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AN INNOVATIVE E-COMMERCE PLATFORM INCORPORATING METAVERSE TO LIVE COMMERCE

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Abstract. *This paper presents an innovative business model of a new electronic commerce platform that overcomes the limitations of existing online shopping by combining live commerce with metaverse using digital twin technology. The proposed business model is presented in detail through the business model canvas and the visualized core business activities. Currently, live commerce is attracting attention as a new online shopping method, and its growth rate is fast. However, the existing live commerce has disadvantages such as boring content, limited communication through chatting, limited space for live broadcasting by sellers, and lack of experience with brands and products of consumers. Through the proposed new intermediary platform, consumers can look and feel the brand and experience the functions of the product in the virtual world, thereby enhancing the purchasing experience. In addition, sellers can create innovative content through the metaverse and design a concept space to secure brand awareness and loyal customers.*
Keywords: Business model, Digital twin, E-commerce platform, Live commerce, Metaverse, MBUS

1. **Introduction.** Recently, the live commerce market started from China, has become a new trend in e-commerce worldwide [1]. Live commerce is a streaming broadcasting type of commerce that introduces products by communicating with consumers through chat [2]. Taobao, China's most representative e-commerce platform, launched its first live commerce application called Taobao Live in 2019. In 2020, it achieved more than $4.4 billion in transactions and is growing rapidly due to the impact of COVID-19. In addition, according to statistical data, in February 2020, the number of sellers on Taobao reached 1 million [3]. Currently, consumption through the live commerce platform is increasing, and the market prospect is good enough to create professional platforms in each country [4]. However, despite the rapid growth of live commerce, there are several disadvantages. Specifically, show hosts and consumers can only communicate through chat; therefore, this is not a fully interactive communication. Furthermore, it is impossible to directly experience the product, and neither is the brand. It has limitations in attracting attention by giving new stimulation to people due to its banal content.

Experience means actually going through something or using a particular object. In other words, brand or product experience means that consumers understand the concept and characteristics of brand or product through direct experience. In the era of market 4.0, consumers spend through experience because they value brand identity when making final purchases [5]. In case of Swedish furniture brand IKEA, the store is decorated like a real house with experiential design. Consumers are able to immerse themselves in

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shopping by experiencing the brand and products as if they were at home, which has the effect of leading to a final purchase. As such, consumers have a desire to shop with a variety of experiences. However, there is a limit to delivering the concept of products and brands to consumers online. This makes consumer's product experience insufficient. Therefore, in this study, we propose the idea of creating a platform that overcomes the limitations of existing online shopping by combining live commerce and metaverse.

Metaverse is a compound word of meta and universe, and it is a 3D world where reality and virtual coexist [6]. Recently, various content platforms using metaverse are being launched in the market. Fortnite, developed by Epic Games, is a program that utilizes metaverse to play games or create a community between users. In April 2021, a concert by famous rapper Travis Scott was held at Fortnite. About 27.7 million users gathered and generated more than 10 times the profit of offline concert [7]. Thus, metaverse is receiving positive reviews that it will grow in combination with various fields such as games, fashion, music, and education [8]. Metaverse has the advantage of allowing users to create their own content beyond the limits of physical space, and experience things on online which has been available only on offline.

Live commerce and metaverse have a complementary relationship. If a product is sold only through live broadcasting, it is difficult to completely resolve the questions of consumers by communicating through comments. On the other hand, the metaverse has a limitation in that it cannot obtain information or photos about the actual product shape. Therefore, by combining the two, we propose a platform that can complement each other's shortcomings to form a shopping space that enjoys the advantages of offline as well as online.

This paper presents a business model that proposes a method to identify, analyze, and satisfy the needs of consumers and sellers, who are customers of the proposed platform. The business model provides a space for consumers and sellers to consume and sell products. Also, it can be defined as a concept that generates revenue from commissioning brokerage, advertising, and design request for metaverse space. To this end, the key to the success of the business model is to select a specific market at an early stage, establish a strategy for alliances with popular brands in that market, and establish a strategy for acquiring new customers.

There has been no case of combining metaverse and live commerce so far; consequently information from previous studies on services provided by the platform was lacking. The comparison with business models of other platforms also has limitations. In this study, information on services and functions of existing live commerce and metaverse was identified. Based on this, it has practical significance in that it analyzes the needs of people who do online commerce to gain insights and propose the innovative business model.

