The Study on the Construction of a Commercial Society Simulation Game Based on Science and Technology Innovation

Shi-jun TANG¹, Bing-xue CHEN¹,² and Wei-ping CHEN¹

¹City College of Wuhan University of Science and Technology, China
²Wuhan University of Technology, China

Keywords: ERP simulation game, Simulation of operation, Technological innovation, Pioneering Era.

Abstract. In the early 1980s, the ERP simulation game was introduced in China and gradually was applied to the higher education. With the development of the times, however, the teaching of the stereotypical simulation game has been unable to meet the recent social needs to train innovative and entrepreneurial talents. Based on the research of prevailing ERP simulation game, this paper initially explore and construct a new sand table system which takes technology-based innovation as the core in a simulation society.

Introduction

Early 1980s, the ERP simulation game was introduced in China. Today, ERP sand table teaching has become a general training course in economics and management disciplines of colleges and universities in this country. There are some existing domestic well-known business simulation game software: War of business, Entrepreneurial star and so on.

With the continuous development of society, however, in a time which is more and more emphasis on innovation and entrepreneurship and value chain management, the limitation of thought and technology of the traditional ERP teaching-sandbox also gradually exposed.

So constructing a new simulation platform as soon as possible, which electronically simulate business society, serves the needs of cultivation of talents in the ability of innovation and entrepreneurship and meets the demands of Internet plus time. It not only provides a new revolutionary curriculum for colleges and universities in new era, but also plays a huge role in promoting the cultivation of a large number of innovative and entrepreneurial talents for the social and economic development in China at the same time.

The Limitation of the Main Business Management Simulation Game in China

In the present situations, the traditional business simulation game (“War of business” and “Entrepreneurial star” is the representative) is still taking the idea of commercial competition in 1980s. In the face of the current needs of innovation and entrepreneurship education, it shows many limitations of the time and thought and is mainly manifested in the following aspects.

Only Simulating Single Enterprise’s Operation

All the time, the traditional business simulation game only simulate the operation of single production-oriented enterprises. So its’ simulation course is limited in a single manufacturing enterprise, and mainly study the competitive relationship on the product level in a single industry.

However, in the last thirty years the competition of enterprises has been greatly beyond the scope of the single business unit. Value chain management, supply chain management and other new concepts of management gradually swept the world.

As an example, Apple’s enterprise business model which emphasize the scientific and technological innovation “change the world” and shake the world. Only in five years its construction of the IOS Ecosystem, with the Android Ecosystem, lead the old NOKIA Symbian system into the history. In this kind of “Ecosystem” environment, because businesses and
competitors share a large number of sub system suppliers, both sides show the state of competition and cooperation.

**Closed Business Environment**

Because the traditional business simulation game is based on the simulation operation of a single production enterprise in a single industry, student’s management simulation is bound to be confined to the closed business environment.

However, since twenty-first century scientific and technological innovation oriented enterprises, such as Apple Inc., retain their core capabilities including product design and brand marketing and outsource production, sales and other aspects of the work in order to form a business “ecosystem” with the foundry manufacturers and agent dealers which is its base to compete with other “Ecosystem” (such as Microsoft, Android).

**Based on the Traditional Manufacturing as the Core**

It is another important limitation of the traditional business simulation game that these teaching-sandboxes always simulate the operation and management of traditional manufacturing enterprises without exception. But science and technology innovation enterprises based on information technology gradually become the leading role in the commercial competition.

Taking mobile phone products as an example, science and technology innovation enterprises (such as Apple Inc.) are often in a dominant position in the global value chain and occupy the commanding heights of profits in the global division of labor system. On the contrary, single assembly manufacturing enterprises (such as Foxconn) can only rely on the number of processing to earn meager profits. (This phenomenon can be explained with the “smile curve”, see figure 1).

![Figure 1. “smile curve” shows: In today's international division of labor, the added value is mainly focused on the two ends of the curve—R & D and marketing. Manufacturing enterprises obtain the lowest profit.](image)

**Consumer Preferences Determine the Market Demand**

In the design of the market demand, the traditional business simulation game sets the market's non structural needs by “taking the consumer demand as the center”. In this case, enterprise product development must be based on the consumer demand preference in the existing market.

However, when Apple Inc. launched the landmark iPhone smart phone, the idea of “Taking the consumer demand as the center” gradually be out of date. More and more science and technology innovation oriented enterprises “create demand” by technological innovation and “Hunger marketing”, that is to say, it is time to create consumer demand.

