economy leads to more and more complex external environment of enterprises, enterprises, for their own survival and development, need to take corresponding strategic actions and adapt to the new "hypercompetitive" environment (Gunther, 1994) [26], cause the internal structure of the enterprise organization (Wilson, 1992), for example, through adopting difference strategic behavior, enterprises can change their own market orientation, enhance market competitiveness, enter new markets, create new business models, increase their own overall value and make more profits, etc. strategic behavior selection is a complex process, a successful strategic behavior choice can make an enterprise into a "high-performance enterprise" with many opportunities. Scholars (Gunther, 1994, Ferlie, 1996 [27], Ming Luo, 2012 [28]) study that strategic behavior is the

driving force of enterprise transformation, and plays an important role in strategic selection and implementation, the key to select strategic behavior is to effectively implement environmental assessment, leadership change, strategy implement change and management change related to strategic behavior, etc, these choices basically reflect the intentions and wishes of executives and knowledge of world, therefore, the strategic behaviors of executives have an important impact on industrial upgrading of SME.

Based on the hard to measure the intention and cognition of the executives, scholars mostly study strategic behaviors from the macro angle of management view and analyze the importance of the strategic behavior of executives to the performance of enterprises (Cun Fang Li, 2015) [29] and competitiveness promotion (Lin Hai Lan, 2014 [30], Guo Qun Huang, 2016 [31]), etc. The article hopes to break through the limitation of current research angle, and to study the micro-quantization influence of strategic behavior of executives on the basis of the statistical investigation, combining the political background and inherent characteristics of executives.

Min Luo divides research perspective of strategic behavior into four parts: transaction cost, knowledge base, ability and cognition perspective, cognition perspective focuses on the relationship between strategic behavior and strategic actors (namely, the senior executives' team). Cognition perspective thinks that recognition opportunity of executives is a subjective variable, depends on the individual unique cognitive structure of executive, and is hard to be interpreted quantitatively [32]. The article, from cognitive perspective of executives, analyzes the impact of executive strategic behavior on industrial upgrading from four items: judgment on development of enterprise, external environments, development strategic of enterprise and corresponding decision of industry migration.

## 4. Research Design and Model Selection

Based on the above studies, the article researches the orientation influence of political connection and strategic behavior of executives from the three main aspects of process upgrading, supply chain upgrading and product upgrading.

In the course of specific implementation, process upgrading, supply chain upgrading and product upgrading are taken as the explained variables of industry upgrading. The problem of setting is the form of "whether the enterprise has implemented the process upgrading?", the index value of the interpreted variable is selected variable of 0-1, and can't be used to analyze risk ratio and probability by general quantitative model. Logistic econometric model extended by binomial mean distribution can build generalized regression model that explained variable is classified variable (Ji Chuan Wang, 2001). The article, from above three aspects, builds three industrial upgrading Logistic regression equations; the basic form is followed as formula (1).

$$\ln\left(\frac{p(y=1)}{1-p(y=1)}\right) = \sum_{k=1}^K \beta_k x_k \quad (1)$$

In formula(1),  $p(y=1)$  represents probability of an aspect of the transformation and upgrading of enterprises(Process upgrading (Process), supply chain upgrading (Schain) or Product upgrading (Product)),  $x_k$  represents explanatory variables such as political connection (Policy), union member (Lunion), strategic behavior (Strategy) factor and control variables, reflecting implicit characteristics of executive, such as gender(Gender), registered permanent residence (Register), education degree (Education), study experience abroad (Feducation), working years of industry (In work year), working years of the enterprise (Enworkyear), years as executive (Managyear), promotion channels (Promote), length of the contract (Conyear), whether being the creator (founders), whether being members of the board of directors (Director) and whether being the business owners (Entrepreneur),  $\beta_k$  represents influence coefficient. Based on the interpretability of research, intercept items aren't set. In order to analyze accurately the relationship of micro ratio effect between Political connection and strategic behavior, the article sets the explanatory variables and control variables as classified variables or rank variables, their reference group are annotated in the later specific model. Considering the mutual influence among explanatory variables in the three regression models manifesting industrial upgrading, the article uses Seemingly Unrelated Regression (SUR) disturbance correlation to test the comprehensive effect of executive on industrial upgrading.