The rest of the thesis is structured as follows. Section 2 reviews related studies. Section 3 introduces the proposed business model for the platform. Section 4 shows the usage scenarios of the platform, and explains the related contents and usage process by dividing customers into consumers and sellers. Finally, Section 5 concludes the paper and describes the expected effects and future work.

2. **Related Studies.** This section explains related research and theoretical background. A business model describes how a company creates, delivers, and acquires value [9]. Furthermore, it includes how services are delivered to which customers and how revenue sources will be obtained [10]. The contents of a business model can be visualized using the business model canvas. The business model canvas consists of a total of nine elements: customer, value proposition, channel, customer relationship, revenue source, core

resource, core activity, core partner, and cost [9]. Abstract ideas can be embodied based on the business model canvas, which helps to think and understand them.

In general, the live commerce platform is generating revenue by receiving a certain amount of commission from the sellers through a service that provides a platform and environment for live broadcasting. In this study, the business model is a new solution that provides customers with services using digital twin technology that are differentiated from those of existing platforms. It is meaningful to provide consumers and sellers with a new value as a retailer that overcomes the limitations of online shopping by combining live commerce and metaverse. Therefore, the proposed business model is an innovative business model in terms of value proposition because it can create higher value than the business model of the existing platform.

Digital twin technology is a new technology that digitizes real objects in the real world into twin objects in the virtual world. Users can experience the movement and behavior of objects in the virtual world using the digital twin technology. Metaverse is a world created using digital twin technology [4]. The new business model proposed in this study allows consumers to experience products implemented with digital twin technology as a character in the virtual world. In addition, through live broadcasting, consumers can view the product in detail and execute the function while watching the actual product in a video. Thus, we present a new innovative business model of e-commerce in terms of providing new content and experiences to customers.

3. Proposed Business Model.

This section describes the core services and components of the business model of the proposed idea. Furthermore, it explains the core activities of the business model in an easy-to-understand manner.

The name of the proposed metaverse live commerce platform is MBUS, which has three meanings. It contains the meaning of utilizing a bus to the metaverse space, business using the metaverse, and the metaverse space. The name of the platform was chosen with the core content of the business model of the business idea. The core service of MBUS is to provide customers with a platform that combines live commerce and metaverse. Specifically, consumers are provided with the ability to view products implemented with digital twin technology while watching live broadcasts and listening to product descriptions. Consumers can experience the brand by entering a space with the characteristics of the brand, and they can participate as characters in the virtual world to reveal their individuality. It provides a function that allows consumers to communicate with other consumers during live broadcasting. The sellers can decorate the space to express the concept of the brand. In addition, it can present unique content and provides a service to communicate with consumers through voice as well as chatting. Furthermore, it provides a service that helps sell products by analyzing sales records and providing reports on consumers.

The nine main business elements of the proposed platform's business model are described. Customers of the platform are divided into consumers and sellers. Customer segments are those who want to enjoy brand experiences and fun content while shopping online. There are also sellers who want to express and showcase their brand characteristics. In order to use the platform, an application is provided to consumers and a web channel is provided to sellers. It provides consumers with the same shopping experience both online and offline. In addition, providing a space to appeal the sellers' brand concept online is the core value of the business model of this study. To realize this idea, the cost of operating the IT infrastructure and digitizing the product is necessary. In order to cover these costs and generate profits, the business model has three revenue models. First, it generates advertising fees by exposing advertisements on the web site and in

mobile apps. Second, when consumers purchase products through the mobile apps, platform earns profits by receiving brokerage fees from sellers. The final revenue model is the design fee, which means the revenue received from the sellers when they request additional space design to the platform to further decorate the metaverse space according to the brand concept. Additionally, in order to realize the business model, digital twin technology companies, online payment companies, and product sellers are essential as key partners. Finally, the necessary resources are digitalized products, metaverse technology, and databases of sellers and consumers; therefore, the corresponding elements must be implemented.

