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Willingness to use online food delivery
platforms: Before and during COVID-19

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Willingness to use online food delivery platforms: Before and during Covid-19

by

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ABSTRACT

Background: Since a quarantine was implemented to prevent the spread of COVID-19, online food delivery companies such as UberEats, MeiTuan, and others have garnered more attention. Given the paucity of studies on the willingness and barriers to using online food delivery in general, the current study evaluated the period prior to and during the pandemic using a quantitative manner.

Purpose: To begin, this research identifies the aspects of food delivery services people appreciate most, in addition to convenience and cost savings. Second, sanitary concerns, fear of COVID-19, and social isolation concerns were identified as the primary obstacles to service use.

Design & Approach: The methodology of this paper is through a designed questionnaire to investigate the motivation of using online-delivery food platforms, followed by the statistical analysis methods to determine the real effects. Afterward, the dissertation implemented descriptions Statistics, sample test, One-way Anova, and frequency distribution to identify the hypothesizes whether they will be supported regarding the requesting, the last step is to conduct the resulting insight from the data.

Findings: Most people who have been researched agree that food orders increase due to fear and social isolation during the COVID-19 period, indicating that the hypothesis is valid. The projected beneficial effect of hygienic issues does not materialize, and there is no statistically significant change in hygiene issues associated with online food delivery before and after the pandemic. The data show the attitude of persons with various incomes to pay more for delivery fees is not statistically significant. The results confirmed that users are younger people who are either employed or self-employed. With the emergence of COVID-19, young people's ordering patterns indicate a greater likelihood of using the suggested service.

Limitation: A typical concern is that a convenience sample may not be representative of the population. Future research could look into the impact of new online food delivery developments in different countries and post-COVID-19. The food delivery industry is rapidly expanding. Research is required to develop goods that travel well and keep food quality.

KEYWORDS

Food delivery services, Willingness, Social isolation, Fear, Precautions, Hygienic issues, Millennials, Order frequency.

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INTRODUCTION

A slew of Internet-based sharing platforms have sprung up in recent years, and some of them, including Airbnb, Uber, and TaskRabbit, have steadily provided a robust theoretical foundation and market development for many peer-to-peer enterprises (Einav, Farronato, & Levin, 2016). No matter where in the world, they garnered sufficient attention from a little-known notion to a capital rush, to frequent conflicts and controversies, it had become the government, the public, the media, researchers, and practitioners' center of attention (Yu, 2019). Online food delivery services are web-based food ordering and delivery platforms that connect clients to partner restaurants through their mobile apps or websites (Ray, Dhir, Bala, & Kaur, 2019). There have been countless studies based on previous studies on transportation and accommodation. However, online food delivery has made the proposition of sharing economy once again to become a hot-spot for us during the pandemic.

The aim of our study is to better understand how food delivery services have grown in popularity throughout the pandemic and ever before. According to Rachel Botsman (2012), the sharing economy is an economic system wherein individuals can freely or for a charge share idle resources or services. Another definition of the sharing economy is “the peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services” (Hamari et al., 2013, p.1). Online food delivery belongs to the system which is defined as "the process through which food is made and delivered to a consumer after being requested online" (Li et al., 2020). The introduction of integrated online food delivery platforms like Grubhub, Uber Eats, and DoorDash aided in the growth of online food delivery services, the existence of surplus and idle resources establish objective circumstances for the exchange of material information between supplier and demander, hence improving economic allocation efficiency, development of society, and providing technical assistance for supply-side and demand-side search and matching (Robin, 2015). As further noted by Chinese scholar (Zheng, 2016), this service is to the temporary transfer by the supplier of the right to use idle resources via third-party platforms. Using the description of the above concepts, we can get the following graph to facilitate our understanding of this feature and pattern:

