

Based on the Emerging E-commerce Ecosystem Synergy and Innovation Mechanism Investigation

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Abstract: E-commerce is a new business model based on Internet information technology, and its internal operation mechanism can be studied in depth from the perspective of the knowledge ecosystem according to the law of knowledge ecology. The various knowledge elements in the e-business knowledge ecosystem interact and influence each other, continue to exchange materials and energy according to specific rules, and develop and circulate autonomously so that users can acquire, transfer, share and sublimate knowledge in the business system. Finally, knowledge innovation and new value creation are realized to complete the final value sublimation. Based on this, this paper elaborates on three aspects of e-business ecosystem system synergy theory, e-business ecosystem, and e-business ecosystem synergy and innovation model for the reference of relevant personnel.

Keywords: Emerging e-commerce; Ecosystem; Innovation mechanism

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1 Ecosystem synergy theory for e-commerce

Synergy theory is the study of a specific system under specific conditions through the collaboration and interaction between various subsystems so that the whole system is orderly and forms a structural mechanism with a particular function. Based on information theory, control theory and other academic theories, and using the principle of orderly parameters in the equilibrium phase shift theory, the synergy theory reveals the general rules of the development of various systems and phenomena from obstacles to order. Many subsystems of a complex system collaborate to form a

complete system, and due to the interaction of complex systems from disorder to order, they constitute the evolution of the system.

Synergy theory belongs to the category of self-organization theory, which is universally applicable and has achieved critical applications in various fields such as economics, sociology, physics and management science. The synergistic method covers vital aspects such as the instability principle, governance principle and command parameters. The following section focuses on the three relevant theoretical settings of the synergistic approach of e-business ecosystem systems.

1.1 The instability principle

The instability principle is the cornerstone of synergy theory. Instability of a system means that when one of its control variables reaches a certain threshold, the system will undergo a qualitative change and gradually enter an unstable state. At the same time, however, it means that the emergence of a new stable country in the system is a fundamental step in changing the system from disorder to order.

1.2 The governing principle

When a system approaches an unstable state, the structural characteristics of the system are determined by a small number of variables. In other words, the order parameter specifies the direction and trend of the system and controls the behaviour of other variables. Under the control of the order parameter, the unstable system autonomously forms a functional spatial structure according to specific rules.

1.3 Sequential parameters

The sequential parameter is a critical concept in the theory of collaboration and is essential in the evolution of self-construction. It is a parameter that influences the collaborative behaviour of each subsystem from

one state to another as the network system evolves and allows the system to form spatial and functional structures. The order parameter reflects the order of the system; if the order parameter is equal to 0, it indicates a system failure, and the greater the request of the system, the higher the value of the order parameter.

2 E-commerce ecosystems

E-commerce is more than just a physical to the electronic transaction between a buyer and seller; it is transforming companies and organizations at all stages of logistics, banking, telecom, software, etc. around the core business, focusing on the needs of online customers to transact. Through the Internet, the new industrial environment, resource allocation and resource consolidation have shown clear ecological signs across the industry. E-commerce ecosystems are the result of applying business ecosystem theory to the field of e-commerce. A business ecosystem is an original concept of using an ecological perspective to a company's competitive strategy, which consists of various types of species entities (e.g., companies or organizations) that have different roles and responsibilities in the ecosystem. Similar to business ecosystems, members of a "species" in an e-commerce ecosystem can be divided into three categories based on their functions: leader, key and supporting populations, as shown in figure 1.

Each branch in the e-commerce system is accomplishing its mission, and the different contents together constitute a complete e-commerce ecological organization. Within this network, energy, materials, and information circulate, forming a multi-element and multi-level ecosystem.

3 Synergistic innovation models for e-commerce ecosystems

By dividing the elements of the collaborative innovation model, the collaborative innovation model can be divided into three generations. The first generation of the two-factor collaborative innovation model and the second generation of the three-factor collaborative innovation are used to build the e-business ecosystem—the third generation multi-level collaborative innovation model. From the evolution of these 3G models, it can be concluded that many factors influence collaborative innovation, including technology, market, organization, strategy, management, culture, and systems. During this evolution, the concept of collaborative innovation has undergone dramatic changes. From the beginning, technological innovation has been viewed simply as the main influencing factor of collaborative innovation. Other factors have also influenced the performance of the firm by changing the technical innovation factors, and elements such as market, strategy, organization, culture and technology are at the same place in shaping

