Research and Exploration on the Application of Computer-Based Models to Innovative Entrepreneurial Knowledge

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Abstract. The convergence of mobile communications and the Internet in the 3G era gave birth to the mobile Internet, which has supported and driven the development of the information society. When the 3G infrastructure network was generally built, 3.5G and 4G followed, and the mobile Internet soon entered the post-3G era. According to the Global Internet Report released by the International Telecommunication Union, an agency under the United Nations, along with the arrival of the post-3G era, billions of wireless search requests are made by mobile internet users worldwide every day alone. The rapid development of the mobile Internet in the post-3G era has changed the industrial structure of the Internet, bringing huge business opportunities and prospects for enterprises to participate in the development of mobile Internet operations. It provides a broad opportunity for development. How to correctly understand the new characteristics of the mobile Internet in the post-3G era and how to design business model innovation strategies for mobile Internet enterprises has become an urgent issue in the field of enterprise management. Based on the conditions of computer big data, this paper applies computer big data to the new field of innovation and entrepreneurship, integrating the two to bring more meaningful progress to scientific research. On top of the innovation and entrepreneurship and Internet interactions, the research is then innovated.

Keywords: Mobile Internet · Business model · Innovation strategy · Innovation and entrepreneurship

1 Introduction

"3G" (3rd-generation) refers to cellular mobile communication technology that supports high-speed data transmission. 3G is a watershed in the development of mobile communication technology [1], 3G before the mobile communication network cut transmission of voice signals mainly, with 3G as the starting point, mobile communication network W transmission of data services, voice, pictures, video and other mobile Internet services in the network transmission has a common basis, called digital bits. In the future, the traditional operator voice services may be eliminated, replaced by W unified data services.

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When the 3G infrastructure network is generally built, 3.5G and 4G, and the future 5G come and go, collectively known as the post-3G background [2]. The post-3G context is not only about technology, but also about services, business models and economic value. Most of the mobile Internet services that initially appeared in 2.5G and 3G were variations of cell phone services, and these types of services already existed in other media, such as Internet content, music, MMS, etc. And in the post-3G context, mobile Internet products enter a period of maturity and standardization, and service design engineers discover the wealth of opportunities presented by 2.5G and 3G. Mobile Internet services and business model creation are richer, broader and more exciting than in any other environment. And mobile Internet products and services have penetrated and integrated into people's daily lives, becoming a means to improve management efficiency in other sectors of the national economy [3].

2 Motivation of Mobile Internet Business Model Innovation Based on Core Competencies in the Post-3G

2.1 Mobile Internet Value Proposition and Value Formation Series

According to statistics, the market value distribution in the mobile communication industry in the traditional voice era is as follows: customers get 100% of the value, basic network operators get about 70% of the value, service providers get about 20% of the value, and entrance communication and content providers get only about 5% of the value in total. The basic network operator gets the majority of the benefits and is the only dominant player in the industry value chain.

2.2 The Life Cycle of the Mobile Internet Industry

As Fig. 1 industry has a life cycle, the life cycle is divided into four stages: growth, maturity, standardization and decline.

The post-3G era is a period of maturity and standardization for the mobile Internet industry. When the mobile Internet is in a mature stage, the market is characterized by fierce competition within the industry, increased market capacity, an increase in the number of enterprises, increased investment in promotion, rapid growth in the number of customers, and rapid increase in profits. When the mobile Internet industry is in the standardization stage, its market performance is that there are a large number of participating

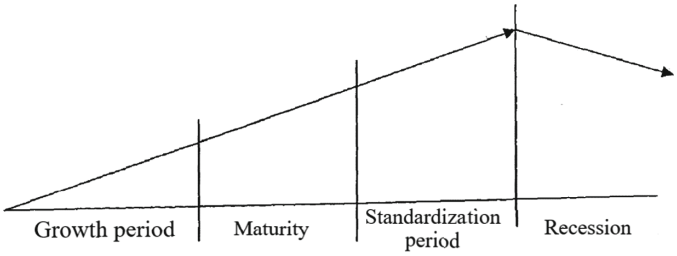

Fig. 1. Industry life cycle diagram

companies in the industry, decreasing investment in promotion, price wars, customers have fully understood and accepted the product, small changes in the total number of customers in the industry, a slowdown in the growth of the number of customers, low market margins, and large total profits [4].

