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# A Study on Consumer Behavior Changes in Response to the Development of Non-Face-to-Face Restaurant Services\*

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## Abstract

This study investigates the evolution and impact of contactless dining services on consumer behavior in the food service industry. Catalyzed by rapid technological advancements and the COVID-19 pandemic, these services have become integral to restaurant operations, reshaping business models and fundamentally altering consumer eating habits. Through a comprehensive analysis of domestic and international case studies, this research elucidates the definition, development, and current state of contactless dining services. The findings reveal that these innovations offer significant advantages, including enhanced convenience, efficiency, and accessibility, leading to increased dining frequency and widespread adoption of digital ordering platforms. Consumers particularly value the temporal and spatial flexibility afforded by these services, enabling food ordering from any location at any time. However, the study also identifies persistent challenges, such as the diminution of human interaction and potential exclusion of digitally disadvantaged populations. To address these issues, the research suggests that restaurants must prioritize customer satisfaction through personalized experiences and intuitive user interfaces, while concurrently developing targeted strategies to accommodate elderly and less tech-savvy clientele. The study posits that ongoing technological innovation will continue to drive industry growth by facilitating increasingly customized services aligned with evolving consumer preferences. These insights provide a valuable framework for restaurant operators.

**Keywords:** Non-Face-to-Face Restaurant Services, Consumer Behavior, Delivery Apps

**Major Classification Code:** L81, M31, O33

## 1. Introduction

Recent technological advancements and lifestyle changes have fundamentally transformed the restaurant industry. In particular, the COVID-19 pandemic has led to the rapid proliferation of contactless services, and

restaurants are increasingly utilizing contactless dining services to keep pace with these changes (Hao & Chon, 2021). Contactless dining offers consumers greater convenience and efficiency, and it's a new way to experience dining outside of the traditional dining culture (Karjaluoto et al., 2021). Consumers now prefer the ease of ordering and

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receiving food without having to visit a store, which has been one of the main drivers for the rapid adoption of digital technologies by restaurants (Kim et al., 2021).

Even before the COVID-19 outbreak, contactless food services were slowly spreading, but the pandemic accelerated the pace (Vu et al., 2019). Mitigation policies such as social distancing have pushed consumers to prefer in-person interactions, which has led to a surge in demand for contactless ordering and delivery services (Vo-Thanh et al., 2022). This shift has not only impacted consumer behavior, but also the way restaurants operate, and they are using delivery platforms, mobile apps, kiosks, and more to maximize operational efficiency (Wong et al., 2022). For example, delivery platforms such as Delivery.io and Coupangit have become a key business model for restaurants, which is helping to further accelerate the digital transformation of the restaurant industry (Jin et al., 2016).

Contactless dining has also brought about a significant change in consumer behavior. Time- and location-independent services have given consumers more freedom to enjoy their dining experience, which has had a positive impact on consumer satisfaction (Karjaluo et al., 2021). Research on shifting consumer preferences shows that consumers prefer contactless dining to traditional dining, which has led to a shift in the frequency and style of dining out (Kim et al., 2021). Studies have reported that speed, convenience, and accessibility have a significant impact on consumer satisfaction and intent to continue (Kaswengi, & Lambey-Checchin, 2019; Nguyen et al., 2019; Roy et al., 2020).

However, not all consumers are positively impacted by contactless food service. The lack of human interaction has led some consumers to feel that the quality of the service experience has diminished, and the digital divide has made it difficult for certain demographics to adapt to these services (Jeong et al., 2021). In particular, some groups, such as the elderly, feel uncomfortable using the service due to technical difficulties, which remains an important challenge for contactless food services to address.

Contactless food service is now becoming the new norm in the food service industry, and the changes in consumer behavior that accompany this shift are becoming an important factor in determining the success of food service companies. This study aims to provide an in-depth analysis of the development of contactless food service and changes in consumer behavior, and to suggest strategies for restaurants to successfully adapt to these changes. In particular, this study analyzes the advantages and disadvantages of non-face-to-face food service, focusing on consumer behavior, and suggests future directions for the food service industry.

## 2. Literature Review

### 2.1. Definition and Characteristics of Contactless Food Service

Contactless services are ways for consumers to order, pay for, and receive food without having to physically visit a store, such as through mobile applications, kiosks, and delivery platforms (Lin et al., 2023). These contactless services have exploded with the COVID-19 pandemic. During the pandemic, health and safety concerns have led consumers to prefer contactless interactions, which has driven restaurants to adopt contactless services as an integral part of their operations (Li et al., 2021).

