

Research on the Mechanism of Introducing Similar Business Complements into JD Platform

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Abstract: Platform enterprises use modern information technology and communication means to effectively link multilateral economic cooperation business groups, thus forming an enterprise ecosystem with the participation of multiple market players. However, since its business is a comprehensive service involving communication, financial services, law and other fields, and the operation process is relatively complex, Therefore, many players in the business are required to introduce complements to achieve the overall operational process. This paper takes JD Platform as the specific research object, and discusses the motivation of introducing related product complementators. First of all, on the basis of sorting out relevant theoretical content and basic data, the main business scope of JD platform is introduced, involving JD Mall, JD Finance, and part of the overseas business department. Although the process of introducing complementary providers to JD platform has made some progress, However, it still faces difficulties such as the disadvantage of high account period income, narrow source of funds and interference of market conditions. Therefore, this paper uses empirical analysis to analyze its influence, and establishes a theoretical analysis framework of "complementers platform enterprise development" according to the correlation theory. The purpose is to analyze the correlation between the introduction of similar business complementers and the stable development of JD platform enterprises. This paper reveals the specific influence mechanism of the complementary providers in the introduction of similar businesses on the improvement of JD platform operation ability, and further tests the empirical conclusions. Finally, based on the empirical results of the survey, in order to promote the benign operation of JD platform and give play to its positive externality as the goal, it is proposed to introduce development countermeasures and strategic significance of similar business complementarity into JD platform at the national, industrial and corporate levels respectively.

Keywords: Complementary business, JD platform, Influence mechanism, Strategic planning.

1. Research Background

Large platform companies will continue to try technological innovation to ensure the dominant position of the platform, and constantly improve their own business models, optimize the platform ecosystem, to ensure that in the fierce international competition market has a lasting competitiveness. The more dominant the platform company is, the smaller the technical communication barrier between the platform company and the complementator, and the closer the geographical space is to the complementator (Liu Xiaoyun & Yin Chuanbo, 2020). The more stable the market of the platform company is due to the market extensiveness of the complementator, and the platform company will have a lasting competitive advantage. Influenced by the rapid development of digital operation, traditional operation and management model companies are exploring the transformation to the platform operation and management model or integration into the network platform, so that the company has the strength to adapt to the external environment quickly (Yang Huixin & Ning P, 2021). Understanding the operation essence of the platform operation and management mode, understanding the platform architecture, the system logic and functional mechanism of collaborative innovation between platform companies and complementors, can better carry out collaborative innovation between platform companies and complementors, and promote the comprehensive and sustainable growth of platform ecosystem. Further, we can understand the environment of platform companies and the required core competitiveness, so that we can have lasting competitive vitality with homogeneous platform companies (Hu T, 2022). Therefore, this paper,

taking JD platform as an example, analyzes the specific motivation for the company to introduce similar business complementaries, and puts forward a new perspective on the company's service-oriented transformation and service ecosystem construction.

2. Review of Related Concepts and Theories

2.1. Platform enterprise

Compared with traditional companies, the most typical characteristics of platform companies are as follows: first, they have the Internet effect, that is, the improvement of the use value of platform companies on the network is not only dependent on the network platform itself, but also closely related to the continuous emergence of new users. With the continuous expansion of the use scale of platform companies, it will affect the desire of potential users to use the network platform, thus driving the increase of the use value and platform price. The Internet effect can also provide a healthy cycle for the development of platform enterprises. The more transaction parties connect with platform enterprises, the lower transaction rate will be, which is also conducive to the effective allocation of social public resources. Secondly, due to the historical evolution characteristics of platform enterprises, the services provided by platform enterprises must be diversified to meet the different needs of consumers. Due to the above characteristics and advantages, platform enterprises have taken off rapidly in the fierce industrial competition and achieved extraordinary or even leapfrog development (Liu Chang, Mei Liang & Chen Jin, 2022).

2.2. The Complementator

The Platform ecosystem includes two kinds of major participants (Platform owner and complementary or) . Platform enterprises play the role of Keystone. By participating in and developing the quality management system of the ecosystem and guiding the complementary innovation of the platform owners, they can bring about a benign interaction effect on the greater value of the ecosystem. The complementary business is relative to the platform business(Ning Ping & Yang Huixin, 2020). By providing complementary goods or services with the platform business, it provides it with more products, capabilities, talents, technologies and other factors that can leverage production and use to meet the needs of end users, thus completing the overall value innovation in ecosystem management. The complementator is critical to the healthy growth of the platform and the ecosystem. Therefore, the ecological owner should coordinate the competition and partnership with the complementator, and realize the complementator effect with the capital and technology of the complementator to further develop and expand the ecosystem. For complementators, joining the platform is a double-edged sword, because on the one hand, the complementator can use the capital and technology of the platform to increase profits, and on the other hand, it may be imitated by the ecological owner and produce competitive effect with the complementator in the market (McIntyre, D. P., Srinivasan, A., & Chintakananda, A, 2021).