3 The Path of Mobile Internet Business Model Innovation Based on Core Competence in the Post-3G Context

In summary, the value formation logic of mobile Internet in the post-3G background is value network. Driven by fierce competition and new value formation logic, the most valuable, comprehensive, unique, difficult to imitate, and extended nuclear capabilities of mobile Internet enterprises in the post-3G era are bound to evolve dynamically around the nuclear gourd capability of building value network as a whole, specifically value network formation capability, value network positioning capability and value network management capability [5]. As show in Fig. 2.

The core competency of an enterprise needs the business model to play and consolidate, and the core competency of an enterprise is the foundation and support element of its business model innovation. The business model innovation path of mobile Internet based on nucleus melon capability in the post-3G context is:

First, enterprises integrate value networks across pounds of industry and enterprises in response to changes in the social, economic, technological and cultural environment [6];

Secondly, by exploring the value needs of customers, companies innovate their core competencies, expand their strategy sets, determine their respective positions in the value network and become core or node companies [7];

Third, the nuclear tunnels, enterprises to introduce the applicable value network of the organization, strategy, processes and other management value network, the formation of the overall core competitiveness of the value network [8].

4 Design of Mobile Internet Business Model Innovation Strategy Based on Core Competence in Post-3G Background

4.1 Value Network Integration Model Innovation Strategy

The customer is the starting point of the value network in the post-3G context, and the company's core is also capable of being selected and determined by customer demand. Those companies in the mobile Internet industry that can take the first-mover advantage, capture the potential needs of customers in a timely manner, and meet their requirements most directly will take the initiative in the operation of the mobile Internet market and become a nuclear also enterprise [9].

4.2 Structure Strategy

Structure is the basis for building a value network, which reflects the inherent connection logic among value network enterprises and at the same time determines the value and

