

## RESEARCH ON THE NEW RETAIL ECOSYSTEM BASED ON ECOLOGICAL THEORY

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Received February 2022; accepted April 2022

**ABSTRACT.** *New retail is the trend of change in China's retail industry. Through the Internet platform and third-party logistics, new retail can realize the integration of on-line and offline shopping. Both in theory and practice, new retailing is in the exploration stage. This paper combs through the literature related to the two concepts of new retail and ecosystem, studies its own ecosystem through the case study of Alibaba, further summarizes and extends it, develops and constructs a new retail ecosystem based on ecological theory with hierarchical analysis from four aspects: individual, population, community, and ecosystem, and derives its mechanism of action to provide further. The study will provide further research ideas to explore the construction and development of new retail ecosystem in China.*

**Keywords:** Ecological theory, New retail, Ecosystem, Mechanism of action

1. **Introduction.** From the birth of e-commerce to the rise of new retailing today, a large number of new retail model terms such as O2O, omni-channel, unbounded retail, and unmanned retail have emerged one after another, some of which have become reality, while more of them have fallen silent after much discussion. Both new retail and tradition retail should return to the essence of retail value, maximizing consumer value. Every social crisis is accompanied by various business opportunities. In China, the SARS outbreak in 2003 gave birth to two e-tailing giants, Alibaba and Jingdong. The outbreak of the new public health outbreak in January 2020 has profoundly propelled China's retail industry to further evolve towards new retail. With the increase of per capita disposable income in China, people's concern about shopping is no longer limited to low price, but is increasingly focused on the experience and feeling in the process of consumption, exploring the use of "new retail" mode to start the upgrade of consumer experience shopping, promote the change of consumer shopping, and build the omnichannel ecological pattern of retail industry. With new technologies such as AI, cloud computing, and big data, new retail has weakened the distinction between online and offline, reaching users, gaining insight into users, and serving them in various scenarios. New retail has become an important part of the digital economy.

Scholars at home and abroad have conducted more exploration and research on online retail ecosystem, and have made certain research results on the nature and definition of new retail, its influencing factors and impact results, but the research on new retail ecosystem has just started, and the perspective of ecological theory is a new idea and method of research that can complement the existing theory. This paper compares and summarizes the literature on new retail and online retailing ecosystem, describes Alibaba's new retail layout, reviews the literature related to Alibaba's ecosystem, and on this basis proposes the new retail ecosystem and its mechanism of action using ecological theory.

## 2. Concept Definition.

**2.1. New retail concept definition.** In October 2016, Alibaba's Jack Ma put forward the "five new" strategies for the first time in his speech at the Ali Yunqi Conference, which are new retail, new manufacturing, new finance, new technology and new energy. Scholars such as Du and Jiang [1] argue that new retail is a new model of retailing that reshapes the business structure and ecosystem by making full use of the latest information technology. According to Wang [2], new retail emerged as a comprehensive retail format to better meet the multi-dimensional integrated needs of consumers such as shopping, social and entertainment. Scholar Liang [3] proposes that new retail is a business model of "physical store + e-commerce + logistics" through the integration of online, offline and logistics, supported by Internet technology. Gong [4] suggests that new retailing is the use of online technology to establish new business models and business structures, and the organic integration of online and offline to enhance the shopping experience of consumers in all aspects. Zhao and Li [5] argue that new retailing is a new type of retail business that is different from traditional retailing by improving and innovating traditional retailing methods guided by the latest concepts and thinking. According to Wu [6], "new retail" is an upgrade and reconstruction of retail and business ecology, adopting an omnichannel sales model and bringing multi-dimensional experiential services to consumers with the help of new technologies and methods, ultimately forming a "synergistic and symbiotic", "new retail" ecosystem.

Through the academic research, this paper concludes that "new retail" is the integration mode of "online + offline + logistics", which allows consumers to enjoy the three-dimensional sense and realism of offline shopping, the richness and convenience of online shopping, and the personalization and intelligence of services through the use of big data, artificial intelligence and other advanced technologies.