## 5. Empirical Research

### 5.1. Data Sources and Characteristics

Shishan Science and Technology Industrial Park, located in the center of Nanhai development zone in China, is biggest industry park in Foshan, and plays the important role in the construction of Guangdong's third largest city, its development situation represents, to some extent, the development situation of SME in Pearl River Delta in China. The article chooses the survey data of SME of Science and Technology Industrial Park investigated by postdoctoral innovation practice base of high-tech industrial development zone of South China Normal University and Shishan people's government in 2016. The survey is divided into three parts: enterprises, executives and employees, industrial upgrading index data is from enterprise survey questionnaire, executive data is from executive questionnaire, a total of 205 effective sample of enterprise and executive, covering 5 parks including Red Sand subzone, Small Pond subzone, south subzone, north subzone and Songxia subzone, are obtained combining with two parts. Data characteristics (table 1) display, under the various political connection and strategic behaviors, the equipment and process upgrading, supply chain upgrading and product upgrading percentage separately is 77%, 63% and 66%, the SME of industrial upgrading in the investigation account for a larger proportion, the characteristics of samples are obvious and representative.

Table 1. Characteristics of survey data.

| Upgrading class index  | Equipment and process upgrading |          |       | Supply chain upgrading |          |       | Product upgrading |          |       |
|------------------------|---------------------------------|----------|-------|------------------------|----------|-------|-------------------|----------|-------|
| Politic connection     | No                              | Yes      | Total | No                     | Yes      | Total | No                | Yes      | Total |
| No                     | 2                               | 40       | 42    | 8                      | 34       | 42    | 12                | 30       | 42    |
| Yes                    | 45                              | 118      | 163   | 67                     | 96       | 163   | 57                | 106      | 163   |
| Total                  | 47                              | 158(77%) | 205   | 75                     | 130(63%) | 205   | 69                | 136(66%) | 205   |
| Enterprise development | No                              | Yes      | Total | No                     | Yes      | Total | No                | Yes      | Total |
| Initial                | 5                               | 14       | 19    | 7                      | 12       | 19    | 6                 | 13       | 19    |
| Growth                 | 25                              | 92       | 117   | 34                     | 83       | 117   | 42                | 75       | 117   |
| Maturity               | 16                              | 51       | 67    | 27                     | 40       | 67    | 26                | 41       | 67    |
| Recession              | 1                               | 1        | 2     | 1                      | 1        | 2     | 1                 | 1        | 2     |
| Total                  | 47                              | 158      | 205   | 69                     | 136      | 205   | 75                | 130      | 205   |
| Environment judgement  | No                              | Yes      | Total | No                     | Yes      | Total | No                | Yes      | Total |
| Worse                  | 18                              | 63       | 81    | 20                     | 61       | 81    | 32                | 49       | 81    |
| Little change          | 14                              | 37       | 51    | 22                     | 29       | 51    | 22                | 29       | 51    |
| Better                 | 15                              | 58       | 73    | 27                     | 46       | 73    | 21                | 52       | 73    |
| Total                  | 47                              | 158      | 205   | 69                     | 136      | 205   | 75                | 130      | 205   |
| Development plan       | No                              | Yes      | Total | No                     | Yes      | Total | No                | Yes      | Total |
| Conservative           | 9                               | 33       | 42    | 15                     | 27       | 42    | 15                | 27       | 42    |
| Normal                 | 33                              | 113      | 146   | 47                     | 99       | 146   | 52                | 94       | 146   |
| Radical                | 5                               | 12       | 17    | 7                      | 10       | 17    | 8                 | 9        | 17    |
| Total                  | 47                              | 158      | 205   | 69                     | 136      | 205   | 75                | 130      | 205   |
| Industrial migration   | No                              | Yes      | Total | No                     | Yes      | Total | No                | Yes      | Total |
| Doing                  | 3                               | 14       | 17    | 4                      | 13       | 17    | 4                 | 13       | 17    |
| Preparing              | 2                               | 10       | 12    | 3                      | 9        | 12    | 1                 | 11       | 12    |
| No                     | 36                              | 123      | 159   | 56                     | 103      | 159   | 60                | 99       | 159   |
| Uncertain              | 6                               | 11       | 17    | 6                      | 11       | 17    | 10                | 7        | 17    |
| Total                  | 47                              | 158      | 205   | 69                     | 136      | 205   | 75                | 130      | 205   |

