

# Enterprises Build Sustainable Innovation Loop: Take ByteDance Launching Lark as an Example

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**Abstract.** This paper uses the method of formal model construction to model the path of enterprise sustainable innovation and explains it by case analysis. Some suggestions are put forward then. In the changing market environment, enterprises can adapt to and strive for more living space only through continuous innovation. The construction of a sustainable innovation loop makes the previous research on sustainable innovation become relatively concrete from the abstract. Enterprises should construct and complete the loop of innovation path according to their own characteristics. In the process of launching Lark, ByteDance takes scientific and technological innovation as the basis, and business model innovation as the key link, and finally completes the cycle of innovation path, and the innovation is still ongoing, achieving the purpose of sustainable innovation, reflecting the enterprise innovation strategy and corporate culture.

**Keywords.** enterprise technology innovation, business model innovation, sustainable innovation, platform enterprise

## 1. Introduction

The fierce market competition makes enterprises and academics realize that only through continuous innovation can they maintain their own interests (Liu, 2015[1]). At the same time, the theory of sustainable innovation in the business field has also received more attention. Innovation is changing, the complex processes and costs of planning innovation activities are very high, and when stopped, they will cause significant losses for businesses. At present, there are two main types of research on sustainable firm innovation theory: "technology theory" and "market theory" (Zhang, 2020[2]). "Technology theory" holds that sustainable business innovation will include personal business technology resources, and the key is to build sustainable innovation capability, which shows systematicness and continuity, enables enterprises to actively respond to the dynamic changes of the market, and will constantly adapt to environmental changes, so that enterprises compete for advantages (Xiang, 2004[3]). It will also continue to allow companies to maintain new competitive advantages as the environment changes. "Technological theory" holds that technological innovation is conducive to cultivating the core competi-

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tiveness of institutions to maintain freedom and strengthen self-discipline in the face of crisis (Jiao, 2020[4]). According to the "market theory", market demand is the key factor for the continuous innovation and production of enterprises, which does not necessarily lead to enterprise innovation. Only market innovation can truly contribute to the sustainable growth of enterprises and generate innovation feedback for enterprises. In addition, other scholars believe that sustainable innovation of business model is an important part of sustainable innovation, and summarize the definition of sustainable innovation business model from four perspectives: factor definition method, process definition method, result in definition method and comprehensive definition method, and more agree with the comprehensive definition method (Xiao, 2020[5]). However, the sustainability of its innovation is only reflected in the business model, without considering the innovation in other fields and the consideration of the whole enterprise strategy, so it is relatively incomplete. To sum up, previous research on sustainable innovation of enterprises has the problems of unclear definitions and relatively general research content.

Therefore, this paper holds that the loop of sustainable innovation needs to be completed path, science and technology innovation, business model innovation, marketing innovation, policy innovation, strategic innovation and so on all can belong to a part of the sustainable innovation, enterprise sustainable innovation needs to be completed from innovation in the field of a step, gradually to other areas of innovation, And use the possible market pull power and the driving force of product research and development to accelerate the innovation iteration, finally can return to the initial innovation step, complete the cycle of the whole innovation cycle. Different enterprises have different paths of sustainable innovation due to their different industries, scales, strategies and resources. This paper will take Lark products as an example to discuss how ByteDance, a platform enterprise, builds a sustainable innovation path loop. Different from the general concepts in previous studies, the model constructed in this paper is abstract and formal, easy to understand and has strong applicability.

## **2. Case introduction: ByteDance launched Lark**

### *2.1. Introduction to ByteDance and Lark*

Beijing ByteDance Technology co., LTD. (<https://www.bytedance.com/zh>, hereinafter referred to as the "ByteDance"), It is one of the earliest technology enterprises to apply artificial intelligence to the mobile Internet scene. The company's strategic goal is to build a "global platform for creation and communication". Its products include Toutiao, Douyin, Watermelon Video, Toutiao Encyclopedia, Lark, etc (Huang, 2021[6]).