2.3. Platform Ecosystem Theory

Platform ecosystem is formed by the joint connection of providers, complementary providers, distributors, innovative product companies and other Internet service providers around the core platform. Providers producing complementary products for the platform will become complementary providers, platform providers will create interactive interfaces, and complementary enterprises can use platform information technology to create new products. Consumers will choose new products or services through the platform technology, and the overall competitiveness of the whole natural ecosystem will come from the member companies to create new products and services using the platform technology. Platform companies are the core companies in the whole platform ecosystem, which shoulder the great responsibility of maintaining the development and stability of the natural ecosystem. Platform strategies are used to achieve the stable development and sustainable benefits of the platform(Ning Ping & Yang Huixin, 2021). The strategies that can be adopted include market pricing, horizontal mergers and acquisitions, vertical integration, entering complementary markets, adjusting openness, etc. Among them, the openness of the platform is the key index of the open and closed development of platform enterprises. Platform openness refers to the amount and degree of platform utilization resources provided by platform companies to other companies in the natural ecosystem. It is a mechanism formed by platform companies controlling external innovation resources and competitive advantages. The increase of platform openness represents the increase of complementary assets, which can enable platform companies to master more complementary resources and have a good source of entrepreneurship. It also promotes the prosperity and development of the natural ecosystem of platform companies.

3. Research Hypotheses

In some cases, the relationship between platform owners and complementators is similar to the relationship between distributors and producers in traditional retail industry, that is, the complementators manufacture products and sell them to users through online platforms. In the platform ecosystem, the relationship between platform enterprises and complementators is substantially different from the relationship between sellers and producers. Both producers and sellers are directly connected to consumers through a linear relationship, and the value activities and brand activities of producers cannot be directly or completely transmitted to users, and the feedback of consumers is difficult to spread to producers in a large extent. Since platform owners can make the complementators directly connected to consumers, the feedback of users will also affect platform enterprises and complementators. The three are connected through the network rather than the linear relationship. In contrast, due to the more complex competitive environment of platform owners, the specialization of cooperation between platforms and complementary enterprises, and the need to cultivate a more valuable and complete business ecosystem, platforms are more active in coordinating cooperation between enterprises and different complementary enterprises. Another important way for platform owners to manage the value creation of their entire ecosystem is through selective marketing of complementary goods, cultivating individual success with complementary goods, and managing end users' awareness of the breadth and depth of the platform. In the case of Apple, by selecting new apps like "Choice", "Best New App", and "Best New Game" on the home screen of its ios App Store, the company gets more attention for new apps, thus increasing the number of customers targeted for these new apps. When a new app is offered by Apple through this route, Its total number of users can reach six times that of other applications, in addition, because of the selective support of different kinds of applications, it can also cultivate the end users of the ecosystem of products and services and the overall quality of the cognition, so as to increase the goodwill of the end users. Therefore, the following hypothesis is proposed in this paper:

H1: The introduction of similar business complements by platform enterprises is conducive to the improvement of enterprise leadership, so as to further strengthen their own operation level.

4. Data Collection and Sample Description

4.1. Collection method and investigation process

There are many methods in the field of information acquisition, which are generally divided into panel information, survey methods, questionnaires and literature research. This paper will take JD as an example to carry out the qualitative research. As a relatively simple, efficient and low-cost means of information acquisition, questionnaire is widely used by the majority of researchers. Therefore, quality research is to collect the required information through the way of questionnaire. At the beginning, according to the actual research topic, the researcher visited the platform company, visited its senior leaders, and participated in the e-commerce industry summit forum to understand the operating status and

operation principle of JD platform company, so as to find out specific business problems, and strive to realize the combination of theory, from experiment to theoretical research. On the basis of preliminary investigation and interview, through consulting domestic and foreign research data, find out the shortcomings of the research, so as to lead to specific research topics. Then find out the relevant variables published in authoritative core magazines in the academic circle or the measurement scale widely adopted by the society, and make a slight correction and adjustment according to the actual situation of JD platform, and then consult relevant teachers to make the correction, and then the staff of JD platform to make the correction and calibration, and finally establish a questionnaire about JD platform company. Then, the reliability of the scale is tested, and the final survey results are established.