**2.2. New retail ecosystem concept definition.** In 1993, Moore [7] introduces the concept of biology into business research and first proposes the concept of "business ecosystem", arguing that business society has entered an era of business ecosystems characterized by co-evolution. Kim et al. [8] suggest that the value of a business system can be greater than the value of a single enterprise through the synergistic cooperation of the enterprises that make up the system. Masaharu et al. [9] define a business ecosystem as a self-organized multilayered social network composed of stakeholders with different attributes, decision-making principles, and beliefs.

Li [10] considers the e-tailing ecosystem as an organic ecosystem formed by a series of closely concerned individuals, businesses and organizational institutions and environmental factors that are gathered around the core activity and process of e-tailing. Gong [11] believes that the new retail ecosystem is an innovation in the development of e-commerce under certain conditions to realize the co-development of online and offline retail business. Chen [12] constructs a new retail analysis framework based on two dimensions of big data and innovation to create and improve a trinity of enterprise ecosystem integrating data ecology, innovation ecology and empowerment ecology. Wu [13] combines the roles played by different enterprises and the differences in their positions in the ecosystem, and the categories of the constituent populations of the new retail supply chain ecosystem can be roughly divided into three categories: key populations, support populations and marginal populations.

## 3. Case Study.

**3.1. Alibaba's new retail layout.** Founded in 1999 at the turn of the century, Alibaba Network Technology Limited has witnessed and influenced the historic stage of China's e-commerce from 0 to 1 in its 20 years of development. This article focuses on the new

retail layout of Alibaba in every aspect from 2017 to now. Alibaba not only invests in traditional large-scale retail industry such as “RT-Mart” and “Gao Xin Retail” and home furnishing enterprises represented by “Suning”; it also has a stake in home furnishing markets such as “Actually Home” and “Red Star Macalline”; in the food and beverage and fresh food market, “Eleme” and “Hema Xiansheng” are the main players; in the field of convenience stores, Ali, on the one hand, through its Retail Business Division, has been digitally transforming the operation mode of street-side stores with its Tmall small store strategy, and on the other hand, exploring the unmanned mode of new retail through “Tao Coffee”; in the field of logistics, based on the Cainiao network, the “China Intelligent Logistics Backbone Network” project promotes the digitalization of logistics, and with the support of Ant Financial Services, Ali Cloud, Ali Mama, etc., provides consumers with a complete closed-loop service for life, as shown in Table 1.

TABLE 1. Alibaba’s new retail layout

e-commerce	Offline market	Logistics	Financial service	International market
Alibaba		Novice network	Ant financial group	Lazada
Taobao	Yintai business	Best express	Paytm	Zomato
Tmall	New huadu	Gooday	Silver box pou chen	ShopRunner
	Sun art retail	YTO express	WeLend	Tokopedia
	Auchan group	Line card all over the world	CompareAsia	Paytm Mall
	RT-Mart	Dianwoda		Jet.com
	Suning	GoGoVan		Groupon
	Sanjiang shopping	AnXianda		Fanatics
	Bailian Group			Istdibs

Source: Ali Research Institute

**3.2. Alibaba ecosystem.** From an ecological perspective, Niu [14] explores that the e-commerce ecosystem consists of four types of populations: leadership, key populations, support populations and parasitic populations and the environment that affects their survival, based on the business ecosystem theory. Tong and Yang [15] study the core business of e-commerce and the financial business supporting the e-commerce system in Alibaba Group’s business ecosystem to form its own complete business ecosystem. The layout of the ecosystem can be described as a very complex and large chess game in Ali’s business system. Tang et al. [16] derive the structural composition of Alibaba ecosystem by analogy with the structural composition of the virtual business circle ecosystem. The leading population is Alibaba; the key population is the providers and recipients of online transactions or services; the supporting population is the professional service providers that assume the role of online transactions or service helpers and the parasitic population. Peng et al. [17] analyze in detail the investment history of Alibaba through the integration strategy to create an “industrial value chain”, the central radialization strategy to build an “ecological network”, and the new retail strategy to activate the “ecological network”. Sun [18], with the help of the theory of ecology, divides the structure of Alibaba’s ecosystem into leadership population, key population, support population, and parasitic population.