The main characteristics of contactless food service can be summarized as convenience, accessibility, and efficiency. Consumers can easily place orders and complete payments from their mobile devices anytime, anywhere, and save time and effort by selecting and ordering food without face-to-face interaction (Shah et al., 2020). Delivery applications also allow consumers to compare menus and prices from different restaurants, giving them more options (Vu et al., 2019). These services increase consumer satisfaction, and restaurants can reduce labor costs by increasing the efficiency of order fulfillment (Khan, 2020; Shah et al., 2020).

### 2.2. The Evolution of Contactless Food Service

Non-face-to-face food service initially began with phone orders, but has evolved further with the development of mobile applications and internet technology. Since the mid-2010s, with the proliferation of smartphones, delivery applications such as Delivery.io and Coupang Eats have become essential platforms for restaurants, allowing consumers to easily order and receive food (Stephens et al., 2020; Kumar, et al., 2023). The COVID-19 pandemic accelerated this transformation, and early in the pandemic, restaurants were forced to shift to online ordering and delivery services as brick-and-mortar operations were limited or shut down (Tao et al., 2022).

Technological innovations in contactless services have also played a major role in the evolution. Artificial intelligence (AI) and big data technologies have helped restaurants analyze consumers' ordering histories and preferences to make personalized menu recommendations and optimize marketing strategies (Li et al., 2021). Innovative technologies like delivery robots and drones have also greatly improved the speed and efficiency of delivery (Xiang et al., 2023). This benefits both restaurants and consumers in terms of time and cost savings, and is likely to become the new standard for food service in the future.

### 2.3. Consumer Behavior Change and Key Factors

The introduction and proliferation of contactless dining services has led to significant changes in consumer behavior. First, contactless services offer greater convenience to consumers, which has made them more preferred than traditional dining out (Saad, 2020). Consumers are now able to dine out freely, regardless of time and space, which is a huge advantage, especially for modern people who value saving time in their busy lives (Shah et al., 2020).

Accessibility has also been an important factor in changing consumer behavior. Delivery applications allow consumers to choose from a wide range of food brands and menus, and order a variety of foods regardless of physical distance (Jun et al., 2021). In terms of efficiency, consumers are increasingly satisfied with the service due to the ability to process orders quickly and easily and track orders in real time (Ryu et al., 2012). These factors are driving consumers to use contactless dining services more frequently and consistently (Shah et al., 2021).

However, despite these positive changes, the lack of human interaction has had a negative impact on some consumers. In particular, older and less tech-savvy populations struggle to use contactless services, and the digital divide remains a challenge that needs to be addressed (Litchfield et al., 2021). Financial burden is also an important factor. The fees charged by delivery platforms are burdensome for both restaurants and consumers, which can be a deterrent to using contactless dining services (Nguyen et al., 2019).

As a result, contactless dining is having a positive impact on consumer behavior and has become a preferred dining option for consumers. However, challenges such as lack of human interaction, digital divide, and financial burden require strategic responses from restaurants. By addressing these challenges, contactless dining will become a more sustainable and evolving service.

### 3. Research Methods and Materials

This course is a systematic analysis of research and existing literature to summarize key issues and concepts related to contactless food service. The course mainly includes articles, reports, industry reports, etc. from the 2010s onwards, exploring the development of contactless food service and changes in consumer behavior, which have grown rapidly since the COVID-19 pandemic. The theoretical framework was comprehensively summarized, including the definition of contactless food service, the social background of service adoption, technological innovation, and changes in consumer preferences.

The second step is to analyze the actual application of

major non-face-to-face food service platforms through case studies. We examined the introduction background, service operation strategy, consumer response, and market share changes of major non-face-to-face food service platforms at home and abroad. Through the successful introduction of each platform, we explore the specific impact of non-face-to-face food service on consumer behavior and draw conclusions about the changes in the food service industry. In this course, we analyzed in-depth the development background of the service and consumer responses, focusing on platforms such as Delivery Nation, Coupang Eats, and Uber Eats as specific cases.

By utilizing the characteristics of qualitative research, this study explored the impact of the development of non-face-to-face food service on consumer behavior changes through literature review and case analysis, and aimed to draw results that can contribute to the establishment of non-face-to-face service strategies in the food service industry in the future.