Figure 1 visualizes the core activities of the proposed business model. MBUS is a platform that provides mediation services between consumers and sellers. First, the sellers enter the platform, register the product and sell it. The consumers then visit the platform to purchase or browse the product. The platform provides sellers with metaverse space and themes. When sellers register a product, the platform implements the product using digital twin technology and provides it to the sellers. The platform also provides sellers with the interworking function and space between the metaverse and live broadcasting. In addition, the platform provides sales analysis function and order management function. For consumers, the platform provides services so that they can experience metaverse content and products. It also provides a service that enables communication between consumers. The consumers can ask the sellers a voice question during the live broadcast. Then sellers can accept voice question requests and communicate with each other by voice.

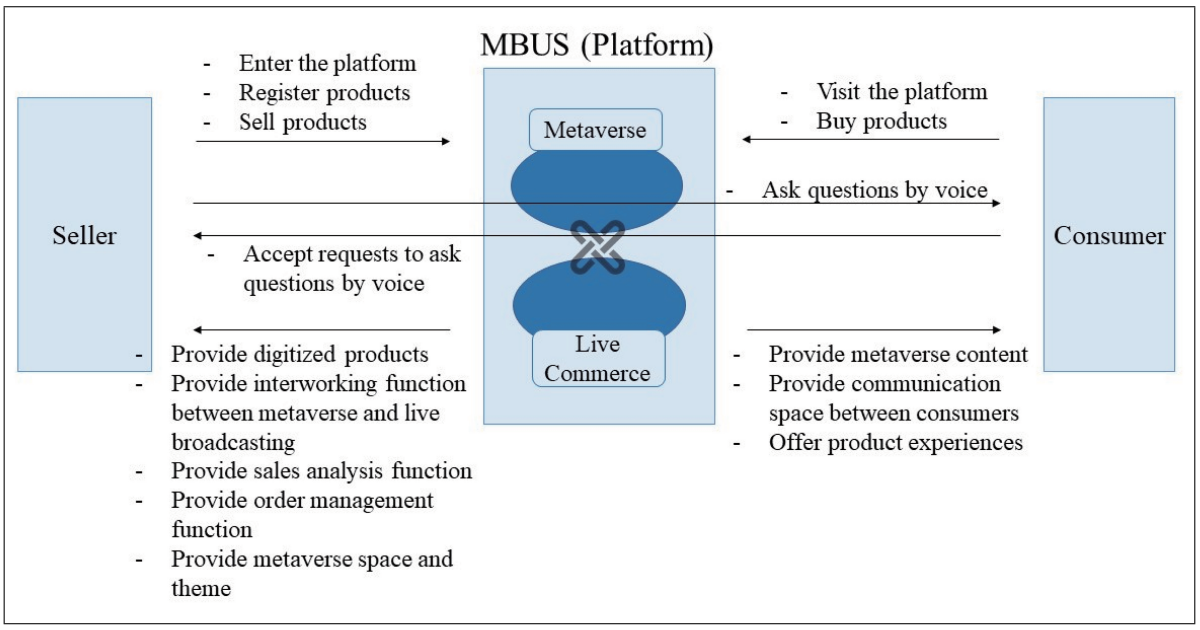

FIGURE 1. The core activities of the proposed business model

4. **Use Case.** In this section, a use case scenario for the platform is presented. The scenario was created using the Jump [11] application. The platform provides web-type User Interface (UI) for sellers and application-type UI for consumers.

Since MBUS is a latecomer in the live commerce market, it has set an initial target market. Recently, outdoor camping has become a new trend, and consumption related to camping is rapidly increasing [12]. In the case of camping equipment, there are many things to assemble, so consumers must check and use it with their own eyes. Also, when selling by live broadcasting, it is difficult to decorate the broadcast place like a

campground. Therefore, a promising camping market that can solve the limitations of existing online sales through metaverse was selected as the initial target market for the platform.

4.1. **Sellers' use case.** The platform provides sellers with product registration, order management, sales analysis, live setting, and metaverse setting functions. In '*Product Registration*', product to be sold in a live broadcasting is registered. Registered products are implemented with digital twin technology and can be used in the metaverse setting. In '*Order Management*', sellers can check the order of products they sell. In '*Sales Analysis*', it provides a report that analyzes customer visit, sales and metaverse. Sellers can use the analysis report to plan a sales strategy.