## 5.2. Impact Analysis of Industrial Upgrading

(1) Comprehensive impact comparative analysis of process, supply chain and product upgrading

Politic connections, strategic behaviors and control factors, under the condition of the same control variables, have a significant impact on industrial upgrading at significant level of 5% according to Seemingly Unrelated Progress Test, and have a significant impact on the improvement of equipment and process and upgrading of industrial supply chain at significant level of 0.1%, and have a significant impact on high-tech industrial upgrading such as product research,

value-added promotion at significant level of 5%, which show SME currently pay more attention to industrial upgrading with low technological level, and have a lesser degree of emphasis on industrial upgrading with higher technological level such as product research and value-added promotion, in other words, the industrial upgrading of SME in the Pearl River Delta in China is in the key stage of high-tech integration, it takes a long process to achieve a real product upgrading, namely the industrial upgrading of SME in the Pearl River Delta in China is in a difficult period of transformation(Hong Cheng, etc., 2016)

**Table 2.** Comprehensive influence significant analysis results of Seemingly Unrelated Progress Test.

| Industrial upgrading content | Model    | R-sq  | X2     | P-value |
|------------------------------|----------|-------|--------|---------|
| Process                      | Promodel | 0.213 | 55.390 | 0.005   |
| Schain                       | Chmodel  | 0.251 | 68.830 | 0.000   |
| Product                      | Promodel | 0.187 | 47.250 | 0.031   |

p<0.1, \*, p<0.05, \*\* p<0.01\*\*\*.

(2) Politic connection, strategic behavior, production equipment and process upgrading

Taking politic connection and trade union member as variable and carrying on the politic connection analysis (Model 1), it shows that there is a strong correlation between political background (Policy) and trade union member (Lunion), namely, the executive with politic connection is usually a trade union member, the endogeneity has an unnatural effect on production equipment and process upgrading, namely, politic connection is not conducive to upgrading corporate equipment and processes, further analysis will remove the model 1. The paper further analyzes the effect of senior executive on influence of enterprise development phase (Develop), judgment of survival environment(Enviro), judgment of development strategy(Dstrategy) and judgment of industrial migration(Transfer) on upgrading of production equipment and process(Model 2), the result shows the senior executive

significantly affect on the influence of judgment of enterprise development phase on production equipment and process upgrading, the equipment and process upgrading desire of enterprise in the growing period is stronger, and is about 3 times as many start-ups. Further analyzing combination of politic connection and strategy behavior of senior executive (Model 3), it shows politic connection and strategic behavior of senior executive control each other, under the background of enterprise in growth stage that decides not to migrate, the senior executives with high politic connection more conducive to promotion of the upgrading of enterprise production equipment and process, upgrading ratio is about the (1/0.1388) seven times of non-politic connection executive, such as formulate (2). Equipment and processes upgrading rate of enterprise with the trade union members executive is about 3 times those of non-members, the influence of senior executives on the judgment of the stage of enterprise development has been significantly enhanced.

$$\frac{p(y=Process)}{1-p(y=Process)} = e^{-1.974} \times Policy_2 + \sum \beta x_k = 0.1388Policy_2 + \sum \beta \quad (2)$$

After adding to the implicit qualities of senior executive, the effect of political connection indexes and strategic behavior indexes remain stable (Model 4), which shows political connection of senior executive has a significant effect on both equipment updating and production process upgrading of enterprise, the effect of senior executive on the judgment of enterprise development stage is not significant for influenced by controlled variable the essential feature of senior executive. Under the condition that senior executive decides enterprise don't be migrated, working life of senior executive in the industry (In work year) or the enterprise

(Enworkyear) will significant affect on both equipment updating and production process upgrading of enterprise, more than 10 years working experience of senior executive in industry will promote equipment updating and process upgrading of enterprise, contrary on industry working experience, the shorter working experiment of senior executive in enterprise will be conducive to equipment updating and process upgrading of enterprise, namely, senior executive with long-term industry experiment reserve will find more opportunities of equipment updating and process upgrading of enterprise in a short time.

