

A STUDY ON THE BUSINESS MODEL OF FOOD DELIVERY PLATFORM

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Abstract

The expansion of the worldwide e-commerce industry has been facilitated by advancements and innovations in science and technology. This has resulted in increased convenience in daily life. Furthermore, the progress of science and technology is frequently driven by consumer demand, which explains why individuals are more inclined to allocate financial resources despite their hectic schedules. The convergence of time-to-buy convenience services and the recent epidemic has significantly transformed individuals' lives and impacted numerous sectors, most notably the catering industry, which has concurrently propelled the growth of food delivery platforms. The exponential growth of the Internet of Things has established a nexus between retailers and customers, enabling businesses to engage in online competition as well as offline.

The delivery platform offers an extensive selection of options. It not only alleviates the inconvenience but also adds to the enjoyment of food shopping. At present, consumers can receive doorstep delivery of supermarket products, and the progression of online-to-offline (O2O model) technology swiftly satisfies evolving customer demands. Nevertheless, in a highly competitive market and one where consumption patterns are in a constant state of flux, enterprises require innovative services, channels, strategies, and systems to maintain a steady customer base and attract new ones, thereby extending the life of the distribution platform. Numerous business interests, in order to facilitate the sustainable development and operation of enterprises.

As an increasing number of companies enter the market for delivery platforms and products of the same nature become increasingly competitive, the objective of this study is to determine how businesses can attract consumers with innovative services. This study focuses on delivery platforms and primarily employs the business canvas model to describe the organization. Subsequently, the TRIZ method is utilized to construct a business contradiction matrix, which investigates the conflict between management and business, and suggests potential resolutions.

Keywords: O2O model, Delivery platform, Business Canvas model, TRIZ method

Introduction

Background of the Study

Emerging technologies have significantly impacted e-commerce and shopping behavior, leading to an increase in on-demand services such as food delivery platforms (Shen et.al., 2020). These platforms connect food providers and customers, providing convenience and real-time updates. With a single tap, customers can order groceries, drinks, or meals, browse menus, and post reviews. These services are highly efficient and have seen rapid adoption in urbanized areas, offering a wide variety of meal choices and reducing queuing times. They also help restaurants provide

simple and convenient services, reducing call charges and transaction costs.

As people become busier and lifestyles become more convenient, food delivery platforms have become more accepted. The market continues to grow due to the availability of various menus from both large chain stores and small restaurants, discount benefits, and easy access to information (Ye-Eun Song et.al, 2017). Platforms like Foodpanda, Uber Eats, and Foodomo are expanding their offerings and partnering with supermarkets and convenience stores to provide faster services. The global online food delivery services market is expected to grow at a compound annual growth rate of 15.4% from 2019 to 2025. (Figure 1)

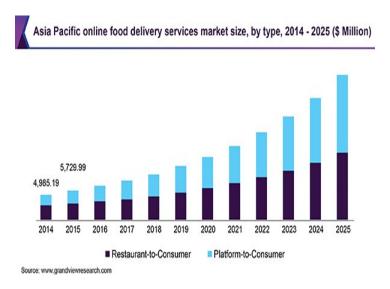


Figure.1 The Asia Pacific online food delivery services market size

During the Covid-19 pandemic, online shopping has become crucial for consumers to avoid crowd contact and maintain social distance. New features like non-contact delivery have reassured consumers about the limited virus exposure risk. Taiwanese people are now consuming three meals a day through food platforms, balancing demand and creating a win-win marketplace for merchants and customers.

This study investigates the proliferation of new entrants into the fooddelivery platform sector. Environmental and human behavior shifts will continue to influence the business models and positioning strategies of food delivery platforms in order to retain existing consumers and attract new ones. The results obtained from this research will prove valuable in aiding the development of a sustainable business model for delivery platforms and in enhancing comprehension of their inner workings.

Changing eating patterns have increased online-to-offline catering, resulting in increased consumption and the emergence of "virtual restaurants." Nevertheless, delivery service platforms encounter obstacles including private brands, virtual supermarkets, and competition. It is of utmost importance to analyze these threats and contemplate appropriate responses, given the profound impact that forthcoming technological advancements will have on the food-delivery sector.