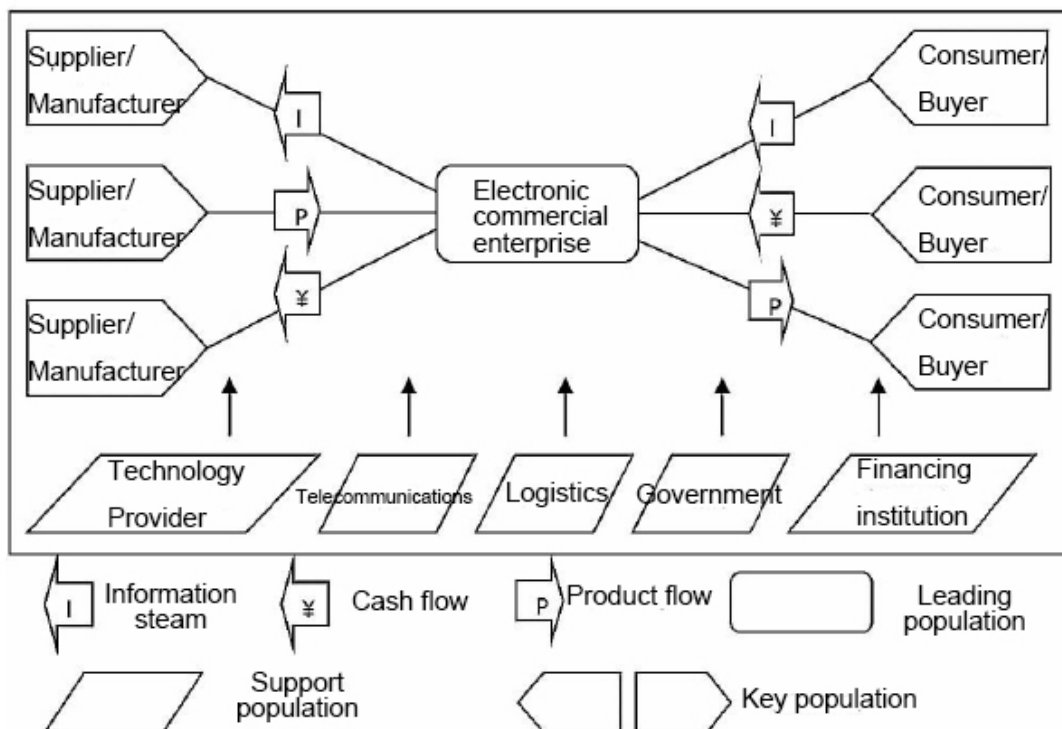


Figure 1. Structure of the e-commerce ecosystem

the performance of business innovation.

The e-business industry is a new product that incorporates a unique blend of traditional business and Internet technologies as compared to other sectors. In the e-business ecosystem, due to the particular network effects of the Internet, the value of the significant group (e-business companies) targeting the target customers (key group) increases exponentially as the number of target customers (key group) increases. At the same time, the more target customers (core group) there are, the easier it is to attract more potential target customers (core group). The result of this “positive network effect” is that the target customers (core group) also become accustomed to the products or services they offer so that they become more robust. Weaker groups are gradually absorbed or disappear. For the e-commerce ecosystem to achieve close collaboration and co-innovation among the members of the “species” to make “1 + 1 > 2” synergies, it is necessary to establish absolute leadership among the key populations.

However, there are many critical populations in an e-commerce ecosystem, not only the key populations but also the vital species of that ecosystem. Direct transactions between significant people are a way to exchange, transfer and escalate value in an e-commerce ecosystem. Significant populations belong to different economic actors and operate independently and make decisions based on maximizing their respective interests. Key people have different goals to pursue that not only tend to conflict with each other but also directly affect the overall benefit of the ecosystem as a whole. How to deal with and mediate conflicts and contradictions among the significant populations, guided by the notable people, has become the main reason for developing a limited e-business ecosystem.

In addition to significant populations and the e-commerce trading platforms provided by many notable people, a healthy, competitive e-commerce ecosystem must have a well-supported community. They can offer services that allow the entire e-commerce ecosystem to flow smoothly.

In the third-generation multi-level collaborative innovation model, the ecosystem is built through the collaboration, resource sharing, and collaboration of members of the various “species” of the e-commerce ecosystem, technology, organization, market, strategy,

and culture, as well as their operations and other aspects of the ecosystem. Innovate collaboratively to achieve growth. Leaders provide the platform and oversight services that provide shared resources for system members to find effective ways to create and share value with other members. E-commerce companies play an important role in market synergy by opening up new markets to accommodate more major species and support population entry as they evolve. There are two relationships between competition and coordination between members of significant groups, with each member of the ecosystem moving towards cooperation as a result of a game, making for an excellent trend towards competition and collaboration, and eventually a general direction by disability. To achieve a virtuous cycle for the entire ecosystem.

4 Summary

E-commerce business model innovation is a system model that can improve customer satisfaction by continuously optimizing business processes and reorganizing the value chain to achieve customer value creation and share participants' profits through the innovation of business relationships based on web-based information technology. E-commerce business model innovation requires a greater focus on sustainability, which is a long-term strategic issue from an ecological point of view. E-commerce business model innovation includes changes in industry standards, changes in the rules of market competition and the opening of new markets. Changes in traditional business models, such as e-commerce, or the overall structure.

References

- [1] Lu JR. Research on the construction of a collaborative framework for e-commerce knowledge ecosystem[J]. *Journal of Qingdao University of Science and Technology (Social Science Edition)*, 2019, 35(04): 43-50.
- [2] Zhang SJ. Synergistic discussion of e-commerce value ecosystem[J]. *Business Economic Research*, 2019(12): 68-71.
- [3] Wang LQ. A collaborative innovation model for building an e-commerce ecosystem[J]. *Mall Modernization*, 2017(03): 38-39.
- [4] Wang LQ. Research on collaborative innovation of platform-based e-commerce ecosystem[J]. *Times Finance*, 2016(35): 349-350.