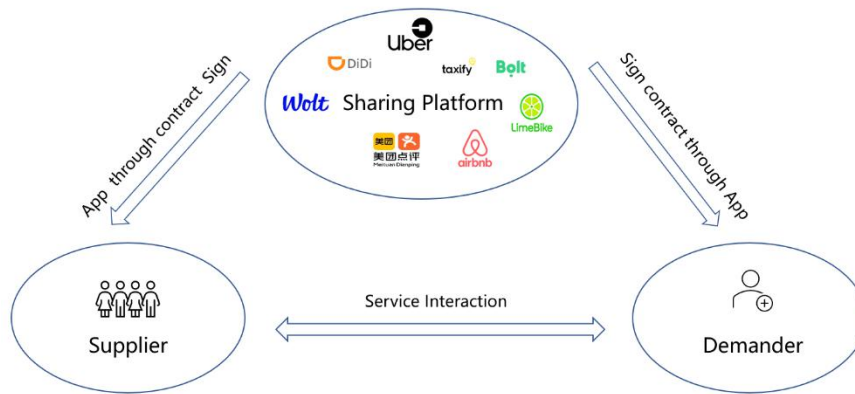


Figure 1.1 – The sharing platform pattern

When a consumer (Demander) places an order from a menu of available restaurants (Supplier) using an Online food delivery mobile app or website (Sharing Platform) and pays for it, the restaurant (Supplier) receives the order and prepares the meal. A driver then delivers the customer's order. Customers (Demander) can use the application to track the status of their orders as well as stay in touch with their drivers. Online food delivery services (Sharing Platform) provide a variety of advantages to their consumers (Demander), such as no travel for pick-up, no waiting in line, no order misunderstandings that occur frequently over the phone or, in restaurants and discounts on daily specials (The Other Stream, n.d.). Customer demand for online meal delivery services has surged considerably in recent years and is expected to rise steadily in the future. The total revenue of the global online meal delivery service market was estimated to be over \$107.4 billion in 2019 and is likely to exceed \$182.3 billion by 2024 (Statista, 2020).

During the global COVID-19 pandemic in 2020, the benefits of online meal delivery were clear, as it increased customer access to prepared food while allowing food suppliers to continue operations (GOV.UK, 2021). What's more, as a result of the COVID-19 pandemic online meal delivery platforms have exploded, and the majority of countries have imposed social distancing measures (GOV.UK, 2021). It's understandable because many individuals are unable to go out to get food, and meal delivery applications appear to be a viable option for many individuals to use to acquire food and supplies for themselves as well as their families. As a result, consumer behavior has been altered by food applications (Sun et.al, 2020). Al Amin et al. (2021) show that people may continue to utilize meal delivery services during the pandemic if they are convinced they have the essential information, abilities, and tools to properly buy food online. Additionally, in the receiving package, each delivery

includes detailed unpacking guidelines, allowing consumers to protect themselves from virus infection (Siddiqui, 2020).

As restaurants struggle to stay afloat, online food delivery services that transport beverages and food directly to clients' homes have recently surged in popularity (NPD, 2020). Despite the fact that the online meal delivery market had grown significantly prior to the pandemic, more clients used online meal delivery services during the pandemic, according to a survey by the NPD Group, which found that the number of online meal delivery orders rose by 67% in March 2020 compared to March 2019 (NPD, 2020).

Numerous investigations have provided a foundational understanding of online meal delivery customers' decision-making process and behavioral intentions, such as motivations to use online meal delivery services (Yeo, Goh, & Rezaei, 2017) as well as factors influencing online food delivery usages (Yeo, Goh, & Rezaei, 2017). (Ray, Dhir, Bala, & Kaur, 2019).

However, it's unclear whether the pandemic has influenced clients' significant online meal delivery ordering behavior and decision-making process. Since the pandemic has had the biggest impact on current human behavior changes (Laato, Islam, Farooq, & Dhir, 2020), including the pandemic as a contextual factor impacting customers' online meal delivery usage is critical (Kim, Kim, & Hwang, 2021).

Nonetheless, several authors have raised concerns regarding Online food delivery's drawbacks, such as increasing costs, revenue sharing with delivery companies, and package delivery error (Chai and Yat, 2019). Taking this into consideration, this study evaluates factors influencing consumer intention to utilize online meal delivery services prior and during the pandemic, as well as consumers' willingness to utilize online meal delivery services under the effect of the pandemic. Specific to the COVID-19 pandemic, in general, this research intends to determine which characteristics of these platforms are most valuable to their consumers, to assess the significant hurdles and concerns of non-users of food delivery services. More precisely, the following research questions should be addressed:

- 1) How consumer behavior on online food delivery platforms has changed during COVID-19?*
- 2) What are the primary impediments and concerns preventing individuals from adopting online food delivery services during COVID-19?*

3) What are the growth factors that could increase the use of online food delivery platforms during COVID-19?