Literature

O2O Business model

The "O2O model" refers to the integration of online and offline stores, allowing consumers to shop and purchase products and services (Pan, Wu, &

Olson, 2017). This model is fast, convenient, and efficient, operating on a core platform that links everything and provides users with comprehensive product and service information (S.Y. Hwang and S. Kim). As consumers increasingly prefer online shopping and visit physical stores less frequently, brick-and-mortar retailers are adapting their business models to stay competitive. The rise of online commerce has led to changes in traditional work practices, with O2O services providing both online and offline services. The O2O marketing model challenges the notion of a single channel, integrating the physical and digital attributes of offline businesses with online shopping to provide an enhanced shopping and business experience. This model is seen in industries like restaurants, food delivery, and travel and transportation. By leveraging online engagement, businesses can gain a better understanding of consumers' preferences and foster stronger relationships.

O2O Operation Mode

The O2O consumption model focuses on consumers purchasing goods or services in physical stores and paying online, with the O2O model being directional and identifying customers through various channels (Rampell, 2010). This model encourages businesses to use online channels for marketing, keeping messages relevant and offering promotions to drive offline sales. By under-

standing the advantages of online and offline channels, businesses can better target customers and develop accurate marketing strategies. This approach fosters a cooperative environment between merchants and service providers, promoting mutual benefit without overdependence.

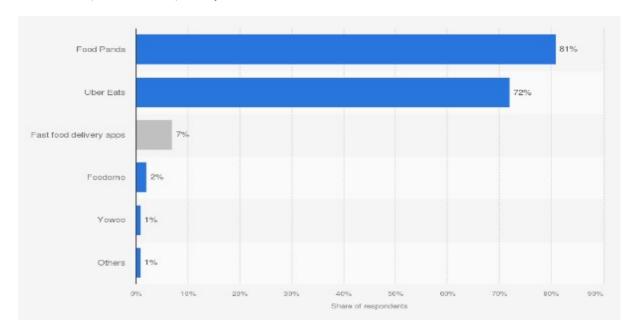
O2O addresses challenges faced by physical store owners by providing customers with a convenient, costeffective, and broader reach. It helps retailers understand customers through network data and reflects current trends. Online and offline channels complement each other, allowing businesses to attract customers and maintain a competitive edge.

O2O offers numerous benefits to users, including time-saving, discounts, information sharing, and efficient communication. It allows customers to compare prices and services, reducing the dependence on physical stores. O2O also allows merchants to grow sales channels, reduce location dependence, and reduce costs. It also provides convenience by offering goods and services to specific customer groups and managing accounts. Overall, O2O platforms provide a platform for both consumers and service providers.

Delivery Platforms

The Covid-19 pandemic has led to a shift in the food delivery industry, with many urban consumers adopting delivery platforms (yeo, Goh, & Rezaei, 2017). These platforms act as intermediaries between consumers and restaurants, handling logistics and providing numerous benefits (Rivera, 2019). They allow

applications like Foodpanda, Uber Eats, and GrubHub offer online ordering and easy tracking. These platforms must cater to the needs and expectations of their existing consumers, leading to intense competition in the third-party food delivery industry (Kitsikoglou et.al., 2014).



consumers to purchase a wide range of food selections, increasing revenues and convenience. Delivery platforms collect orders from consumers and pass on information to restaurants and delivery personnel (troise et.al., 2021). They do not cook food or own restaurants, but aim to connect customers with service providers in the best way possible. They encourage well-known restaurants to join their platforms, building a loyal customer base. There are two primary types of food delivery operations: restaurantbased, direct-to-consumer, where restaurants provide their own services, and delivery-based, platform-to-consumer, where third-party operators and mobile

Taiwanese Food Delivery Platforms

Das and Ghose (2019) said that consumer behavior has changed due to busy work, lifestyle, and health events, with the worst period since February 2020. Restaurants have had to shift their strategies to online orders and contactless delivery to survive. E-commerce provides benefits such as information on products and services, locating retailers, price comparisons, accessible delivery, and fluency in buying through mobile devices. Food delivery services are an extension of the overall e-commerce business model, with well-established