**Table 3.** Model analysis results of political connection, strategic behavior affecting on production equipment and process upgrading.

| Variable   | Model 1         |           | Model 2          |           | Model 3            |           | Model 4            |           |
|------------|-----------------|-----------|------------------|-----------|--------------------|-----------|--------------------|-----------|
|            | $\beta$         | e $\beta$ | $\beta$          | e $\beta$ | $\beta$            | e $\beta$ | $\beta$            | e $\beta$ |
| 2. Policy  | 1.026***(-0.22) | 2.789     |                  |           | -1.974*** (-0.686) | 0.139     | -2.901*** (-1.043) | 0.055     |
| 2. Lunion  | -0.138 (-0.291) | 0.872     |                  |           | -1.098*** (-0.392) | 0.333     | -1.361*** (-0.483) | 0.256     |
| 2. Develop |                 |           | 1.259** (-0.616) | 3.522     | 1.792*** (-0.677)  | 5.999     | 0.956 (-0.874)     | 2.602     |

| Variable      | Model 1 |           | Model 2         |           | Model 3          |           | Model 4          |           |
|---------------|---------|-----------|-----------------|-----------|------------------|-----------|------------------|-----------|
|               | $\beta$ | e $\beta$ | $\beta$         | e $\beta$ | $\beta$          | e $\beta$ | $\beta$          | e $\beta$ |
| 3. Develop    |         |           | 1.168* (-0.639) | 3.216     | 1.566** (-0.701) | 4.788     | 0.542            | 1.719     |
| 2. Transfer   |         |           | 0.354 (-1.001)  | 1.425     | 1.328 (-1.091)   | 3.774     | 1.848 (-1.32)    | 6.344     |
| 3. Transfer   |         |           | 0.0752 (-0.62)  | 1.078     | 1.394* (-0.74)   | 4.031     | 1.738* (-0.941)  | 5.683     |
| 2. Inworkyear |         |           |                 |           |                  |           | 1.154 (-0.812)   | 3.169     |
| 3. Inworkyear |         |           |                 |           |                  |           | 1.585* (-0.863)  | 4.880     |
| 2. Enworkyear |         |           |                 |           |                  |           | -1.142* (-0.658) | 0.319     |

$p < 0.1$ , \*,  $p < 0.05$ , \*\*  $p < 0.01$ \*\*\*; 1, 2, 3, 4 separately represents the variable option for setting. The reference groups of each variable are: being political association, being membership of the trade union, during initial development period of the enterprise, preparing for industrial migration, industry working years of 1-4 years, enterprise working years of 1-4 years; only relevant indicators with significant impact being listed.

### (3) Analysis of politic connection, strategic behavior and supply chain upgrading

The three models have strong consistency on the supply chain upgrade. Political connection, judgment of enterprise development and the strategic behaviors of external environment judgment have a significant influence on the supply chain upgrade. The control variables don't affect the significant influence of the political connection and strategic behavior of executives on industrial upgrading. The difference from equipment and process updating and product upgrading is that the significant effect of executive's implicit comprehensive characteristics reflects that the supply chain upgrading needs the human capital and social capital of all aspects of the enterprise to be implemented effectively, through researching 189 manufacturing enterprises in the pearl river delta region of Guangdong province, the studies by scholars (Fei Ye, Jia Wu etc. 2011) [33] showed that information flow is the key to improve supply chain, private relationship of senior executives is conducive to information sharing in the upstream and downstream of supply chains, which can reduce the principal-agent risk resulting from asymmetric information, and improve enterprise operational performance. Further research in this paper shows that the expansion of this private relationship mainly relies on the political connection of senior executives, education and working years. Meanwhile, the research shows that the proportion of senior executives with political connection promoting the supply chain upgrading is about 5 (1/0.204)

times (as shown in equation 3) as often as they do not. Education and length of service have a significant impact on supply chain upgrading, but not to maintain a continuous positive correlation, too much education or too long working life will reduce the ability of executives to resist risk and inhibit executives' strategic behavior for supply chain upgrading, and inhibit the upgrade of supply chain strategic behavior of executives, undergraduate education and overseas education experience have significant positive influence on supply chain upgrading, the ratio is respectively 1.2 and 8.