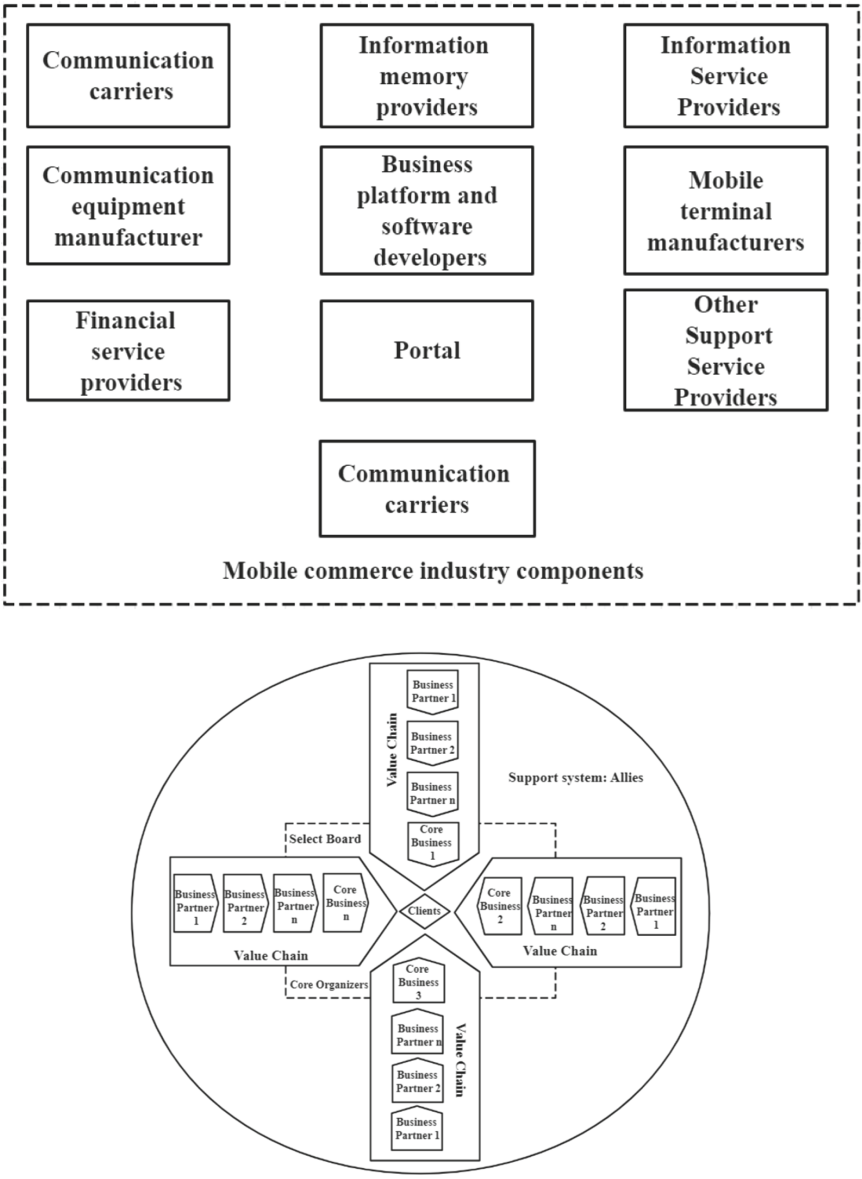

Fig. 2. Schematic diagram of the structure of the driven business value network

function of the value network. When nuclear companies integrate value networks, they usually choose companies with complementary resources and build a synergistic relationship between them to strengthen the overall resources and capabilities of the value network [10].

(1) Resource complementary strategy.
(2) Collaborative strategy.

4.3 New Strategy of Value Network Positioning Model Sword

In the post-3G context, mobile Internet enterprises design different value network positioning strategies according to their respective core competencies. Enterprises can position their business at a point of the value network and become a node enterprise, or they can position their business in the middle of the value network and become a core enterprise.

When formulating value network positioning strategies in the post-3G context, mobile Internet companies must master and follow the new trends in value network positioning in order to beat their competitors, position themselves accurately and gain long-term competitive advantages. The value network positioning strategy of mobile Internet companies based on the core also capabilities in the post-3G context emerged towards the following three trends:

(1) Nuclear also enterprise diversification.
(2) Selection of key value links.
(3) Diversification of value network integration mode.

4.4 Complexity of the Value Network

In the post-3G era, the mobile Internet value network is composed of customers, communication equipment manufacturers, communication operators, business platform and software developers, content service providers, etc. It is an interconnected, interactive and complex system. This paper illustrates the complexity of the value network with the help of the calculation of the betting in Shannon's information theory. The bribe model is a function used to describe the degree of uncertainty of a system and is widely used in life sciences, physics, manufacturing fields, sociological fields, etc. Bit is a unit of measure of complexity, which is used in this paper to represent the number of binary problems contained in the value network at a certain deterministic state. We use C to denote the degree of complexity between the value network customer and the firm, with the following formula:

$$C = \sum_{i=1}^{T} Pt_i \sum_{j=1}^{N} -\left(Pn_j|Pt_i\right)\log\left(Pn_j|Pt_i\right) \tag{1}$$

where, the logarithm is base 2. The above formula indicates that in the value network, there are T enterprises and N customers, the probability of enterprise i trading with customer j is Pt, the conditional probability of the jth customer trading with the i-th enterprise is Pn_jPt_i, and C transactions may occur between enterprises and customers.

In addition, it follows from (14) that $\|v(\cdot.t)\|_{L^\infty(R)} \leq c(\|v_0\|_{L^\infty} + \int_0^t \left\|\rho^{\gamma-\alpha}\mu\right\|_{L^\infty} + \left\|\rho^{\delta-1}\mu\right\|_{L^\infty})$. We obtain that $\|v_0\| \in L^\infty(L^\infty)$ and $\left||\rho^{\frac{\delta-\alpha-1}{2}}|\right| \in L^2(0.T^0; L_\infty(\mathbb{R}))$ from Lemma 5, if (α, γ, δ) satisfies either $\alpha \in (0, 1)$, $y > \delta > 2\alpha + \frac{1}{2}$. In view of (3.6) and (11), we have $\partial_t\left(e^{\gamma\int_{a_{j_0}}^t \rho^{\gamma-\alpha}(x_s,s)ds} y^M(t)\right)$, C(T) Integrating in time yields on $\left(a_{j_0}, t\right)$, we get the bound $y^M(t)$, C(T) for any $t \in I_{j_0}$, where C(T) is continous function on $\mathbb{R}^+$. Since j_0 is arbitrary, the above estimates is also true for any $t \in (0, T^*)$. It implies for

