

## Mental Model of Top Management Team: Dimensional Structure, Development Mechanism, Environment Construction

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**Abstract.** The purpose of this study is to explore the dimension, structure and development mechanism of TMT mental model, and the way TMT construct environment. Basing on the basic premise of “emotional man”, this study puts forward three research propositions to set up a research framework, and then we conduct a longitudinal case study of Lenovo group with the aid of causal map method, and draw the conclusion: First, value pursuit, business principles, business orientation and business model are the four dimensions of TMT mental model, and the value pursuit direct the business principles, the business principles direct the business orientation, the business orientation direct the business model. Second, the self-evolution of value pursuit is internal driving factors of the TMT mental model self-evolution. Third, as the self-evolution of TMT mental model, the way TMT construct environment will develop from choosing the environment actively, to breaking the environment actively, and finally, to creating the environment actively.

### Introduction

Since Hambrick and Mason (1984) put forward upper echelons theory, a large amount of research has verified that the mental model of top management team is the key variables influencing enterprise performance after loosening rational man supposition. However, as the research focusing on the inner structure and activity mechanism of top management team is in short, the mental model of top management team still remains as “black box” to be explored (Lawrence, 1997). In fact, emotion and cognition are two kinds of most basic mental activities (Loveday, 1901), and in the interactions between emotions and cognition, emotion occupies more basic position. Emotion is the direct feeling and experience of conscious activities (Loveday, 1901), which is the source of momentum and initiative; the movement and development of emotions have the tendency of not being changed by the external environment (Scheler, 1993); the tendency is displayed in: the basic needs based on emotional desires have the “instinct oid” properties of being restrained by the environment but not being changed by the environment. When certain lower needs are satisfied, the corresponding higher level needs will take the predominant position (Maslow, 1954). As emotion has this property, Sartre, existentialism scholar, regards human beings as “emotional person” and believes that emotion is the essence of human beings’ existence. Thus, emotion should be the core element of managers’ mental model.

### Research Design

**Research techniques and objects:** The issue studied in this paper is on how the mental model of top management team is formed and evolved, and how to interact with the environment. Therefore, the core of the research is to disclose the existing internal process of “how does it happen”; for the research of this kind of issues, case study is proper (Yin, 1994). The three research propositions put forward on the basis of previous research in this paper is the initial theoretical framework.

**Data source:** As the time span of this case study is large, the collected data from interviews may lead to such issue as recall bias; therefore, this paper takes historical text to make research. This paper collects information from multiple channels and makes use of principles of methodological



enterprise annual, research data of the industry, media data, and so on; all kinds of data sources can make the best of the both worlds, supplement each other and enforce the corroboration among proofs. Second is to build proof chain. The cognitive structure and its evolution track of the top management team in Lenovo group can be defined according to time series with using cause-effect graphs.

② Reliability. This paper ensures the reliability of research through following ways. First is to build record of research data bank. This paper builds research data bank after data triangulation, for the following scholars to make inspection and re-analysis. Second is to develop case analysis according to formal cause-effect graph approach and procedure. After making cause-effect graph analysis coding and concept classification on multiple data, this paper makes detailed explanation on coding and operating steps, to make following researchers to make inspection and re-analysis.

## Case Study

**Development history of Lenovo Group:**Lenovo Group started in 1984, founded with 200 thousand yuan by the computer institute of Chinese Academy of Sciences. After constant development of 28 years, Lenovo Group grows to be the second computer manufacturer in the world, occupying as much as 12.9 % of the annual market and breaking the record. In 2012, Lenovo Group was in world top 500 companies of *Fortune*, ranking the 370<sup>th</sup> with great efforts with the revenue of 29.6 billion US dollars in 2011, and surpassing 80 places. In the classifying the data of Lenovo Group, this paper firstly recognizes the key events influencing enterprises strategically, builds data bank of key events, and divides the development history of Lenovo Group into 5 stages, which are start-up stage, export-oriented industrialization, fast development, diversification stage and internationalization stage. Then, this paper orders the key events in corresponding stages according to their influence on enterprises, recognizes the representative key events (as is shown in Table 2) further, takes them as the main research object and extracts and analyzes the mental model in various development stages of the top management team.

Table 2 Development process of representative key events of Lenovo Group

Time	Development stages	Representative key events	Main members in top management team
1984-1988	Start-up	Agency for computers and Hanzi board sales	Liu Chuanzhi, Zhang Zuxiang
1989-1993	Export-oriented industrialization	Implement “overseas trilogy”	Liu Chuanzhi, Zhang Zuxian, and Li Qin
1994-1999	Fast development	Develop computer business unit	Liu Chuanzhi, Li, Yang Yuanqing
2000-2003	Diversification stage	Multiple attempts	Yang Yuanqing, Liu Chuanzhi
2004-2011	Internationalization stage	Merge and integrate with IBM computer department	Yang Yuanqing, Liu Chuanzhi, and Amelio

Data source: this research organizes

**Constitutional dimensions and their interrelation of mental model of Lenovo Group’s top management team:**According to the data of collected case, this paper constructs the cause-effect graph of the structural dimension of dominant mental model in every development phase of Lenovo top management team.