Lark(<https://www.feishu.cn/>) is a new one-stop cooperation platform independently developed by ByteDance in 2016, which can ensure the continuous and efficient work of tens of thousands of people around the world (Zhang, 2020[7]). Lark will be real-time communication, calendar, cloud documents, cloud disk and workbench deep integration, through the open source and compatibility of the platform, letting members online to meet the fluency of collaboration, mutual assistance and sustainability, the full level to improve enterprise efficiency. Its main functions include audio and video conferencing, online document and form creation, enterprise exclusive cloud storage space, "online office" real-time voice communication, message cloud preservation, small program ap-

plication and flying book robot, two-factor security service, efficient conference room system, AI multi-language translation, etc. On February 24, 2020, Lark, the office software of ByteDance, announced that it would be open to all enterprises and organizations in China free of charge, and all users could use all the functions of Lark. In addition to all suite features for free, enterprises can also enjoy free services such as regular online training courses, online live streaming to share the latest practices, training on new product features, and irregular return visits provided by Lark to maximize the use of efficiency tools.

2.2. Sustainable Innovation of ByteDance launching Lark

The key to sustainable innovation is to realize the loop of the innovation path. Relying on its scientific and technological innovation and business model innovation, Lark platform uses the two dimensions of user and industry research and development at the same time, realizing the loop of innovation path and sustainable innovation, as is shown in Figure 1.

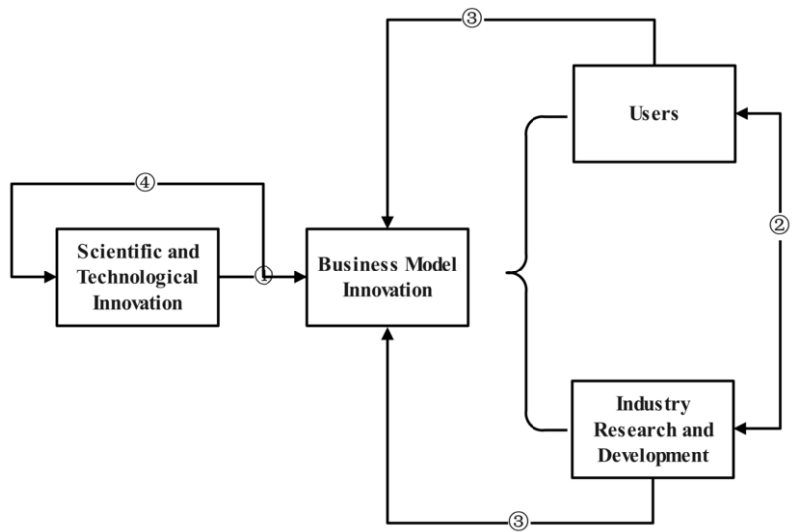


Figure 1. Sustainable innovation loop realization path of Lark

2.2.1. First step

First of all, scientific and technological innovation is the foundation of the whole innovation technology, and it plays a role in promoting business model innovation. The scientific and technological innovation of scientific and technological enterprises lies in the practice and exploration path of a technological innovation system. It is believed that enterprises should focus on the construction of product R&D systems and promote the timely transformation of achievements (Gu, 2022[8]). Relying on the high-tech support of ByteDance platform, Lark can realize the application of the latest research and development technologies and products. The multi-functional characteristics of its products

enable rapid iterative research and development of new technologies, so as to achieve the rapid marketization and application of scientific and technological innovation technologies. Among them, "Multi-person meeting and intelligent conference room solution" is its key scientific and technological innovation project. Video is the advantage of ByteDance, so in addition to the conventional functions, the conference function is especially highlighted in the construction of the Lark platform. The video of Lark combines the office scene in depth, and files can be shared in the meeting, which is convenient for viewing and discussing solutions, and is more suitable for remote collaborative work. You can mute some personnel to improve meeting efficiency. It can be recorded and broadcast for the convenience of those who did not attend the meeting. Can be directly linked to share, convenient for other users to quickly view on other ports. At the same time, in addition to the above online meeting functions, Lark also fully considers the offline meeting needs in the regular office of enterprises, and works with leading intelligent hardware brand partners in the industry. Including ANKER, Bose, Cisco, EPOS, Hamedal, HIKVISION, Hisense, HP, HUAWEI, etc., together to provide high-quality hardware-supported video conferencing solutions for enterprises. ByteDance provides online and offline technical support through scientific and technological innovation when operating the Lark platform, which can better promote the construction of a complete business model, so that there is no solution gap in every demand corner of the business model.

