Study on Telecom Operators’ Competitiveness under the Network Convergence

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Abstract—This paper analyzes the changes of the operators’ competitiveness structures under the background of 2/3G network convergence. First, it builds the operators’ competitiveness structure model from dynamic perspective. Second, it analyzes the relationship between capability and resources of telecom operators and its impact on enterprises competitiveness in the light of resources and capacities. Finally, it compares the differences of competitiveness structure model between the 2G and 2/3G network convergence and put forward the developing direction and the strategy for operators under 2/3G network convergence.

Keywords—network convergence; Competitiveness of Telecom Operators; Competitive resources and capacities

I. INTRODUCTION

After issuing 3G licenses, the competitive environment of Chinese telecommunications industry has changed obviously. The enterprises’ competitive advantage in the past maybe no longer is a competitive advantage when environment changes rapidly, which need to study the competitiveness of telecom operators in the new competitive environment. First, one of the major reasons for the good development of second-generation of mobile communication network in China is that mobile phone is not popular enough in the early stage of 2G development. However, the market initially showed matured and saturated trend now. To form economies of scale by solely increasing users in the past may no longer be an effective means of competition. Second, another developmental trend of Chinese telecommunication industry is that the proportion of voice service is getting lower and lower while the proportion of data services, value-added services and information-based service is getting higher and higher. To increase income by only reducing the price of voice service may no longer be the most effective way to create enterprise value. Third, the government clearly expressed that would give support to the development of triple play rather than simply support the telecommunications industry. It is a developmental trend to integrate the mobile telecommunication with industries like Internet, media, finance and transportation in the future, which tests the ability of telecom operators to cultivate competitiveness in the new environment. In the current 2/3G network convergence, telecom operators need to consider whether their core competitiveness adapts to the environment of network convergence and how to invest their resources to cultivate core competitiveness in adapting to the environment of network convergence.

II. COMPETITIVE ENVIRONMENT OF TELECOMMUNICATIONS ENTERPRISES UNDER 2/3G NETWORK CONVERGENCE

2/3G network convergence is a new problem that Chinese telecom operators are facing. 2/3G network convergence has presented three requirements—network convergence, service convergence and application convergence—for telecom operators.

By observing the development of network convergence oversea, combined with Chinese actual situation, the operators’ network and technology, consumers’ demands, industrial chain and business model have changed under the background of 2/3G network convergence. In network and technology, the

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main trend of communication technology’s development are network taking IP and broadband access movable, and the three major 3G standards are developing to LTE all together. In consumers’ demands, there is huge market space in 2/3G network convergence. However, there are some barriers in 2/3G network convergence, such as high price and needing to change the mobile. In industry chain, the telecom chain has changed from single chain which operator plays a core role to complex reticulate structure which is caused by division of labor’s refinement in the whole industry. Now the chain is developing to “F-TIME” Business Ecosystem. In business model, according to the level that the telecom operators are control and participation in the industrial chain, the operation model can be divided into the three types of wall model, pipeline mode and channel mode. Now With the continuous advance of industrial integration, telecommunications and other industries mutual penetration and entry, industry boundaries increasingly are becoming blurred and operators’ control for the whole industry chain is going down and the role of the platform is increasingly prominent. In this case, "channel model" has become a common choice for national telecom operators.

According to the convergence’ demands and trends, there are some key success factors for telecom operators under the 2/3G network convergence environment. They are converged network, converged business, close cooperation with the industry chain, application innovation and professional products’ division. Some of these key success factors are never be faced by telecom operators, and some are seriously controlled by 2G operators, and these factors will determine whether the telecom operators could be success under the 2/3G network convergence background.

Besides, there are some characteristics of environment under 2/3G convergence environmental. For example, the macroeconomic environment are in the cycle bottom, license and cross-border operations are still strictly controlled by government, the trend of pipeline is appeared, and the level of technology standardization. is lower.

III. THEORY AND MODEL OF TELECOM OPERATORS’ COMPETITIVENESS BASED ON COMPETITION RESOURCE AND CAPABILITY

A. Connotation of Telecom Operators’ Competitiveness

The telecom operators’ competitiveness refers that telecom operators gain the capacity of achieving better competition performance than other competitors by making good use of competition resource and competition capability to adapt for external environment. Competition resource is the basic condition for the formation of enterprises’ competitiveness, and competition capability is the necessary one. Meanwhile, the external competition environment affects the performance of competition resource and competition capability.

Telecom operators’ competition resource refers to all the elements owned by the enterprises including tangible resources such as telecommunication equipment, base stations, staff, land, capital, etc, and intangible resources such as trademark, brand, technologies, patents, culture and so on. These elements are objective and can be measured absolutely to some degree. Enterprises’ competition capability refers to the capability of conducting its business successfully through adapting to, coordinating and managing internal and external environment. Its connotation is to organize knowledge in some field. Enterprises’ competition capability involves many aspects, such as information capability, technology capability, service capability, and marketing capability and so on.