In '*Live Settings*', sellers can set basic settings for live broadcasts such as a broadcast name, broadcast start time. A unique key number is generated when sellers schedule a

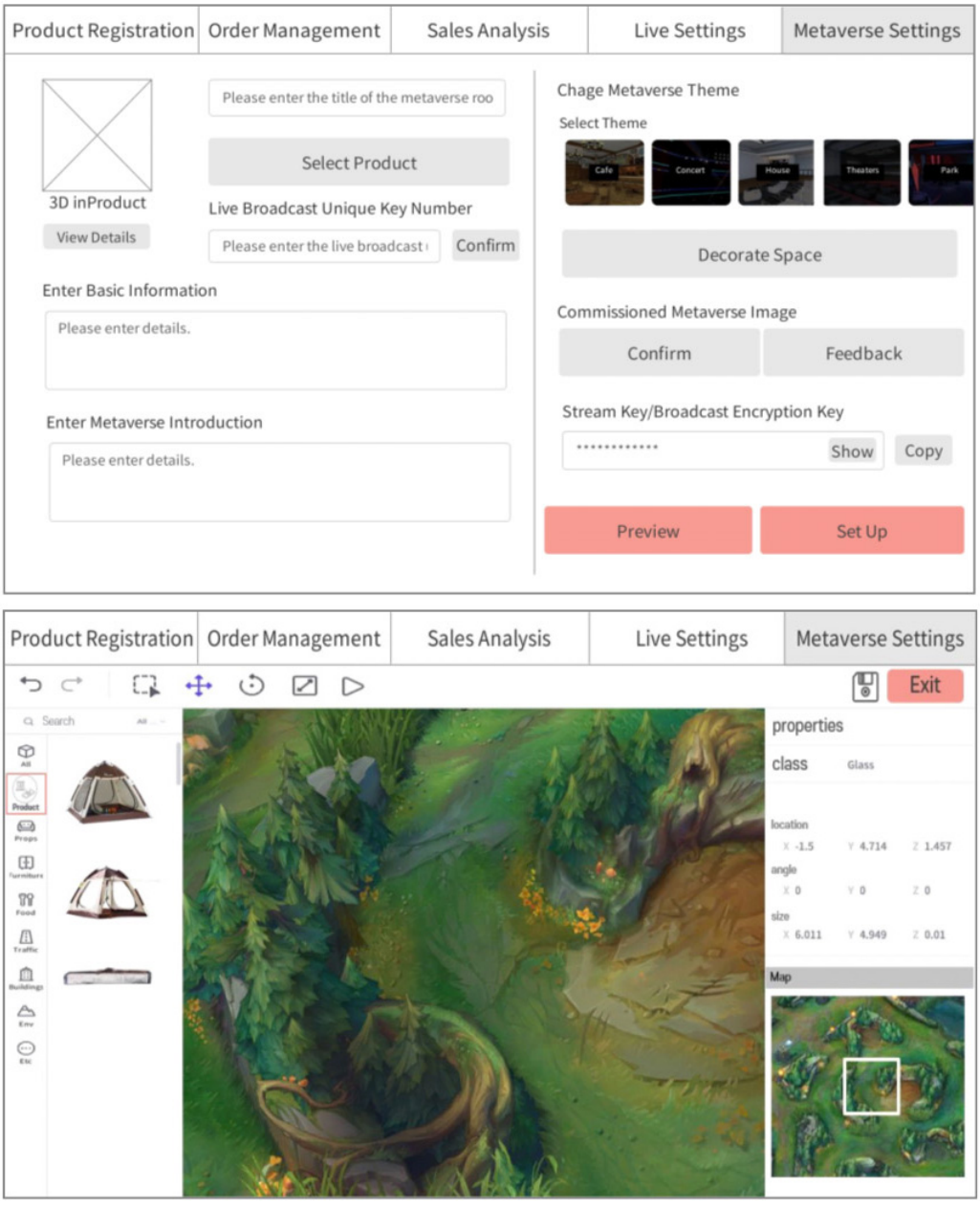

FIGURE 2. Screens of metaverse settings

live broadcast. In '*Metaverse Settings*', live broadcast and the metaverse space can be linked using a unique key number. When a live broadcast with the unique key number of the metaverse starts, the metaverse is also automatically created. Also, sellers can choose a basic theme, decorate the space with furniture and props, and even place digitalized products.