**Emphasizing on Decision-Making but Ignoring the Operation Practices**

In fact, the traditional business simulation game only allow students to operate the extreme simplified business process, and this kind of operation more emphasize on the “decision” instead of
“practice”. Because the traditional business simulation game tend to give people the impression of “game”, students “play” happily, but after the whole simulation management training process, students still lack the most basic understanding of the real business management, it is a clear loss.

The Design Concept of a Commercial Society Simulation Game based on Science and Technology Innovation

Overall, the traditional business simulation games exist many ideas and techniques limitations. Conforming to the times of “Mass entrepreneurship and innovation”, a new sandbox is constructed which simulate commercial society that take technological innovation as the core, named “Pioneering Era” (its main operation interface, See Figure 2).

![Figure 2. Main operation interface of "Pioneering Era".](image1)

First of all, constructing a complete competitive environment of virtual business society; Beyond traditional sand table games’ scope of single production business, this project has been constructed a complete virtual commercial society including raw material suppliers, manufacturers, distributors, third party logistics, foreign trade companies, banks and tax subject, which takes scientific and technological innovation oriented enterprises as the core.

Secondly, the main competitive body is the business “Ecosystem” rather than a single enterprise. The “Ecosystem” is composed of a science and technology enterprise, an OME manufacturing enterprise and an agent marketing enterprise.

Thirdly, the science and technology enterprise is the core of the value chain “Ecosystem”. The manufacturing enterprises play decisive roles in traditional business simulation game, while the science and technology enterprise occupy the core status in this project. In our design, the science and technology enterprise always determine the dominant power of new product research and development and marketing.

Fourthly, this project stresses creating new demands of market rather than meeting the needs of the market. Apple Inc. launched an era of smart phone named iPhone, opening a new competitive model of “Creating new market demands”. Similarly, the “Pioneering Era” is different from the traditional business simulation game and stresses creating new market demand by the technological innovation.

Lastly, this project absorbs the mainstream ERP management software into it and reflects both the decision making and the operation practice of a enterprise. So, in the Pioneering Era, the enterprise operation process is compatible with the mainstream ERP management software process (for example, “Order Change Audit” in daily operation of the technological enterprise, see figure 3). In some extent, Pioneering Era overcome the defect of “Only paying attention to decision making” or “Just be a game”.
The Structure Design of the Pioneering Era

Based on the above ideas, Pioneering Era takes “Ecosystem” as the competitive unit which consist of three enterprises. The score basis of competition is sales performance and asset status of each “Ecosystem”.

Each “Ecosystem” in “Pioneering Era” consist of a technological innovation-oriented enterprise, an OEM Enterprise and an agent marketing enterprise. In each “Ecosystem”, the technological enterprise is the core.

First, the technological enterprise (such as Apple Inc.) masters core technology and dominates the overall interests of the entire value chain by brand promotion, market strategy, supply regulation and so on. In the course of operation, this enterprise carries on the product innovation research and development according to their own financial situation, chose stalwart enterprises for product manufacturing, and chose agents to achieve product marketing. In the process of the production and marketing this enterprise is not directly involved but controls the manufacturer and distributor by incorporating both into the overall management of the supply chain. It realizes the integrity of the value chain of “Ecosystem” and ensures the scientific and technological innovation-oriented enterprise’s maximum economic benefits.

Second, an OEM Enterprise (such as Foxconn Technology Group) located in the upstream of the supply chain of “Ecosystem” is not involved in the development and design of new products and only offers large scale manufacturing service. In the course of operation, the OEM Enterprise develops a suitable manufacturing plan according to the LRP work order from downstream and its financial ability. Then this enterprise purchases fixed assets, manages the production, operation and inventory.

Third, an agent marketing enterprise (such as China Telecom, China Unicom) is responsible for product promotion, sales management and other business in the “Ecosystem”. In the process of system operation, according to the demand of the market, the agent marketing enterprise formulates the reasonable sales plan and the sales network construction plan, than puts forward the order to the upstream enterprises. This enterprise adjusts inventory status in time in order to meets the changing market demand.

Conclusion

In summary, there has been existing various limitation of the enterprise management simulation game in technology and idea. In the wave of “Mass entrepreneurship and innovation”, the new business simulation sandbox must take technology-based innovation as the core of a society, so the “Pioneering Era” is designed.

Reference