### 2.2.2. Second Step

Secondly, the business model innovation of Lark platform fully considers the two aspects of users and industry, research and development, and makes full use of its interaction, so that product development can meet the user experience and user experience can promote product development at the same time. For the discussion of business model, no matter from the perspective of a business framework, a business model is an organic structure formed by the combination of basic business elements of an enterprise. The key to understanding business model is to clarify the content, structure and connection of business elements (AMIT R, 2001[9]; MORRIS M, 2005[10]) or value logic view, which regards business model as the route plan for enterprises to carry out value creation and acquisition activities (TEECE D, 2018[11]), both require enterprises to clarify the parties involved in business model and the solution route. However, for Internet products, there is almost no physical material resource cost, and participants only need to know the needs of users and the ability of research and development, so it is particularly important to pay attention to these two ends. ByteDance has a social tool matrix with information, short video and community as the core, and has a large number of C-terminal users, which can accumulate users base and make endorsements for the launch of new platform products. In addition, different from the previous static products, Lark is mainly dynamic content, which can cut into many industries horizontally, such as e-commerce industry (merchants enter), education industry, B-end tools, etc.; By using the dynamic nature of channels such as live broadcasting, users' questions can be answered at any time, so that users can constantly accept them, and then carry out new marketing. It is not the same as common static products, which only have one chance to talk to users, and it is difficult to have a second chance to explain users' questions and dissatisfaction. It relies too much on data embedding and data analysis. More importantly, since the Lark platform itself serves enterprises, ByteDance is a very suitable enterprise for the office platform based

on its Internet industry background, and high-tech talent advantages, so ByteDance employees become the first batch of users of the Lark platform. More importantly, most of the first group of users have a basic knowledge of algorithms, programming, product iteration, UI design and aesthetics, and are familiar with corporate culture and corporate objectives. They can put forward clear and reasonable requirements and suggestions for improvement. Internal communication within the company is convenient and smooth, which lays a foundation for the first step of development, operation and maintenance of the platform. More importantly, the multi-dimensional tables and low-code development functions equipped with Lark enable users to write corresponding functions according to their own needs based on templates, without learning complex programming syntax. Under such conditions, users themselves are developers.

### 2.2.3. *Third Step*

Thirdly, the different application background of the platform makes users put forward new demands, and the industry and research development department also creates a new product iteration path, which will also give birth to a new business model. ByteDance initially offered its service for free to business users. This can expand the number of users, so as to serve as many types and as many enterprises as possible; It can accumulate industry data and lay a solid foundation for future industry big data analysis; It can cultivate the inertia of enterprises and users, so that enterprise users form the habit of using, so that after the data accumulation, because the cost of replacing products will be too large, the data is difficult to migrate, so as to basically bind long-term users; It can also quickly polish the product, so that more users can quickly run-in with the product, iteration of better products, so that users and products adapt to each other. In the later stage, the business model of personalized payment and customization is introduced according to different enterprise needs. Including the most basic premium paid services (according to the number of organization members, according to different versions of charges), industry trend reports (relying on the data of many enterprises, machine learning and artificial intelligence can analyze the current situation and future of all industries), supply chain finance (using unique data dimensions to build a model, To provide financial services for high-quality enterprises) and ecosystem construction (by investing in high-quality enterprises in the industry and self-admission, we constantly construct and improve our own ecosystem). In this way, user needs and R&D drive new and more personalized business models. A more specific and typical example is that in 2020, due to the soaring demand for online office work during the pandemic, ByteDance announced a three-year free policy for organizations with less than 100 employees, while giving big companies a discount for collaborative solutions. On the face of it, that would seem to be a bit of a hit to Lark's potentially profitable business model. But fundamentally, the change of user needs in turn promotes the innovation of business models, and pushes the whole sustainable innovation loop forward.