Name	Overview	Market Positioning
foodpanda	Established in 2012. The first delivery platform to enter Taiwan. Well known and relatively mature delivery platform.	 Complete eco-system: Services updated regularly so that the interface is clear and easy to understand and has a complete function set. Wide choice: Cooperating businesses range from fine dining restaurants to snacks. Panda Supermarket now delivers fresh food and daily necessities. Broad scope: Business scope expands continually. Now has operations throughout Taiwan and internationally.
Uber Eats	Established in 2014. Successful marketing campaign led to rapid growth.	 Discounts: Many discount options and coupons that are shared with Uber and can be used interchangeably with the ride sharing service. Specificity: A highly detailed search engine accounts for dietary restrictions (such as vegetarians). Clean and efficient user interface.
Foodomo	Established 2015. Integrated with LINE Pay. Closer to customer payment habits, provides consumers with diverse payment options.	 get in line to buy: Not limited to cooperative stores on the platform, as long as there are restaurants on the map, you can help run errands and buy on your behalf. Group buy: Customers can benefit from collective bargaining. This service saves time and reduces the chance of order errors. Membership: Has various levels and upgrades with discounts on shipping fees.
Lalamove	Established in 2013, entered Taiwan in 2015. Not specifically a food delivery service.	 Primarily a logistics service. the store that wants to eat is not listed on the food delivery platform, the fresh groceries at home are used up or the documents and packages need urgent express delivery, all within the scope of service Business model includes trucks and general file delivery. Provides enterprise transportation services such as store transfers, bulk shipments, etc.

YoWoo Delivery	Founded in 2016: Native Taiwanese delivery platform. There are fewer service areas, focusing on local food.	 Same price as store price. Local foods and specialties, developing a community economy. In addition to well-known restaurants, small local restaurants are also included, with diverse and affordable options.
shopee delivery	Delivery arm of shopee founded in 2019. Shopping platform was already very popular. Currently, only serves the Taipei metropolitan area.	 Rewards: Points based reward system connects activities and ratings. Users can exchange shopping gold and return to shopee Mall for shopping. Simplicity: Food delivery is managed within the shopee app. And the service extends naturally from an existing account.

Figure 2. Most used apps for food delivery orders in Taiwan (2021)

overseas platforms like Food Panda and Uber Eats establishing operations in Taiwan. These platforms have low barriers to entry and a history of innovation, allowing them to redirect resources quickly to services and restaurants. However, the addition of a takeaway platform has brought convenience to many people, but it is crucial for restaurants to differentiate themselves and survive among competitors. (Table 1)Delivery Platform Innovations

As food delivery platforms become more popular, businesses must adapt their strategies, optimize services, and offer innovative services to attract more users (Santos and Spring, 2013). These platforms, which use their core resources and incentives, have attracted office workers and students, solving their inconveniences and increasing their dependency on them. The rise of virtual delivery platforms has diversified the customer experience, offering a variety

of cuisines, desserts, drinks, and latenight snacks. Restaurant operators no longer need to bear additional costs and risks of hiring delivery staff. In the future, food delivery platforms must adapt to market changes, use their resources to create more value, and provide customers with a better consumption experience. This includes introducing extended services like fresh food, virtual kitchens, self-built supermarkets, and delivery media conversion.

1. Fresh and cooked

An increase in grocery deliveries has resulted from the proliferation of food delivery platforms. The establishment of the streamlined infrastructure for pre-cooked dishes concurrently led to the emergence of a novel market for fresh produce delivered to consumers' residences. After verifying inventory and confirming online orders, raw food delivery platforms can establish a predetermined delivery window. Alternatives

may be suggested by the platform when a particular item is unavailable.

2. Virtual supermarkets

Certain delivery platforms, including foodpanda's "Panda Supermarket," have established their own virtual supermarkets. In addition to serving customers with self-constructed warehouses and a self-managed inventory, this method collects consumer preferences and purchasing behaviors with precision. The Panda Virtual Supermarket will determine warehouse locations in areas with high demand and high user density, with an emphasis on expedited delivery to the designated location—within twenty minutes of an order—by analyzing food delivery orders.

3. Cloud Kitchen

Some restaurants are continuing the trend of eliminating counters and seating areas as delivery platforms advance. By operating as online-only brands, which do not have physical locations and offer only take-out services, store expenses are minimized. The platform may assume the accountability for delivery and publicity, provided that the store upholds the anticipated standards of food quality and delivery timeliness.