### 4. Results and Discussion

Contactless dining services have become a significant factor driving change in the dining industry due to technological advancements and the impact of the pandemic. This study provides an in-depth analysis of the effects of such services on consumer behavior, with a literature review and case studies on major platforms like Baemin, Coupang Eats, and UberEats. In particular, the COVID-19 pandemic has caused an explosive increase in demand for contactless dining services, acting as a catalyst for the shift from traditional dining methods to contactless options. For example, a study from Taiwan reported a 5.7% increase in online food shopping sales for every additional COVID-19 case (Mehroliya, 2020). This trend is driven by consumers' desire for safer and more convenient ways to purchase food during the pandemic. Furthermore, as many restaurants were forced to close or limit operations due to COVID-19, consumers naturally turned to contactless food delivery services (Chang & Meyerhoefer, 2020; Guy et al., 2021). The increased demand for contactless dining services has also been accelerated by technological advancements. The introduction of drone and robot technology has significantly improved the speed and efficiency of deliveries, which has become one of the main reasons consumers opt for contactless services (Choe et al., 2021). The expansion of these services has provided new opportunities for both restaurants and consumers. In conclusion, the changed consumer behavior patterns brought about by the pandemic are likely to persist, contributing to the establishment of a new paradigm in the dining industry.

Contactless dining services offer convenience and

immediacy to consumers, significantly shifting consumer preferences both before and after the pandemic. Consumers now prefer to order food easily from anywhere at any time through mobile applications without the need to visit physical stores (Chang & Meyerhoefer, 2020; Mehroliya et al., 2020). This trend is particularly evident in domestic platforms like Baemin and Coupang Eats. These platforms have significantly increased customer satisfaction by offering real-time order tracking and various discount benefits, which played a crucial role in the rapid adoption of contactless dining services.

During the pandemic, Baemin secured approximately 60% market share, solidifying its position as the leading platform in Korea (Choi, 2023). This success was due to the provision of various features beyond simple delivery services. For example, Baemin maximized consumer convenience through real-time delivery tracking and multiple payment options, and increased customer retention through consumer-friendly programs such as discount events.

Coupang Eats is one of the fastest-growing food delivery applications in Korea, having started as a subsidiary of the large e-commerce platform Coupang. Amid the COVID-19 spread, Coupang Eats introduced a groundbreaking service known as single-order delivery, which stood out in an industry where bundled deliveries were common. The demand for faster delivery was high, and Coupang Eats leveraged this demand to provide differentiated services in the highly competitive food delivery market (Choi, 2020; Shah et al., 2021). Subsequently, other platforms like Baemin and Yogiyo also introduced single-order delivery, intensifying competition within the industry. During this period, Coupang Eats offered a 10% discount without limits to Coupang's paid membership subscribers, which led to a more than twofold increase in transaction volume in over 75% of the regions where the program was launched (Park, 2024). In these regions, Coupang Eats' market share increased by more than 5%. Recently, Coupang Eats surpassed Yogiyo to become the second-largest delivery app based on user numbers. This growth can be attributed to consumer satisfaction enhanced by integration with Coupang's payment system and an unlimited free delivery policy (Lee, 2024).

Overseas, major examples of contactless dining services include UberEats and DoorDash (Stephens et al., 2020; Leung et al., 2023). These platforms grew rapidly during the pandemic in the United States and Europe, collaborating with local restaurants to offer a wide variety of food options (Bezerra, 2020).

In particular, UberEats and DoorDash have actively utilized big data and artificial intelligence (AI) technologies to provide personalized services to consumers (Adak et al., 2022; Liang et al., 2023). By analyzing consumers' past order histories, these platforms offer personalized menu

recommendations, significantly increasing repeat purchase rates (Leung et al., 2023). Additionally, AI-based order prediction systems and efficient delivery route optimization technologies have shortened delivery times and improved customer satisfaction, a trend that accelerated during the pandemic alongside the rising demand for contactless dining services.

DoorDash, with over 50% market share in the U.S., established itself as a leading platform for contactless dining services during the pandemic (Lord et al., 2022). By leveraging AI-based order prediction systems and optimizing delivery routes, DoorDash reduced delivery times and enhanced customer satisfaction. These technological advancements played a key role in maintaining DoorDash's high market share.

The development of contactless dining services has brought about significant changes in consumer behavior. Consumers no longer prefer to visit restaurants, place orders, and wait, but instead favor ordering food easily via mobile applications and receiving prompt delivery. This shift has made convenience and immediacy key factors in consumers' perception of contactless dining services. In addition, domestic platforms like Baemin have enhanced consumer trust by providing transparency through real-time delivery tracking systems.

During the COVID-19 pandemic, consumers particularly valued the hygienic benefits of contactless dining services, aiming to minimize face-to-face contact. Many consumers sought safer dining experiences through contactless delivery and no-contact packaging options, fundamentally shifting their perceptions of dining (Bezerra, 2020). These behavioral changes are expected to persist even after the pandemic.

