

Scale-free characteristics of the information and communication industry international marketing network

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Abstract

Information and communication industries has become one of the key industries among China's strategic emerging industry. We carry on the research by taking the international marketing network of information communication industry as a complex network. We treat different enterprises constituting a marketing network as the research object, the individual enterprise as the network node, the enterprise cooperation relationship as edges, and finally construct a network model. That can help new perspective on international marketing strategy more suitable for the development of the information and communication industry from both government and corporate levels.

Keywords: Information and communication industries; Statistical parameter; Scale-free network; Strategy research

1. Introduction

The growing Chinese economy has become increasingly depending on knowledge and technology-intensive, less consumption of material resources, growth potential, and comprehensive benefits industries Information and communication industry is an important part of the strategic emerging industries, its develop-

ment and growth has an important significance to the third industry in China's the progress of science[1,2]. Therefore, with the gradual development of the information and communication industry, the international marketing of mobile communications products has increasingly become the focus of the scholars' attention.

2. Analysis of the Information and communication industry international marketing network

In short, BA scale-free network is the degree distribution in line with a power-law distribution of complex networks. It showed severe heterogeneity, the connection between the situation in each node is very uneven, reflecting the "Matthew Effect"[3]. Broadly speaking, the scale-free nature of the scale-free network is an inherent nature described severely uneven distribution of a large number of complex systems overall.

2.1. Obey the power law distribution

Power law distribution has heavy tail characteristics, which will result in a few nodes in network have a large number of connections. In the information communication industry of the international marketing network, large enterprises with advanced technology, management ma-

turity and full customers will have trades with small and medium-sized enterprises. This kind of enterprises usually have a huge volume of trade and have a high position in the industry. They are more likely to become the "important node"[4]. At the same time, the characteristics of preferred connection will also aggravate the "rich get richer" phenomenon.

2.2. Important nodes

Any industry which has developed to the mature stage of the world will have a leading enterprise in it. These enterprises usually control most of the trade flow, being able to connect several upstream enterprises, providing advanced technical support and plenty of equipment support for downstream enterprises. Take ZTE for example[5], in 2011, it got full-year operating income of RMB 86.254 billion yuan, with year-on-year growth of 23.39%. And international export trade amounted to 46.758 billion yuan RMB, the overall revenue accounted for 54.21%. Obviously, in the chain of information communication industry of international marketing, ZTE has occupied an important position, and with the key node position it realized the international patent and standard declaration and transformation.

2.3. Soundness and robustness

In the information communication industry of the international marketing network, enterprises exit network for their own reasons usually happen randomly, is defined as random attack, If an important enterprise exited network for its benefit maximization or joined other related marketing chain, it will finally affect the entire network dynamics properties, it is called sabotage. One hand, information communication industry of international marketing network is more resistant to random attack. New-joined enterprise will quickly occupy the position of the

original enterprise and replace it. This is the soundness of network. On the other hand, nodes' failure or remove will definitely affect the dynamic character of the whole network. And the change of an important node can make network property happening structural changes. In the international marketing network, important enterprises may suddenly exit network because of market competition and enterprise development, once exited, relevant enterprises can't find new supply channels and technical support in a short time so it will cause strikes to industry's development namely robustness.

From the above, international marketing network as a reality performance of complex network, due to node distribution embodies power law distribution, the large network exist fixed number of important node, which determines its network have obvious robustness. On the premise that network node is increasing and new node is constantly connected with important node, we consider this kind of International marketing network as significant scale-free feature [6].

3. The international marketing strategy which is suitable for the development of the information and communication industry

With the proposition of the domestic strategic emerging industries to its flourish, new communication technologies are becoming the focus of people's attention gradually. However, the scale-free characteristics research based on the information and communication industry's international marketing network, combining with the China's actually economic development, can propose the following international marketing strategies from government and enterprises' angles:

3.1. Governmental angle

Increase support to the Information and

Communication Industry Alliance. The clustering coefficient of the Information and communication industrial international marketing network is an important standard to the surrounding connection situation of the reaction network nodes. The bigger the clustering coefficient, the more concentrated the network will be, and the affection of the diffusion between the nodes, which means the trade flows in the real economy will also be better[7]. Facts have proved that, the improvement to the industry of the domestic information and communication industry technology alliance isn't good enough, and the technology alliance is an important medium which can connect each network node. Currently, the operators that can affect the information and communication industry's international marketing issues mainly conclude network operators, handset manufacturers, chip manufacturers, network service providers and so on. The large upstream and downstream enterprises make it very difficult for the industrial alliance to arrange and manage. So we need the government to give as much support as it can to the industrial alliance on the macro perspective.

Guide enterprises develop in a balanced and benign manner. We define the exiting made by large important node communications companies because of benefit, competition or some other reasons as sabotage. And the robustness of complex networks also makes it a devastating blow to the whole network. So the government is bound to guide the balanced development of the various enterprises in the process of industrial regulatory, in order to reduce the occurrence of such a situation to the greatest extent, and integrate the advantages of the uniform network ensuring the complex nature of that network. Refer to policy formulation of specific industry, we can give the small and medium-sized communication-enterprises an appropriate tilt and give

necessary help to their technological reform and financing, in order to make them stronger. We need to avoid only one enterprise enjoys market dominance in international export trade to make domestic informational and communicational industry develop in a balanced manner. Also, government should support the weaker operators, acting as the role of managers and arbiter.

3.2. Firm Level

Improve industry quality, speed up the pace of technological development. Information communication industry international marketing network becoming stronger in each node can strengthen the whole network. From this perspective, enterprises need to change the mode of operation through the management and marketing innovation to shorten production cycle, improve market share; On the other hand, firms need to speed up the technology introduction and absorption, face to the international market, develop and produce mobile terminal equipment or products which can meet the needs of international (large) users in a relatively short period of time. Thus, it requires network nodes to speed up the information communication industry technology development process. Since 2009, 3G technology became commercial, China's 2G users are accelerated migrating to the 3G network, only in first three quarters of 2011, the 3G users has achieved 55.406 million's growth.

Secondly, form an overall effective low carbon international marketing model. With the increasing energy consumption, low carbon economy development mode is accepted by more and more people. To protect environment and ecology, every country starts to impose tax about carbon emission, the rising cost and declining profit will lead small and medium-sized communication enterprises to exit marketing network, then lead to

network scale reduction and the lack of network effect. From this point of view, forming overall effective low carbon international marketing mode is very necessary. In order to adapt to the demand of low carbon economy, carrying out international marketing activities in the controllable range, enterprise should make efforts in the following aspects:

First of all, all the enterprises in international marketing network must establish a highly uniform low carbon development consciousness. Secondly, enterprises should take strategies that can effectively decrease the pollution, make price strategies which can reflect demand of low carbon product and production cost, and implement channel strategies that can effectively improve the low carbon products international distribution rate. Thirdly, in the global scope play production enterprise's guide role, encourages consumers to set up "from" low carbon awareness and reduce personal and relevant terminal of carbon emissions.

4. Conclusion

The development of information communication industry has become the key of international industry competition, and in the research made up by different enterprise as different nodes, people found that the network shows scale-free properties. To master its characteristics and regulars can promote enterprise international marketing, it is also beneficial to state formulates and adjust the industrial strategy. Thus, in combination with the Chinese industry development practice, the government should support industry associations. Enterprises should promote technology progress and adhere to the low carbon marketing model. Through which,

we can effectively promote advancement of enterprise international marketing and the development of China's information communication industry. It has an important significant for China's economic development and technological progress.

5. References

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