Niu [14], Tang et al. [16], Sun [18] and other scholars in the study of Alibaba ecosystem are based on ecological theory, from the perspective of biological population theory, to find the existence of leading populations, key populations, supporting populations, parasitic populations in Alibaba, and the populations communicate and exchange with each other through the Internet in a virtual network. Together, they constitute a dynamic and balanced healthy ecosystem.

**3.3. Alibaba ecosystem role mechanism.** Wu [19] detailed the process of building the Ali ecosystem into five stages, based on which the four major segments of Ali's business are analyzed, focusing on the Alibaba business ecosystem under one core business-oriented, three major drivers of market demand, network effect, and synergy effect as well as three major mechanisms of action: balance, acceleration, and renewal.

**3.3.1. Balancing mechanism.** Only by working together and cooperating can members of the system create value for the ecosystem. Alibaba establishes an integrity evaluation system for buyers and sellers, and restricts the transaction behavior of both sides through mutual evaluation mechanism, making the collaboration more fair and creating value.

**3.3.2. Acceleration mechanism.** In the network era, users and traffic are the core of the business battlefield seizure. Only by continuously responding quickly and creating value for customers, can employees grow and shareholders gain long-term benefits.

**3.3.3. Update mechanism.** "The only constant is change", which is one of the values of Alibaba Group. The market environment is unpredictable, and the Ali ecosystem is constantly embracing change, updating its value proposition, and improving the business ecosystem accordingly to prevent aging and decay, achieving sustainable growth.

**3.3.4. Feedback mechanism.** Xie et al. [20] argue that it is through the feedback mechanism that value co-creation and network effects enable the feedback mechanism between enterprises and users in the platform ecosystem, leading to the dynamic evolution and growth of each enterprise body in the platform ecosystem.

**4. New Retail Ecosystem Development.** Ecology is the study of the relationship between biological systems and their environment. Ecology is divided into four fields: individual ecology, population ecology, community ecology, and the study of ecosystems. The main content of ecology is the study of populations and communities of biological systems and the functional system formed by the external environment, the system of interactions between organisms and the environment.

Drawing on the composition of Alibaba's ecosystem, this paper also applies ecology-related theories to the research field of new retailing from the perspective of management, based on ecology and analogy with natural ecosystems, and analyzes the new retailing ecosystem hierarchically from four aspects: individuals, populations, communities, and ecosystems, ultimately providing further research ideas for developing and constructing new retailing ecosystems.

**4.1. Individual elements of new retail activities.** The individuals in the new retail ecosystem are similar to those in the natural world, which are composed of bacteria, plants, animals, etc. The individuals in the new retail ecosystem are mainly consumers, online e-commerce platforms, offline retailers, suppliers, financial platforms, logistics service providers, and other major individuals.

**4.2. Population division of new retail activities.** A population in a natural ecosystem is a group of organisms that live in the same area and belong to the same species. The population in the new retail ecosystem refers to the group of species with the same behavior without the limitation of time, space and territory, which is mainly summarized into the following three categories: consumer population, key population and support population.

4.2.1. *The consumer population.* It mainly refers to consumers, and the new retail activities are oriented to consumer preferences and more customized products and services. On the one hand, consumers' preferences and needs have an advanced predictive effect on producers' behavior. Consumer preferences and needs make a certain kind of goods or services sell well, which in turn leads producers to produce more of that kind of goods or services. On the other hand, customer preferences and customized needs have a feedback effect on suppliers or vendors. Customers in the new retail ecosystem consume certain goods or services and pass the evaluation information back to the suppliers or vendors. Producers can get the valuable content for themselves from the information and thus improve their goods or services. In this way, through the role of prognosis and feedback, the new retail ecosystem continuously optimizes its internal structure and achieves sustainable development.