In terms of strategic behavior, given executives enough time for strategic behavior, namely a longer contract deadline, will help the supervisor to open up the market actively, and constantly improve every link of the supply chain, and promote supply chain upgrading. In the strategic behavior of executives, in the start-up stage, the supply chain upgrading will not be noticed, executives tend to focus on supply chain development and upgrading at the stage of growth or maturity, the upgrade ratio is respectively about 5 times as high as in the start-up phase. At the same time, executives usually adjust the supply chain link according to the change of external environment, and less to improve the supply chain under the adverse external conditions, there is a greater opportunity to upgrade the supply chain under the improving external environment, studies show that the rate of supply chain upgrade under the good external environment is about twice that of the bad environment.

$$\frac{p(y=Schain)}{1-p(y=Schain)} = e^{-1.592} \times Policy_2 + \sum \beta x_k = 0.204 Policy_2 + \sum \beta x_k \quad (3)$$

Table 4. Model analysis results of political connection, strategic behavior affecting on supply chain upgrading.

| Variable      | Model 2         |           | Model 3           |           | Model 4            |           |
|---------------|-----------------|-----------|-------------------|-----------|--------------------|-----------|
|               | $\beta$         | e $\beta$ | $\beta$           | e $\beta$ | $\beta$            | e $\beta$ |
| 2. Policy     |                 |           | -0.968** (-0.458) | 0.380     | -1.592** (-0.632)  | 0.204     |
| 2. Lunion     |                 |           | -0.0722 (-0.323)  | 0.930     | -0.404 (-0.398)    | 0.668     |
| 2. Develop    | 0.821 (-0.588)  | 2.273     | 1.075* (-0.603)   | 2.930     | 1.688** (-0.847)   | 5.408     |
| 3. Develop    | 0.737 (-0.609)  | 2.089     | 0.981 (-0.626)    | 2.666     | 1.697* (-0.93)     | 5.460     |
| 4. Develop    | 0.828 (-1.621)  | 2.290     | 0.71 (-1.713)     | 2.034     | -0.342 (-1.999)    | 0.710     |
| 2. Enviro     | -0.182 (-0.388) | 0.834     | -0.177 (-0.393)   | 0.838     | 0.0791 (-0.493)    | 1.082     |
| 3. Enviro     | 0.629* (-0.37)  | 1.876     | 0.688* (-0.373)   | 1.989     | 0.775* (-0.452)    | 2.170     |
| 2. Transfer   | 1.411 (-1.204)  | 4.102     | 1.821 (-1.229)    | 6.179     | 3.040** (-1.447)   | 20.896    |
| 3. Transfer   | -0.453 (-0.589) | 0.636     | 0.0336 (-0.637)   | 1.034     | 0.838 (-0.833)     | 2.312     |
| 2. Gender     |                 |           |                   |           | 0.952** (-0.434)   | 2.591     |
| 2. Register   |                 |           |                   |           | 0.812* (-0.435)    | 2.253     |
| 2. Education  |                 |           |                   |           | 0.185 (-0.466)     | 1.203     |
| 3. Education  |                 |           |                   |           | -2.354** (-0.923)  | 0.095     |
| 2. Feducation |                 |           |                   |           | -2.170*** (-0.768) | 0.114     |

| Variable      | Model 2 |           | Model 3 |           | Model 4            |           |
|---------------|---------|-----------|---------|-----------|--------------------|-----------|
|               | $\beta$ | e $\beta$ | $\beta$ | e $\beta$ | $\beta$            | e $\beta$ |
| 2. Enworkyear |         |           |         |           | -1.961*** (-0.605) | 0.141     |
| 3. Enworkyear |         |           |         |           | -0.0177 (-0.597)   | 0.982     |
| 2. Managyear  |         |           |         |           | 0.8900* (-0.467)   | 2.435     |
| 3. Managyear  |         |           |         |           | -0.804 (-0.63)     | 0.448     |
| 2. Conyear    |         |           |         |           | 0.897 (-0.56)      | 2.453     |
| 3. Conyear    |         |           |         |           | 1.2090* (-0.709)   | 3.350     |
| 4. Conyear    |         |           |         |           | 1.079** (-0.535)   | 2.941     |

p<0.1, \*, p<0.05, \*\* p<0.01\*\*\*; 1, 2, 3, 4 separately represents the variable option for setting. The reference groups of each variable are: being political association, being membership of the trade union, during initial development period of the enterprise, the bad external environment, preparing for industrial migration, male, town residence, below high school education, having abroad study experience, enterprise working years of 1-4 years, years of senior executive 1-4 years, contract of 1-2 years; only relevant indicators with significant impact being listed.