4.2. Questionnaire distribution and recovery

In this paper, the final survey results are made into an electronic questionnaire, which will be pushed to the middle and senior managers of JD Platform Company from June to August 2021. However, due to the limited amount of questionnaires collected, many middle and senior managers of JD Platform company refuse to fill in the questionnaire,

especially before the internal investigation of JD Platform company. The middle and senior managers all made it clear that the investigation must obtain the permission of the parent company's legal institution. To collect more survey results, the researchers used the channels of teachers and entrepreneurs to complete the distribution of questionnaires, which were distributed between August and December 2021. A total of 652 survey results were collected, of which 231 were invalid, all of which have been withdrawn. Then, the sample questionnaires obtained were verified one by one, and incomplete or inaccurate questions were removed by improving the accuracy. After 137 questions were eliminated, 284 answers were finally obtained. The basic situation of the sample is shown in Table 1.

It can be found in Table 3.2 that the number of middle managers who actually participated in the study was 214, accounting for 75.40%; And the number of top managers was 70, accounting for 24.60%. In terms of the working duration of relevant managers, the number of samples within 5 years is 25, accounting for 8.80%; 5.10 years, 110 samples, accounting for 38.70%; 87 samples in 10.15 years, accounting for 30.60%; 43, or 15.10%, in 15.20 years; And 19, or 6.70%, for those who are more than 20 years old.

Table 1. Basic information of samples

| Basic Characteristics | Specific categories | Quantity | Ratio |
|-----------------------|---------------------|----------|-------|
| Position | Middle management | 214 | 75.40 |
| | Top management | 70 | 24.60 |
| Years of service | Less than 5 years | 25 | 8.80 |
| | 5.10 years | 110 | 38.70 |
| | 10.15 years | 87 | 30.60 |
| | 15.20 years | 43 | 15.10 |
| | Over 20 years | 19 | 6.7 |

4.3. Results of Correlation analysis

4.3.1. Regression test

In the data analysis process, according to the method most widely used in the scientific community, SPSS22.0 is used to average data processing for all factors before the direct effect hypothesis test, and then regression data analysis is conducted to test the influence of complementarity quotient (including specific complementarity quotient and general complementarity quotient) on platform leadership.

With the platform leadership as the dependent variable and

the newly introduced similar business complementarity as the dependent variable, the effect of complementarity on platform leadership was investigated by the regression method. The test results of the regression equation are shown in Table 3. Taking the complementator as the independent variable, the role of the complementator on the platform leadership is investigated. After adopting the regression method, it can be seen from the figure that the complementator has a positive effect on the platform leadership (M1, M2, $\beta_1=0.601$, $\beta_2=0.726$, $p<0.001$), and the H1 is tested.

Table 3. Analysis results of the effect of complementarity quotient on platform leadership

| variable | M1 | M2 |
|------------------------|------------|------------|
| Complementary quotient | 601 *** | |
| Platform leadership | | 726 *** |
| Position | .. 037 | .. 097 * |
| Years of service | 034. | 006. |
| R2 | 0.493 | 0.545 |
| ΔR | 0.418 | 0.470 |
| F | 29.610 *** | 31.893 *** |

Note: *** <0.001 , ** is $p<0.01$, * is $p<0.05$. The coefficients in the table are non-standardized coefficients.

4.3.2. Analysis of empirical results

JD platform enterprises occupy a key ecological position in China's innovation ecosystem. Among the multilateral cooperative customer base that is widely connected by network technology, the important factor that has a huge

effect on users is to a large extent the introduction of a large number of complementary manufacturers on JD platform. JD platform enterprises can not only obtain products and technologies from the product side through the complementary manufacturers, but also obtain the entry of

product side customers through the complementary manufacturers on the supply side. They can even make use of the effect of the same side of the market, so that the supply and demand sides can match supply and demand, interact in the market, and jointly capture the value of their products. Therefore, the more complementary vendors JD platform enterprises can integrate and utilize, the more beneficial it will be for its enterprises to gain greater benefits when entering its ecosystem, improve the trust of its internal company and individual users, and further improve the leadership of JD platform enterprises on other participants, so as to improve its own business ability.

5. Discussion and Suggestions

5.1. Discussion

(1) The introduction of similar business complements from JD platform has achieved good operating performance, especially in the aspect of operating efficiency of investment business, which has provided a lot of improvement to the operating performance of JD Group, increased the overall investment business income, effectively controlled the investment cost, and increased the return on equity. Thus, it greatly enhanced the market environment and investors' trust in JD enterprises, improved the turnover rate of enterprise receivables, improved the overall capital liquidity of the enterprise, thus improving the overall fund benefit, but also improved the level of operational cash flow, and made the supply chain fund operation situation improve day by day. However, the similar business complementator introduced from JD also faces some weak links and still has a large room for improvement, mainly affected by the following problems: First, it is not a long-term solution to extend the account period investment profit, the capital source channels need to be expanded and market changes and other factors. Therefore, the platform should also gradually do a good job in the introduction of complementary businesses.