Methodology

Design of the Study

This research aims to understand the business model of a delivery platform by using the business canvas model and questionnaire to understand user views. The TRIZ method, proposed by Altshuller and Altov (1996), helps identify problems through creative development and innovative thinking. The study aims to propose feasible solutions based on TRIZ analysis, improving management strategies and attracting users. The research framework includes Figure 3. The TRIZ method has been applied to business management by Souchkov (2015), helping decision-makers identify problems (Gadd, 2011) and improve innovative thinking.

Table 2. Four areas and nine elements of business model canvas

Four Areas	Nine Building Blocks
Supply Orientation	Key Resources, Key Activities, Key Partnerships
Value Orientation	Value Propositions
Demand Orientation	Customer segments, Channels Customer, Relationships
Financial Orientation	Revenue Streams ,Cost Structure

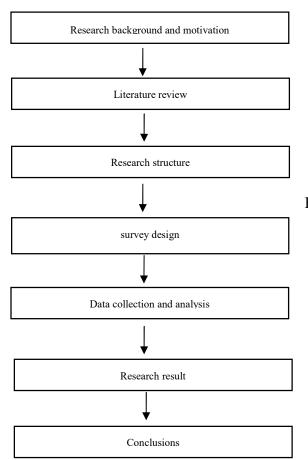


Figure 3. Study Framework

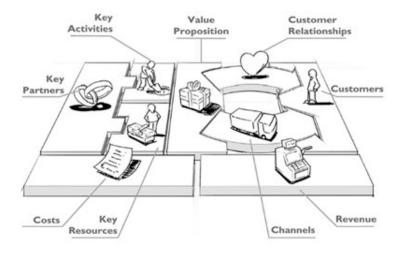


Figure 4. Business Model Canvas Generation (Osterwalder & Pigneur, 2010)

Business Model Canvas

A business model is a set of interdependent value-adding activities that and ensuring effective operations (Marielle Sijgers, 2010). It describes the interaction between enterprises, customers, partners, and suppliers. A business model canvas helps identify opportunities in the business' internal and external environment, enabling visualization and analysis of strategies over time. Business model canvasing embeds the value proposition into a viable business model, capturing value for the organization. The Business Model Canvas system consists of nine key components, covering four main areas of a business: customers. products, infrastructure, and financial soundness. This process is essential for constant reassessment and adaptation to market changes and new trends.

TRIZ Theory:

Background and Problem Solving Framework

TRIZ, a Russian acronym for Teoriya Resheniya Izobreatatelskikh Zadatch, was conceived in 1946 by Henrich Altshuller as a patent reviewer.

He identified general modes of problem-solving and believed a theory could promote inventiveness. Altshuller conducted research on 40,000 patents and summarized their development processes. TRIZ theory is applied in management, industry, food-technology, and software development.

an enterprise can operate and execute (Dasilva and Trkman, 2014; Velu and Stiles, 2013), targeting consumer needs

The Trivial Invention Method (TRIZ) is a creative problem-solving method that involves restating a design task and selecting generic solutions from general formulations of principle. This approach is based on evolutionary patterns and patent databases, allowing for a wide range of technologies (Darrell Mann and Conall O Cathain, 2005). TRIZ focuses on reducing ineffective solutions and reducing the focus on the problem itself, rather than focusing on the problem itself (Souchkov, 2005). The TRIZ solution process involves converting the system into a TRIZ problem.

TRIZ Tools

TRIZ is a systematic approach to problem-solving that provides a comprehensive toolkit for problem analysis and system improvement. It helps researchers reduce research area and minimizes trial and error (Duran-Novoa et. Al., 2011). TRIZ has evolved from a single tool to a large area of knowledge, supporting various innovation tasks. It can solve inventive problems, improve existing products, develop disruptive technologies, and even predict future innovations (Valeri Souchkov, 2018). The range of tools includes substance field analysis, contradiction analysis, and required function analysis.