B. Theoretical Model of Telecommunication Enterprise Competitiveness Based on Resource and Capability

Through the theoretical analysis, this chapter has constructed a theoretical model based on the competitiveness and competition resources of telecom operators. According to the above analysis, the theoretical model is set up as follows:

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1 “Wall mode” is that the telecommunications operators monopolize all the stages of the mobile Internet value chain, who take all network, business operating platform and content; "Pipeline model" is that the operators are only the providers of network access, and are only the data transmitters, but not to participate in other stages of the value chain; "Channel mode" is that the telecom operators partly participate in the other stages of the value chain.
The model in this study distinguishes resource factors and capability factors, and researches ISM causal structure of them respectively. ISM causal structure of resource factor and ability factor are divided into three layers: explicit layer, drive layer and basic layer. These three layers are from outside to inside. Explicit level factors can rapidly improve the competitiveness of enterprises. They are directly implicated in enterprise competition. The driver factors affect the explicit factor and play a supportive and driving role in competition. The basic layer is the foundation for explicit layer and driver layer. The change of basic layer will affect enterprises in business direction, competitive barriers and the methods of knowledge transfer, with fundamental impact on explicit layer and driver layer. Hierarchical rules not only conform to the thought of enhancement of enterprise competitiveness, but also meet the need of practice.

IV. THE INTERNAL CAUSAL NEXUS OF RESOURCES AND COMPETITIVENESS IN TELECOM OPERATORS UNDER 2/3G CONVERGENCE

A. The competitiveness driving force of telecom enterprises under 2/3G network convergence

Through analyzing resource factors and capability factors of ISM causal structure, this study determined the competitiveness driving force of telecom operators in the era of 2/3G convergence. In the aspect of resources, there are leading technology resources, technical cooperation resources, services resources, channels of resources, financial resources, human resources, industrial chain resources. In the aspect of capability, there are the capability of technical extension, the capability of technology development, the capability of market innovation, the capability of controlling chain, the capability of expanding industrial chain and human capital. The factors of the driving layer make supporting and driving effect on the explicit layer, and influence competitiveness of enterprises by the effect on the explicit layer. They are the capacities or resources that maintain the long-term competitive advantages.

B. The change of competitiveness’ instruct of telecom operators under 2/3G network convergence

The paper found that environmental changes affect causal structure and level of competitive resource and ability through researching on the competitive environment, resources and capability of telecom operators under the 2G and 3G. Compared with the 2G, the drive forces of telecom operators’ competitiveness are not changed. However, the causal structure between them changed.

1) The changes in resource casual structure

There are three points of changes in resource casual structure. Firstly, the relationship between technical cooperation resources and technical leading resources is no longer in coordinate relationship, but the technical cooperation resources affect the technical leading resources. Secondly, in 2/3G environment, the industrial chain has a direct impact on business resources, then on the customer resources. Thirdly, government resources affect the industrial chain resources.

Causal Structure of Resource by ISM Analysis in 2/3G Environment:

2) The changes in capability casual structure
The capability to expand the industrial chain will affect the marketing innovation with the changes of capability casual structure in the 2/3G convergence background.

**Causal Structure of Capability by ISM Analysis in 2/3G Environment:**

![Causal Structure Diagram]

V. THE STRATEGY FOR ENHANCEMENT OF TELECOM OPERATING ENTERPRISE UNDER 2/3G NETWORK CONVERGENCE

The paper gives the strategy for enhancement of telecom operating enterprise under 2/3G network convergence from three aspects: competitiveness resources, competitiveness capacity and function modules.

A. The aspect of competitiveness resources

![Diagram of Competitiveness Resources]

Telecom operators should pay more attention to the adaptation and adjustment for new technology, then draw up reasonable R&D process and realize it. At the same time, make technical breakthrough and prospective extension of core technology with help and financial aid offered by R&D institution. By proper arrangement of network construction, their matching capacity for network and future service development will be improved, which offered some space for gradual updating to advanced network. To achieve the goals, their ability of industrial chain extension and controlling must be improved in following ways. To cooperate with providers/complementary/cooperators in technological innovation (at the same time prevent those becoming competitors), then develop market from cooperating with them. For example, most telecom operators have developed their market through terminal producer and social marketing channel. Because of 2/3G network convergence ensuring service innovation, telecom operators can also cooperate with content providers to develop market.
C. The aspect of function modules

The telecom operators should make some adjustments on network and technologies, business operation, industries convergence, and organizational strategies. For network and technologies, the telecom operators should make short-term and long-term choices of technique and development strategies to break the bottleneck of network capacity. For marketing strategy, enterprises should develop proper strategies for business promotion according to users’ interests and network implementation scheduling under corresponding scenarios. Under 2/3G network convergences, there is a growing trend towards industry convergence. The telecom operators should carry out the strategy that they make convergence with terminal manufacturers, network equipment manufacturers and business cooperation partners. As the basis of competitiveness, organizational process should be adjusted under 2/3G networks convergence accordingly.

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