Figure 3 is a screen where the sellers can view live broadcast, metaverse room, live chat, and sales status simultaneously during the broadcast. An additional metaverse room is automatically created when the maximum number of participants is exceeded. When you click the hand button (labeled (a) in Figure 3) on the metaverse, a mark appears on the characters of consumers who requested a voice question. By clicking a character on the mark, the sellers can communicate with the consumer by voice.

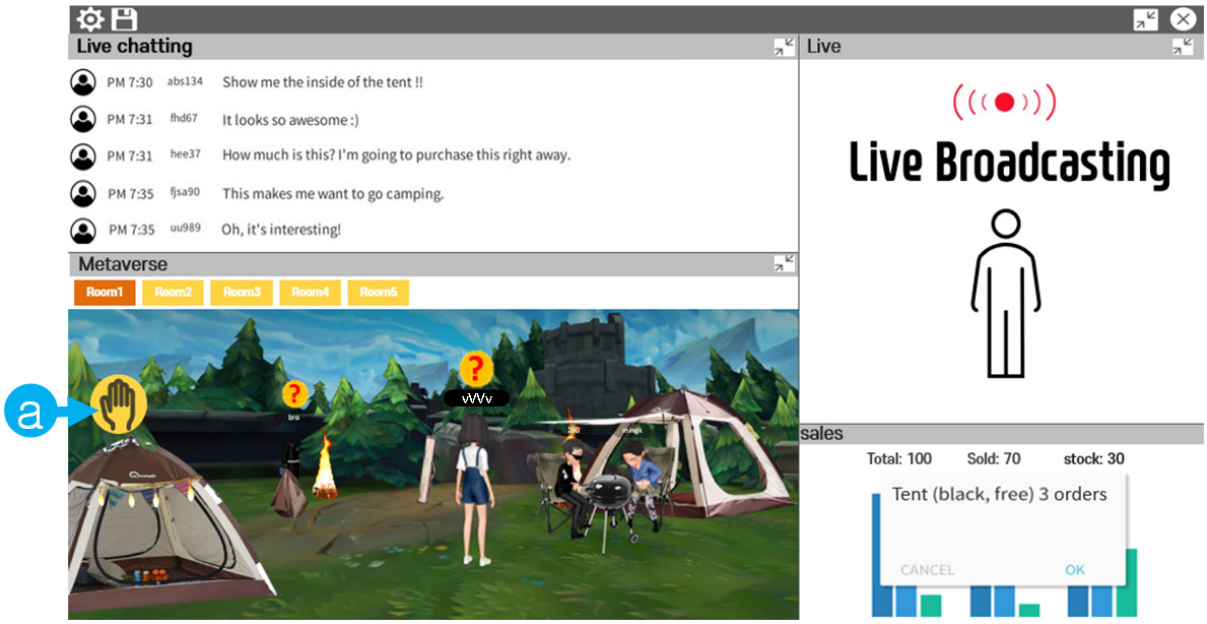

FIGURE 3. Screens of the live broadcasting management

4.2. **Consumers' use case.** Consumers want to buy products online. They want to see the product in detail and try using it. However, general online stores only provide product photos and production information such as size and color, which cannot satisfy this need. MBUS allows consumers to experience the product and obtain more detailed information based on their experiences. When using the application for the first time, a sign-up screen appears, and the consumers create and set a character to be activated in the metaverse. On the main screen, various live broadcasts are displayed, and consumers can enter the metaverse decorated by the sellers by clicking the metaverse button (labeled (b) in Figure 4) at the top right of the live broadcasting screen.