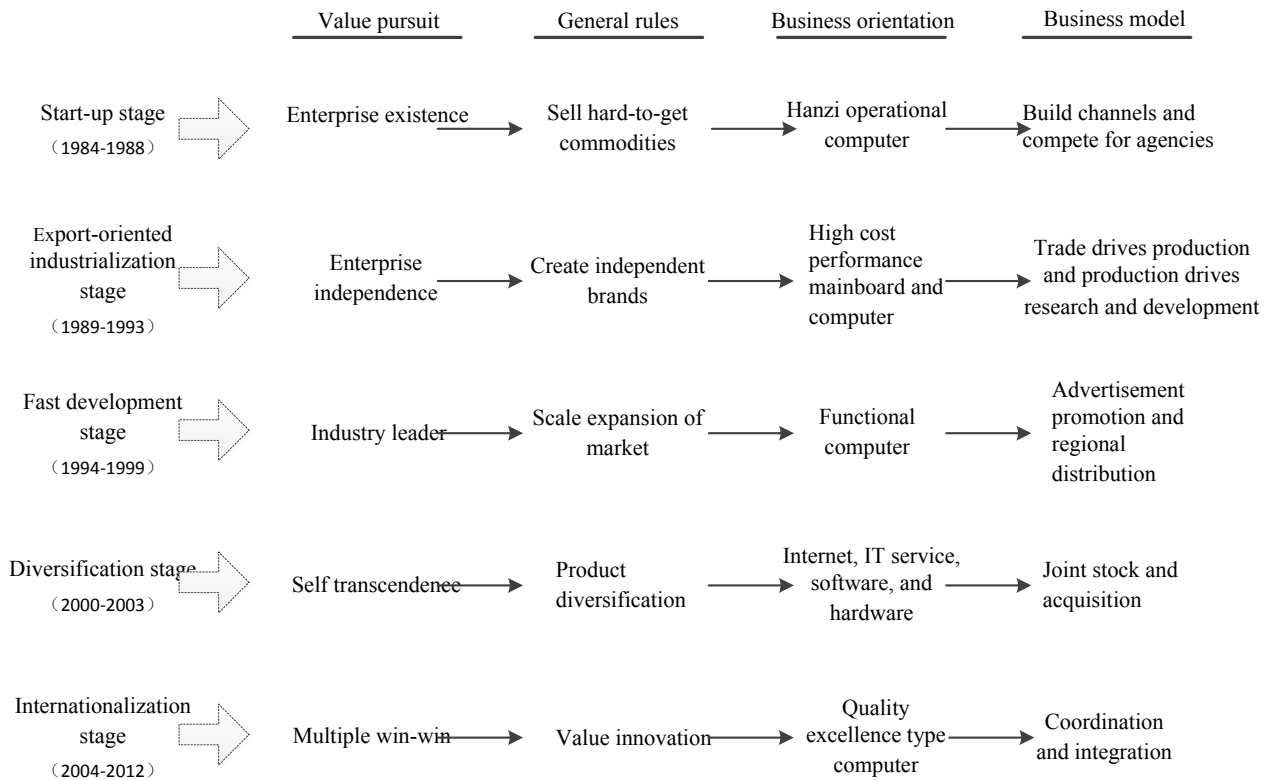


Figure 2 Cause-effect graph of the structural dimension of dominant mental model in every development phase of Lenovo top management team