4.2.2. *Key populations.* They include suppliers and online and offline platforms, which are the main bodies conducting new retail activities. Suppliers are the main practitioners of the entire transaction activities of new retail, including the provision of products. They exchange materials and information with the outside world and constantly take in energy from the outside world to ensure the normal operation of the new retail ecosystem. The online and offline platforms are the center of the new retail ecosystem, connecting suppliers and individual new retail applications and services horizontally, and linking various new retail support services vertically, and are the core link controlling the entire new retail transaction. The new retail enterprise is equivalent to a bridge between suppliers or vendors and customers, providing customers with quality services while bringing stable customer traffic to suppliers and vendors, bringing the two together closely and making an invisible and stable connection that is not present in the traditional retail model.

4.2.3. *Support populations.* They consist of logistics service providers, financial service providers, data service providers, etc. It becomes the support for new retail business on the one hand; on the other hand, the rapid development of new retail has greatly enriched the types of support stock and promoted its development.

4.3. **Community composition of new retail activities.** A community is a regular combination of multiple populations that are directly or indirectly related in a certain time and space, and they are interrelated and interact with each other. The new retail ecosystem is very different from the communities in nature. It is not restricted by territory, time and space, and all the participating subjects in the community communicate with each other through the Internet in a virtual network. Key populations and consumer populations are linked together to form the core system, and supporting populations are combined together to form the service system.

4.4. **New retail ecosystem.** The new retail ecosystem is a dynamic and complex adaptive system that contains various communities and internal and external environments. The participating individuals in the system exchange business, logistics, capital, information and service flows through the internal and external environments, and the mutual subjects interact with each other and are able to self-regulate and repair themselves to maintain balance, so that the new retail ecosystem is always in a state of dynamic equilibrium. The subjects, environments, and interrelationships in the system constitute the new retail ecosystem, as shown in Figure 1.

5. **Mechanism of Action of the New Retail Ecosystem.** In the new retail ecosystem, the Internet platform is the carrier that combines all the elements of "online + offline" and makes them interact with each other to create certain relationships. The new