Another important factor enriching consumer experience with contactless dining services is personalized services. AI-based recommendation systems allow consumers to receive menu suggestions tailored to their preferences, playing a crucial role in increasing consumer revisit rates and loyalty (Wang et al., 2023). For instance, Baemin offers personalized menu recommendations based on consumers' order history, helping them easily choose foods that match their tastes.

Economic benefits and reward programs also represent key attractions of contactless dining services (Rombach et al., 2023). Various financial incentives such as first-order discounts, reward points, and free delivery have acted as important factors that encourage consumers to continue using specific platforms. Baemin and Coupang Eats have strengthened consumer loyalty to their platforms by increasing order frequency through regular discount events (Shroff et al., 2022).

In conclusion, contactless dining services have brought about significant changes in consumer behavior through

convenience, immediacy, personalized experiences, and economic benefits. The COVID-19 pandemic accelerated these changes, and contactless dining services have now become an essential part of the dining industry. With continued technological advancements, contactless dining services are expected to further evolve, offering consumers more diverse choices and personalized experiences in the future.

## 5. Conclusions

This study aims to deeply analyze the impact of contactless dining services on the dining industry and consumer behavior, particularly focusing on how these services have evolved since the COVID-19 pandemic. Centered around ordering and delivery via mobile applications, contactless dining services have emerged as a new trend, offering consumers greater convenience and efficiency, breaking away from traditional in-person dining. The pandemic has accelerated the adoption of these services, serving as a catalyst for restaurants to fast-track their digital transformation.

Contactless dining services remove time and space constraints for consumers, allowing them to easily order their desired food anytime, anywhere. As a result, consumers have come to prefer ordering and receiving food through mobile apps rather than visiting stores. This shift is particularly evident in domestic platforms such as Baemin and Coupang Eats, which have maximized consumer satisfaction through features such as real-time order tracking, fast delivery, and various payment options. These platforms also provide an environment where consumers can easily compare menus and prices from multiple restaurants, broadening their range of choices. Consumers no longer limit themselves to a single restaurant but instead seek personalized dining experiences by comparing the menus of various establishments.

Although the development of contactless dining services was already underway before the pandemic, COVID-19 acted as a significant accelerant. In the early stages of the pandemic, people's outdoor activities were restricted, leading to a surge in demand for delivery services. This was driven by consumers' desire to minimize face-to-face contact and receive food in a safer manner. Platforms such as Baemin expanded rapidly in response to these consumer needs, offering greater convenience with features such as real-time delivery tracking systems and contactless payment options. As a result, consumers gained trust in the hygiene and safety of the dining process. Efforts to enhance hygiene, such as improvements in packaging methods, also received positive responses from consumers.

One of the key advantages of contactless dining services

is that they offer a variety of choices and personalized experiences for consumers. Particularly, AI and big data-driven personalized recommendation systems analyze consumer preferences and suggest tailored menus, contributing to increased consumer loyalty. For example, Baemin helps consumers explore new food options by offering personalized recommendations based on their order history, thereby maximizing consumer satisfaction. This personalized experience plays a crucial role in encouraging frequent visits to the platform and prompts consumers to try a wider range of menu options.

Economic benefits and reward programs are also major reasons why contactless dining services appeal to consumers. Many platforms offer first-order discounts, reward points, and free delivery benefits, which serve as important factors in encouraging consumers to continue using their services. Platforms like Baemin strengthen consumer loyalty by providing additional benefits for orders above a certain amount or by operating exclusive membership reward programs. These economic incentives are significant motivators for consumers to use contactless dining services frequently and serve as vital strategies for restaurants to retain customers and boost sales.

However, contactless dining services face several limitations. First, the lack of human interaction can lead some consumers to miss the personalized in-person service experience. In particular, in the case of delivery services, issues such as food quality management or delivery errors that are not immediately addressed can lead to consumer dissatisfaction. Second, for the digitally disadvantaged, using contactless services may be challenging. Older adults and consumers unfamiliar with technology may experience difficulties in using mobile applications, which can widen the digital divide. To address this, user-friendly interfaces and technological education or support for older generations are needed. Third, the high fees charged by delivery platforms can be burdensome for both consumers and restaurants, potentially causing some consumers to face economic difficulties in using delivery services.

In conclusion, contactless dining services offer convenience, immediacy, safety, a variety of choices, and economic benefits to consumers, and these factors have significantly influenced changes in consumer behavior. Especially during the pandemic, contactless services have become essential for more consumers and have established themselves as the new standard in the dining industry. Future research should analyze the long-term effects of contactless dining services, as well as the specific factors driving changes in consumer behavior, and propose strategic measures for restaurants to effectively respond to these changes.

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