### 2.2.4. *Final step*

Finally, the new business model needs to put forward new requirements for the endogenous scientific and technological capabilities of enterprises. If the scientific theory and practical application capabilities can meet such requirements, a new business model will emerge and a new round of sustainable innovation loop will begin. Although for ama-

teurs as a method to prove or disprove meet the demand of this new business model of the existence and the feasibility of new technology, however, a sustainable innovation loop means the end of the next the beginning of the sustainable innovation loop, byte to beat Lark platform on a separate loop sustainable innovation is generation enterprise collaboration business model new requirements and the results of the pull. Therefore, the integrity of the sustainable innovation loop can be verified by analyzing the new technological requirements proposed in the previous sustainable innovation loop. The last generation of enterprise collaborative business model products have completed the functional separation, that is, in addition to the conventional administrative management, more important is the core process of enterprise work: namely, discussion direction, dismantling and assignment of tasks, collaborative project completion (output document, project implementation) and effect summary. Based on this, two targeted core tools can be extracted: first, meeting, including discussion direction, output meeting minutes to allocate tasks; Second is documentation, including collaboration, and control of output documentation and implementation process. However, the previous generation of enterprise collaboration model still has some problems, such as difficulty in collaboration mechanism, high learning cost and few users. Therefore, ByteDance provides new scientific and technological support for the new generation of Lark platform, aiming at the demand of B-terminal office products. In terms of core target process allocation, an OKR evaluation mechanism is provided, and new low-code SaaS and other emerging technologies are used to help enterprises build their own writing management platform. In terms of documents, a more advanced multidimensional form system is introduced, which can help enterprises better manage data and meet the needs of visualization, instead of using expensive enterprise management software such as an ERP system. For meetings, it's the "Multi-person meeting and Smart Conference Room solution" mentioned above. It can be seen that the scientific and technological innovation requirements put forward by the last round of sustainable innovation loop will promote the generation of the next round of business model innovation.

At this point, a sustainable innovation loop has been completed, and the innovation of enterprises will enter a new stage. This cycle is repeated, adjusting along the way and incorporating talent, marketing, financial support and other factors that help speed up the innovation process to achieve sustainability.

### **3. Conclusions**

ByteDance has completed the loop of innovation path and realized sustainable innovation in the process of launching Lark. In the process of development, operation and maintenance, marketing and improvement of Lark products, ByteDance's strategic thinking of sustainable innovation can be reflected. In the process of sustainable innovation loop, based on scientific and technological innovation, business model innovation and innovation play a key bridging role. Both users and industry, research and development play a role in promoting the smooth operation of the whole sustainable innovation loop.

The realization of sustainable innovation in enterprises lies in the construction of innovation loop, so that innovation can continue to adapt to market changes and devel-

opment through promoting and pulling. Different enterprises have different paths of innovation loop. In the future research process, different sustainable innovation loop constructed by more types of enterprises can be discussed. However, for Internet platform enterprises, the characteristics of science and technology as the primary productive force are more obvious. Therefore, the optimal innovation development of Internet enterprises is based on scientific and technological innovation as the beginning and foundation of sustainable innovation loop, and scientific and technological innovation should be regarded as the foundation of high-tech enterprises. If the company begins a continuous innovation path in other ways, such as business model innovation, the next user demand analysis will be not perfect. And production research and development phase can only operate in black-box rather than be understood as clear internal mechanisms. This will eventually lead innovation path not being achieved circle and the company cannot achieve the purpose of sustainable innovation. Because there is no master to support the core science and technology of the operation of the business model.

The research on enterprise strategy, especially the strategy of Internet enterprises, should not be generalized without its products. Peeling off the product research enterprises will not get a comprehensive understanding from a Hillhouse, but will be vague. Especially Internet enterprise products for consumers and society is the first window, the localization, the strategic target of the enterprise, innovation point and so on also will be reflected in the products, and even a lot of enterprise management and target completely and run around one or more of the following products, products in the new, operations and user satisfaction, etc., directly affect the enterprise performance. The quality of the product is more related to its corporate image itself, and consumers often equate the product with the enterprise itself. Therefore, research on Internet platform enterprises should not go against the trend based on theories, but should first study their representative products and have at least a basic understanding of their application technologies, user portraits, market environment and so on.

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