Contradiction Matrix

TRIZ theory eliminates conflicts by examining decision-making subfields and hierarchies. Altshuller's patents reveal contradictions and opportunities for innovation. He defines 39 contradictory parameters for mechanical systems, identifying system characteristics to improve and potential deterioration. TRIZ theory is applied to engineering technology, similar to Mann's business contradiction matrix. The food delivery platform contradiction matrix is similar, with 45 parameters and 40 principles for solving business and management. The TRIZ theory guides thinking in the right

direction, guiding innovation and invention (Pavel Livotov, 2018).

Substance-Field Analysis

Altshuller proposed Substance-Field Analysis in the mid-1970s to solve problems using 76 Standard Solutions. This method is based on the technological system evolution model and divides a system into two substances and one action field. It helps identify problems and guide solutions by modeling the system in a simple, graphical way, facilitating problem identification and solution finding.

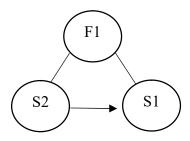


Figure 5. Sample Substance-Field.

In the event that any of the three components are absent and an issue arises with a pre-existing system, Substance-Field Analysis identifies the gaps in the model and provides guidance for innovative thinking (John Terninko, 2000). A field and two substances are adequate and indispensable components in delineating a functional technical system. According to TRIZ theory, matterfield models fall into four fundamental categories:

- 1. A comprehensive and efficient system.
- 2. An unfinished system (another system must be implemented in its entirety).

- 3. An entirely ineffectual system that necessitates enhancement in order to achieve the intended outcome.
- 4. A system that is both detrimental and intricate (eliminating the adverse impact is necessary).

Result

The food delivery platform connects users to local restaurants and physical stores, allowing them to browse menus and provide coupons for home delivery. This changes consumer habits and influences traditional enterprise ecology. Key partnerships include coop-

erating with restaurants, supermarkets, and convenient stores, as well as food delivery riders. Key activities include recruiting and training delivery staff, building relationships with merchants, maintaining and operating information systems, and advertising marketing. Key resources include food delivery riders, a platform system, and an operation management team. Value propositions include convenience, multiple payment methods, and improved food experiences. Customer relationships include reservation, tracking, customization, membership, and review and feedback systems. Channels include mobile apps and web platforms. Cost structure includes working capital, delivery staff salaries, hardware and software costs, and advertising and marketing expenses. Revenue streams include delivery fees, merchant service fees, merchant cooperation revenue, and subscription fees.

This study aims to explore innovative services used by food delivery platforms in Taiwan and understand the current market trends. The research uses a business model diagram to analyze operational elements and transaction structures, and the TRIZ analysis tool to extract positive and negative responses for strategic innovation and improvement. The questionnaire consists of 50 questions to understand users' opinions and identify problems related to management business.

Discussion and Conclusion

The study finds that delivery platforms are popular due to lifestyle changes and the impact of the epidemic,

which allows people to solve meals without going out. They also expand their services to daily necessities, fresh food, convenience stores, and department stores. The platform actively cooperates with the catering industry to increase business opportunities and promote the industry.

However, conflicts arise from the platform's security measures, the perception of delivery personnel's ability to deliver goods within time, and the perception of marketing strategies such as endorsements and co-branded products. To address these issues, the study recommends adjusting the system and welfare, setting fixed time periods for delivery staff, and providing information about co-branded products on the platform.

Additionally, the study suggests developing platform currency to deduct fees and improve customer feedback. The research shows that after poor caterers improve through reviews, delivery platforms can offer discounts and promotions to attract consumers to order meals. By addressing these conflicts, the platform can develop effective management strategies to attract more customers and maintain its competitiveness in the food delivery industry.

The epidemic and changing consumption habits may impact the number of people using external platforms, necessitating delivery platforms to focus on innovative thinking and business expansion. New marketing concepts can retain customer loyalty and attract new ones, promoting sustainable development and operation.

Limitations and Future Research Directions

This study investigates the innovation of delivery platform business models in a competitive market environment. The research uses TRIZ's nontechnical field, primarily used in patent technology or engineering, to understand the needs of the market. The questionnaire was designed online, limiting investigators' understanding and affecting the accuracy of answers. The study suggests future research should focus on improving user experience and management strategies for catering platforms. The study also suggests that future research should consider different industry methods and scales, and use more principles of invention and innovation to develop comprehensive management strategies and solutions for industrial management problems.

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