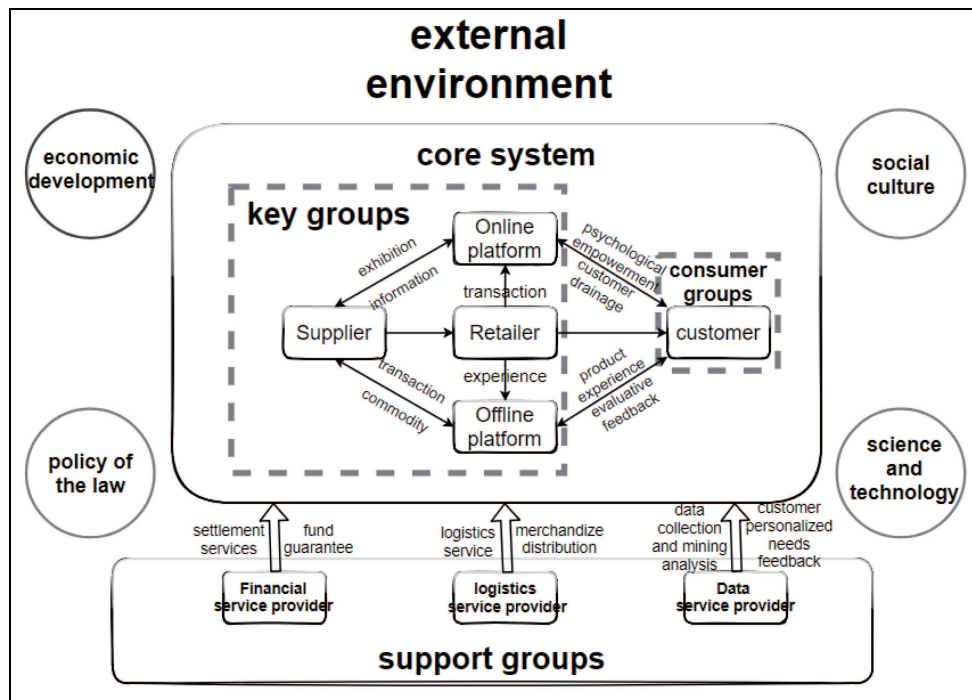


FIGURE 1. New retail ecosystem

retail ecosystem constantly adjusts the operation mode of each link to adapt to new market demands, making the system cohesive and forming a stable and sustainable system with certain economic and social benefits.

**5.1. Information sharing mechanism.** The new retail ecosystem is composed of multiple subjects, such as suppliers or vendors, customers, and new retail enterprises, and information sharing is the basis of mutual interaction between them. Only by achieving information symmetry among the subjects can we drive the continuous coordinated evolution and development of the new retail ecosystem. To build the information sharing mechanism in the new retail ecosystem, on the one hand, the conscientiousness of information disclosure of key populations should be improved. Active information disclosure and information sharing of key populations can improve the transparency of the new retail ecosystem. On the other hand, it is necessary to actively build an interactive platform for e-commerce information exchange. The collaborative development of new retail cannot be achieved without the participation of various standardized e-commerce platforms and various species of the system, which requires the joint efforts of the system members to achieve.

**5.2. Benefit balancing mechanism.** The new retail ecosystem is an open system, and how to balance the interests of all parties in the system and improve the common interests of the system is the highest goal of the collaborative evolutionary development of the new retail ecosystem. The scarcity of resources within the system leads to conflicts among various large and small enterprises or institutions in the pursuit of their own interests. The purpose of building the inherent synergistic mechanism of the new retail ecosystem lies in the hope of achieving their own interests through a cooperative approach. This requires government departments, regulators, or leadership populations to establish an effective interest balancing mechanism to prevent vicious competition and consumer fraud among certain participating companies, and to ensure the smooth achievement of the synergistic development goals of the new retail ecosystem.

**5.3. Synergistic development mechanism.** In the new retail ecosystem, suppliers or vendors, customers, and new retail enterprises are no longer simple individuals, but are

interconnected with each other as producers, consumers, and decomposers, and jointly promote the continuous evolution of the new retail ecosystem, thus requiring the collaborative development of each subject. From the production of goods or services to the completion of the transaction, relevant information can be traced. The complete information chain of the transaction requires the participation of suppliers or vendors, customers, and all subjects of the new retail enterprise, mutual supervision, and collaborative completion.

**5.4. Environmental security mechanism.** At present in the development of new retail, security issues have attracted great attention. Especially in the online environment, customers pay more attention to the security of their property and personal privacy. Therefore, the two most important elements of the security of the new retail ecosystem include the security of internal data and the security of the payment system. New retail mainly relies on big data technology to collect and process commercial data generated during transactions, and third-party institutions in the market make payments based on the trust of the central institution to complete online payments between various transaction subjects. The support of financial service providers and data service providers makes the new retail ecosystem develop healthily.

**6. Conclusions and Outlook.** This paper arranges the literature related to the two concepts of new retail as well as retail ecosystem, and on the basis of the analysis of Alibaba's ecosystem, develops the ecosystem for building new retail by summarizing the extension and derives its mechanism of action. The relevant research results in this paper enrich the theoretical knowledge of new retailing, clarify the various subjects of new retailing activities and their related relationships, provide reference and reference for the academic community to study the new retailing ecosystem in depth, and provide theoretical support and practical guidance for the industrial community to explore the transformation and upgrading of retail models in depth. Future research can build and develop new retail ecosystems from different perspectives, and go deeper into the ecosystem to study the predatory, mutually beneficial, parasitic and competitive relationships among the various populations in the ecosystem.

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