#### (4) Analysis of political connection, strategic behavior and product upgrading

Product upgrading is to increase the technical content, functions and characteristics of products on the basis of original products, so as to expand competitive advantages, improve international competitiveness, increase profits, speed up capital turnover and establish product brands. Product upgrading is the process of independent innovation of enterprise. Scholars put forward different product upgrading paths from the perspective of independent innovation. YunShi Mao (2006) [34] put forward product upgrading paths from the characteristics of China's industrial structure, including imitation innovation, transnational substitution, vague behavior margin, change of industrial standards and adaptation to international industrial transfer. Su JingQin (2011) [35] used practical case to extracts five products upgrading paths based on the product line extension, customer demand, international projects, government policy and technical cooperation. Gao Xiao(2007) [36] pointed out that the effective implementation of strategic leadership is one of the three key way(implement effective strategic leadership, shaping organizational structure and enterprise culture that are conducive to innovation, organic combination of production, education and research with enterprise technology as the core. The strategic behavior of executive has certain influence on the independent innovation of enterprise. Scholars (Qing Quan Tang, 2010 [37], Hua Kang, 2011 [38], YanXiu Niu, 2016 [39]) demonstrated that equity compensation in listed companies can motivate executives willing to take risks, and make the more radical development strategy, and increase investment in research and development, and promote enterprise independent innovation, at the same time, research by Lei Liu (2016) [40] showed that the political connection of the major shareholders and general managers in the listed companies is lack of promoting function to original technological innovation, and has significantly promoting function to the renovations ability, political connection of chairman has significant promoting effect on original technology,

integration technology and renovation technology. From the way of recursion, the political connection and strategic behavior of the senior executives of listed companies promote the product upgrading of enterprises through influence of the independent innovation of enterprises.

There are certain differences between SME and listed companies in the factors affecting product upgrading. The result of model 3 and model 4 shows that political connection of SME doesn't affect directly significant on production upgrading, as study by scholars, ShuangYing Chen (2010), found that political connection of private entrepreneurs has significant negative effects on orientation and intensity of R&D investment, even exacerbate predatory behavior of the controlling shareholder, the predatory effect will be more obvious under the protection level of the rights and interests of investors being lower (HongBo Pan, MingGui Yu, 2008) [23]. Research shows that the strategy behavior of executive has a significant effect on the investment decision behavior of enterprise production, the strategy behavior of executive is the more aggressive, the probability of production upgrading is greater, research shows that the probability of product upgrading for the aggressive development strategy behavior is 10 times that of the conservative strategy behavior, the trade union membership of senior executives has promoting effect on product upgrading, the probability of product upgrading is 3 times (1/0.364=2.74)that of non-member(as equation 4). product upgrading can bring substantial advantage of both labor and capital of enterprise, and is common consistent goal by pursued by executives and employees. The union status of senior executives can help them understand the technical frontier of product upgrading, the needs of employees, alleviate the risk pressure of product upgrading, and motivate them to make more aggressive strategic behaviors. Some implicit characteristics of senior executives do not have significant influence on product upgrading, which indicates that the product upgrading process is a high-risk process and requires the senior executives to have sufficient risk tolerance, which cannot be replaced by the implicit characteristics and political connections of the senior executives themselves.

$$\frac{p(y=Pstrategy)}{1-p(y=Pstrategy)} = e^{2.358} \times Dstrategy_3 + \sum \beta x_k = 10Dstrategy_3 + \sum \beta x_k \quad (4)$$