Data source: this research organizes

### Self evolution driving factors of mental model of Lenovo Group's top management team

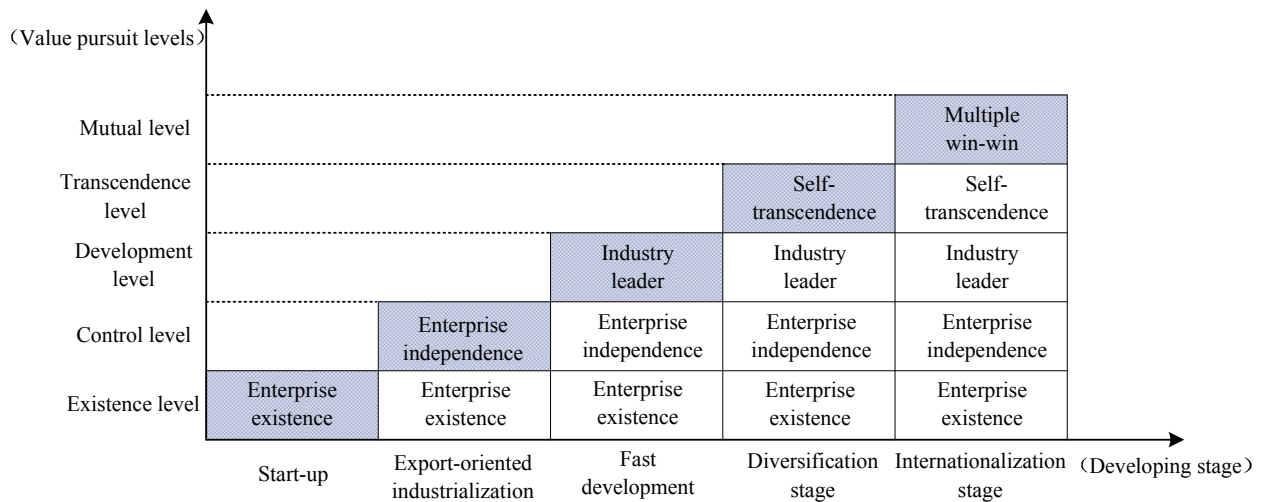


Figure 3 Dynamic evolution graph of the value pursuit of Lenovo top management team

Data source: this research organizes

According to analysis on the cause-effect graph above (Figure 2), it can be obviously discovered that Lenovo Group's development process is a self-evolution process of the mental model of its top management team, and the overall changes of mental model is actually from the changes of value pursuit of top management team. This study makes the value pursuit dynamic graph of Lenovo top management team (as is shown in Figure 3) and makes analysis of it. Each evolution stage of value pursuit is not denying the previous value pursuit; instead, it is the elevation on the basis of the previous one; every new and higher value pursuit plays the dominant role in the value pursuit system and comes from the inner sport commitment of value pursuit, instead of reaction towards the

external world.

The analysis above proves proposition 2. The value pursuit of top management team has the tendency of autonomous and continuous moving to higher levels, and the autonomous movement of value pursuit makes previous stable mental model evolve from the core until the general rules, business orientation and business models based on the new value pursuit rules come into being and become stable. Therefore, the value pursuit of autonomous and continuous moving to higher levels is the driving factor of the top management team's mental model autonomous evolution

### Environment constructing ways of mental model of Lenovo top management team in different development stages

This study analyzes the construction acts of Lenovo top management team in different development stages from three aspects of customers, suppliers and competitors; Lenovo top management team adopts different constructing ways in different development stages, as is shown in Figure 3.

Table 3 Environment constructing ways of mental model of Lenovo top management team in different development stages

Lenovo development stages	Environment constructing acts of Lenovo top management team			Environment constructing ways
	Towards customers	Towards suppliers	Towards competitors	
Start-up stage	Actively try to satisfy customers' shortage needs	Actively choose suppliers that can satisfy self-needs	Actively choose specific products to compete with opponents	Actively choose environment
Export-oriented industrialization stage	Try to break the weak state of customer demand	Try to break the reliance on suppliers	Try to break the defeated state of national brands	Break local environment
Fast development stage	Break the situation of customers' single demand on imported computers	Break the cooperation model with suppliers	Break the industry operation model in the country	
Diversification stage	Try to cultivate customers' new demand	Try to integrate suppliers' techniques creatively	Become the first multi-industry and diversified enterprise	Create environment locally
Internationalization stage	Create new value for customers	Make the example of oriental and western cultural integration	Create the miracle in national industry	Actively create environment

Data source: this research organizes

The analysis above proves proposition 3. In each stage of mental model development, Lenovo top management team construct the environment actively according to inner requirements and rules; moreover, the ways of constructing environment of Lenovo top management team develops continuous upward according to the mental model level, which shows the change from choosing environment to break the environment and finally to create the environment.

### Conclusions and prospects

**Conclusions:** This paper analyzes the dimension, structure and self-evolution of mental model of

Lenovo top management team and the different ways of constructing environment of top management team under different mental model level. Here are the conclusions.

Conclusion 1: the mental model of top management team is the inner requirement and rules relied by top management team to construct environment.

Conclusion 2: the tendency of top management team's value pursuit autonomously moving towards higher level is the driving factor for top management team's mental evolution, and what is the driving factor for top management team's mental model evolution can answer the key question of why enterprise can develop continuously.

Conclusion 3: the ways for top management team to construct environment evolve to higher level with the mental levels, which reflects the changes from actively choose environment, to actively break the environment, and finally to actively create environment.

**Prospects for the future:**This paper puts forward theoretical proposition first to construct research framework, and then adopts cause-effect graph to verify propositions with single case. In the future, multi-case studies can be developed on the basis of this paper to examine the reliability of the conclusions in this paper and to make corrections of the theory. Besides, the constitutional dimensions of the mental model in this paper can be made more detailed to develop mental model scale; and the conclusions in this paper can be analyzed and examined with large sample data and new discoveries may reveal.

## Knowledge

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