(2) Through empirical analysis, it can be seen from the actual role of business complementarity similar to JD model, first of all, the huge impact of complementarity on the platform leadership. Complementarity is a large amount of capital needed for the special function of platform enterprises to generate advantages, and platform leadership is the most advantageous special function of platform enterprises. The generation of its leadership is also inseparable from the huge influence of complementarity. Secondly, the huge influence of universal complementarity on platform leadership. The funding of universal complementarity can support platform companies to accelerate the development of infrastructure, thus enhancing the economic strength of creating core business capabilities for platform enterprise customers. Through the rational use of the new manufacturing equipment, new process and new equipment brought by the entrepreneurial subjects in its ecosystem, it can also supplement the large demand of the platform companies for technical equipment. The more proprietary and universal complementaries platform companies can use in the natural ecosystem, the more they can leverage the investment of ecological enterprises into their ecosystem. At the same time, the ecological companies will play a bigger role in the natural ecosystem of various entities and influence more market entities, thus enhancing the influence of leadership. That is, the more complementary capital an ecological company can use, the more its leadership can be enhanced.

5.2. Suggestion

5.2.1. Build a service environment of payment integration in line with users' habits

Introducing the number of complementary merchants is an important cornerstone for the business development of a platform. Therefore, each company in the industry must determine its own user status in advance, which lays a good foundation for the overall cooperation process and the development of the whole platform. For example, in the business cooperation, the complementator and JD need to share user information to explore the user's ability in all aspects to meet the company's various needs; For the cross-application with complementary business, complementary business also needs to establish specific promotion plans to improve user stickiness and maintain user usage habits.

In addition, relevant business institutions must improve the construction of the entire network platform, and continue to guide commercial banks and financial institutions to establish a safe and convenient network clearing system; Encourage network operators to introduce policies to improve basic fixed and wireless broadband Internet access; Actively improve consumers' requirements for convenience of transactions, and increase consumers' mastery of mobile payment related technologies. Enterprise leaders can also stimulate the enthusiasm of consumers through corresponding policies, so as to lay a solid consumer foundation for the development of each product business.

5.2.2. Improve the level of internal operation

The internal operation and management of a platform enterprise not only directly determines the stability of the cooperation between the platform enterprise and its complementary partners, but also determines the service capability of the platform enterprise to users. Reducing the payment service cost of the platform may not only affect the overall income of the payment service provider, but also improve the profitability of the platform company itself. Therefore, JD platform company must start from internal logistics management, improve management, improve operation, formulate various systems, and ensure the effective implementation of the system through effective measures; With the change of objective facts, timely improve and enrich the management system, reduce the operating costs of JD platform; According to the business content of the complementator and take corresponding measures, timely adjust the cooperation plan, in order to balance the income sharing factors; To continue to take the leading enterprises in the industry as the development goal, armed themselves with new ideas and work style, to strive for and obtain the wide recognition of complementary business; To continue to strengthen the complementary business image construction, improve the sense of trust to users and complementary business.

5.2.3. Focus on innovative development strategies

At present, the biggest problem facing JD platform company is relatively simple business model and high degree of homogenization of business. This will increase the competition among platform companies and make the profit space smaller and smaller. It is not conducive to the collaborative development of the platform and the complementary companies, and generally reduces the overall profitability of the whole industry under this model. To completely change this situation, JD platform enterprises must innovate in order to form their core competitiveness. At

the same time, JD platform enterprises should make full use of the advantages of flexible operation, adhere to the innovative management thinking, actively expand the business field, promote model innovation, and constantly expand new market opportunities and development space.

From the perspective of the business development of JD platform, starting from the online payment service, JD platform continues to develop in the direction of complete services such as transaction service solutions, account service, data application and transaction convenience, and strives to bring more abundant and convenient transaction business to individual users and small and medium-sized enterprise customers. In order to improve cooperation benefits, JD platform company also needs to integrate and make comprehensive use of a large number of potential user information needed by complementary providers, thus forming rich user management resources. Not only to ensure the integrity and effectiveness of the resources, but also to make efforts in the sustainability and long-term nature of the resources, so as to mobilize the complementator's interest in other resources and thus enhance the cooperative partnership between them and JD Service company.

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