*Table 5. Model analysis results of political connection, strategic behavior affecting on product upgrading.*

| Variable     | Model 2           |           | Model 3           |           | Model 4            |           |
|--------------|-------------------|-----------|-------------------|-----------|--------------------|-----------|
|              | $\beta$           | e $\beta$ | $\beta$           | e $\beta$ | $\beta$            | e $\beta$ |
| 2. Policy    |                   |           | -0.703 (-0.516)   | 0.495     | -0.958 (-0.631)    | 0.384     |
| 2. Lunion    |                   |           | -1.009** (-0.394) | 0.364     | -1.385*** (-0.461) | 0.250     |
| 2. Dstrategy | 1.354*** (-0.425) | 3.873     | 1.735*** (-0.465) | 5.670     | 2.058*** (-0.524)  | 7.834     |
| 3. Dstrategy | 1.626** (-0.788)  | 5.084     | 2.352*** (-0.872) | 10.512    | 2.358** (-0.934)   | 10.567    |

$p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ \*\*\*; 1, 2, 3, 4 separately represents the variable option for setting. The reference groups of each variable are: being political association, being membership of the trade union, conservative strategic behavior; only relevant indicators with significant impact being listed.

## 6. Conclusions

The paper makes microscopic investigation and study to characteristics of senior executive based on MSE of industry upgrading in the Pearl River Delta. Comprehensive studies have shown that 70% of survey companies is in industrial upgrading or will be in industrial upgrading. Results show that MSE in the Pearl River Delta are in the key process of industrial upgrading, under the environment of “High-end Talent Bottleneck”, the industrial upgrading of “Weigh Talents, Light Assets” is struggling, a large number of companies have status of “low skills and high employment”. As the most important part in the shortage of high-end talents, senior executives are the decision-making force of the industrial upgrading of enterprises, their political connections, strategic behaviors and internal characteristics have a significant impact on the industrial upgrading of MSE in the Pearl River Delta, reasonable structural talent matching can be carried out according to their influence scope and degree, so as to improve the use efficiency of high-end talents. The following is the conclusion of the research on the ability matching of senior executives in various parts of industrial upgrading.

First, the production equipment and process upgrading is the initial stages of the industrial upgrading, and is significantly affected by senior political connection, trade union membership and working years. The significant influence of executive with the double identity, political connection and trade union membership, shows that production equipment and process upgrading process is beneficial process for both enterprise and employee. On the one hand, production equipment and process upgrading can improve employee work environment, reduce staff labor intensity, and improve work efficiency; On the other hand, the upgrading of production equipment and processes can improve production efficiency and product quality, and further improve the economic efficiency of enterprises. In the ability of the executive, during the phase of production equipment and process upgrading, the enterprise executives with longer industry working years and shorter enterprise working years are more likely to upgrade production equipment and processes, on the one hand, senior executives with longer industry work experience have a deeper understanding for development frontier of the industry, and can accurately find the gap between the present enterprise situation and that of whole industry, on the other hand, under the having certain management decision-making power,

executives have stronger short-term performance promotion desire, the probability of upgrading production equipment and process is accelerated, the success probability of production equipment and process upgrading is high under the clear upgrading direction and financial guaranteed.

Second, supply chain upgrade is the intermediate links of industrial upgrading, as the current market improves the degree of refinement, the value creation links increases, the enterprise supply chain has become more complex, the flow of information becomes the key to connect all the links. Information sharing needs broad connections of executives, the expansion connection factors such as political connection, education background, work experience, and household registration have significant effects on the supply chain upgrading, implementation time to upgrade is in the external environment of industry development for the better, enterprise development for more mature.

Thirdly, product upgrading is the main goal of industrial upgrading of enterprises, is the main way for enterprises to establish their own brand, improve competitiveness and survive for a long time, is the most risky process of in the process of industrial upgrading and is the second element of enterprise development (GuanQun Wang, 2011). According to the research, the aggressive strategic behavior and the trade union membership of the senior executives have a significant impact on the product upgrading; product upgrading requires both labor and capital to work together. On the one hand, product upgrading needs to be driven by aggressive and risk-taking executives, and there is sufficient cohesion to lead employees to achieve this goal, on the other hand, employees can feel the benefits and advantages brought by product upgrading from the charisma of senior executives, and have the determination to take risks with them.

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