any $(x, t) \in \mathbb{R} \times (0, T^*)$,

$$\frac{\partial_x v(x,t)}{\rho(x,t)}, C(t) - F_1(\rho) - F_2(\rho) \tag{2}$$

ext, the mass equation implies

$$\partial_t\left(\frac{1}{\rho}\right) + u\partial_x\left(\frac{1}{\rho}\right) - \frac{\partial_x v}{\rho} - \rho^{\alpha-1}\partial_{xx}\left(\frac{1}{\rho}\right) - \alpha\rho^{\alpha-2}\partial_x\left(\frac{1}{\rho}\right) \tag{3}$$

It follows from (5) and the Eq. (6) that $\rho \in C^1[0, t]; \mathbb{R}$. Similarly, from $\lim\limits_{|x|\to+\infty} \frac{1}{\rho} = 1$, we also deduce $\left\{t \ldots 0 | sup\frac{1}{\rho}(x,t) > 1\right\} = Q_0 \cup \bigcup_{j\in\mathbb{N}*} Q_j$ where $Q_j(J \ldots 1)$ with (a_j, b_j) are open disjoint intervals in $[0, T^*)$. By the definition of Q_j, we obtain that $sup\frac{1}{\rho}(a_j, x) = 1$. We deduce that for any $j \in \mathbb{N}, t \in Q_j$, there exists a point $x_t \in \mathbb{R}$, such that $sup\frac{1}{\rho}(x,t) = \frac{1}{\rho}(x,t)$. Denote $z^M(t) = \frac{1}{\rho}(x_t, t)$. Reaches its maximum in x_t, so $\partial_x z(x,t) = 0$, $\partial_{xx} z(x,t) = 0$. It follows from (19) and (20), we yields for any given Q_{j_0}, any $t \in Q_j$, $\partial_t(z^M(t)) \le C(t) - C(t) - F_1(\rho(X_t, t)) - F_2(\rho(x_t, t)) \le C(t) + (\gamma + \frac{\delta}{\delta-2}(\rho(x_t,t)^{\delta-1})z^M(t)$ Therefore, we obtain

$$\partial_t\left(e^{\gamma\int_{a_{j_0}}^t \gamma + \frac{\delta}{2-\delta}\rho^{\delta-1}(x_s,s)ds} z^M(t)\right), C(t)$$

It then follows easily that for any $t \in Q_{j_0}$, $z^M(t), C(t)$ Where $C(t)$ is continous function on $\mathbb{R}^+$. Since j_0 is arbitrary, we get bound $\sup\limits_{t\in[0,T]} \left\|\frac{1}{\rho}\right\|_{L\infty(\mathbb{R})} \le C(T)$, where $C(t)$ is continous function on $\mathbb{R}^+$. In virtue of Theorem 1, we find $T^* = +\infty$ and for any $t > 0$, $sup\frac{1}{\rho} \le C(t)$, where $C(t)$ is continous function on $\mathbb{R}^+$.

4.5 Power Distribution Panel Overview

In the post-3G era, massive users, massive enterprises, and massive data products together constitute a huge mobile Internet industry, in which Nucleon, enterprises, node enterprises and customers form a value network.

5 Conclusion

Mobile Internet, big data and information economy are hot topics in the field of economic management in recent years, which are new economic growth points in the future and contain huge commercial and social benefits. Business model is the driving force to create or stimulate economic value. Innovation is the eternal theme of human society and the source of competitive advantage for enterprises. After the emergence of mobile Internet, business model innovation has received unprecedented attention. Global mobile

Internet players generally regard business model innovation as an important way to gain competitive advantage, and mobile Internet business model innovation has emerged all over the world. In this paper, we study the mobile Internet business model innovation strategies in the post-3G context, and some conclusions may have a positive effect on mobile Internet players' adaptation to the post-3G environment and promotion of business model innovation.

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