In metaverse, users can view live broadcast screens, request voice questions, add products to the shopping cart, and make purchases (labeled (c) in Figure 5). When the user clicks the voice request button (labeled (d) in Figure 5), the request is forwarded to the sellers, and if accepted by the sellers, the consumers can ask a question by voice. There are also digital products for sale (labeled (e) in Figure 5). These digitized products are implemented using digital twin technology and have the same properties and appearance as the actual product. Consumers can try using these products through character. For example, if the product being sold is a tent, the consumers can unfold and fold the tent as a character. Consumers can also step inside the tent to see what the inside looks like

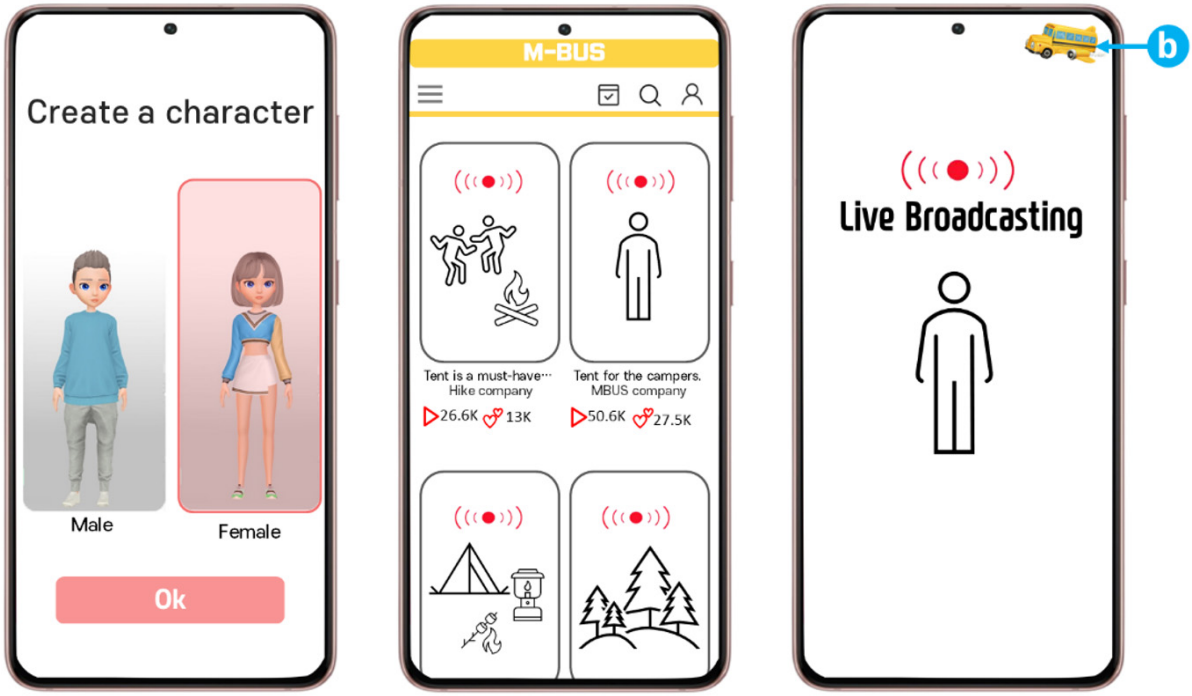

FIGURE 4. Screens of character creation, main screen and live broadcast

FIGURE 5. Screens of metaverse

and see the outside of the product as they want. In existing live commerce, consumers obtained product information only through the host. However, by combining metaverse, they can answer any questions that they have about the product on their own. Finally, consumers can communicate with others, thus creating new communities within the platform.

5. **Conclusions.** We proposed a new business model that combines live commerce, a new and promising e-commerce channel, and metaverse. The proposed metaverse live commerce platform called MBUS was presented in detail. Sellers solve the limitation of the space shown to the live broadcast consumers with the metaverse. In addition, it is possible to provide a brand experience to consumers by decorating the space of the metaverse according to the brand or product concept. Consumers can look around and use the product as they want with their characters in the space of the metaverse. By using the application, sellers can create innovative content through metaverse and design a concept space to secure brand awareness and loyal customers. Also, consumers can experience the advantages of offline shopping on online. This makes shopping more satisfying and allows consumers to enjoy shopping by making the shopping process a form of play.

In the future, more advanced technological research is needed to provide satisfaction corresponding to actual experience. As a contactless society is activated due to COVID-19, it will be difficult to take offline consumers who have already settled online. Therefore, there is a reason to create a new platform with the advantages of offline as well as online. If the proposed platform is activated, consumers will be able to experience the same as offline shopping on online. Furthermore, even without operating an offline store, sellers can make the consumers aware of the brand and reduce store operating costs.

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