This dissertation is divided into seven chapters. The following chapter will evaluate the academic research on the development of online meal delivery according to the history of literature research, how COVID-19 is influencing online meal delivery services, consumption at home, impacts of the continuous use of the online meal delivery services, innovation in online delivery services, and concern of COVID-19 impacts on online meal delivery, as a result, formulate a hypothesis that is related to our research problem. Chapter 3 will introduce the methodology that will be implemented in the research. Following that, Chapter 4 will analyze the data, then the explanation of their subsequent results and further discussion will be provided in Chapter 5. Subsequently, the concluding chapter discusses the study's findings and limitations. Finally, the thorough references will be attached in the last chapter.

LITERATURE REVIEW

2.1 ONLINE FOOD DELIVERY SERVICES DEVELOPMENT

The concept of food delivery can be traced all the way back to Ancient Rome, from 753 B.C. to 476 A.D., according to the report on the History of Food Delivery and How It's Changed. Thermopolis was a fast food restaurant famous amongst ancient Romans, who, like us, enjoyed the concept of quick meals. Over the last decade, the e-commerce sector has grown at a rapid pace, as people increasingly shop online (Mansoor, 2018). O2O-FDS (Online-to-Offline Food Delivery Services) uses information technology to digitalize conventional offline meal delivery services, allowing for meal ordering and mobile payment. Consumers can order and pay for food from neighborhood eateries and other food service establishments. In 2018, the O2O to FDS market was worth 35 billion dollars, more than twice what it was in 2015. Internet giants like Uber Eats are attempting to replicate China's success in other countries, and market share is rapidly expanding (Wang and Somogyi, 2018; Wang, Somogyi, and Charlebois 2020). Food delivery platforms serve as a bridge between people and food (Bakker, 2016), allowing customers to purchase a wide range of meals from their partner businesses that did not previously offer delivery. As a result, businesses looking to increase their delivery options can team up with third-party delivery services, allowing people to choose from a wider range of eateries.

Meal delivery services have altered considerably in the current era as a result of technological advancements. Toll-free phone numbers have been adopted by the majority of well-known restaurants so that customers can call them without paying any charges. Customers enjoyed the concept of free food being brought to their homes. This shows that food delivery services are important in today's food and restaurant sector (Turim, 2021). Today, meal delivery applications have dominated delivery services as smartphones have become more popular. Some catered to consumers who wanted to try their hand at cooking by delivering all of the ingredients for a meal. Others help consumers stick to specialty diets without all the legwork and stress of cooking (Jackson, 2021).

2.2 HOW COVID-19 IS IMPACTING ONLINE FOOD DELIVERY SERVICES

Food delivery has more than tripled in value since 2017, reaching a global business worth more than \$150 billion. During the COVID-19 pandemic, the market in the United States has

more than doubled. The title of a recent Food Navigator story, "Online Food Delivery One of the Only Winners in Coronavirus Outbreak," perfectly represents the actual situation (Southey, 2020). Despite some reservations, consumers are progressively choosing food deliveries as they limit their social connections. Simultaneously, restaurants that did not previously provide delivery are suddenly doing so. Due to changing restrictions, beer, wine, and other alcoholic beverages are now available for delivery in numerous locations (Hussey, 2020). Prior to the pandemic, the restaurant business in the United States was increasing at a rate of 3 to 4% each year. Delivery sales were expanding at approximately double the rate (7 to 8%). The food-delivery market grew significantly during March and May 2020, when lockdowns were most severe in the United States and Europe. Significantly, it has kept this trajectory, with continued growth throughout 2020 and into 2021 (Hussey, 2020). Access to preferred and familiar food service and delivery items offers customers with comfort during this difficult period, according to Christina Furlong, Consumer & Market Insight Specialist for Kerry Europe. It also provides convenience and access to fresh food to folks who might be avoiding social interaction.

The following hypothesis will be examined in light of the existing literature:

H1: Online food delivery platform is used more frequently during the pandemic than before.

2.3 CONSUMPTION AT HOME

COVID-19 pandemic is a global crisis that will have a severe economic impact globally. While the outbreak began in China, Wuhan, the disease's epicenter. As the virus's worst symptoms fade in China, life begins to return to 'normal', and a feeling of that new normal emerges. Consumer behavior changed throughout the crisis, with more people purchasing online out of necessity (CitiGPS, 2020). As a result of the COVID-19 outbreak, there have been numerous changes in consumer behavior. One distinction is in the way people shop. E-commerce users have shifted from younger to middle-aged consumers, and the shift from offline to online shopping is happening faster than expected. The move toward online shopping of fresh food (where physical stores remain the key sales channel), large-ticket commodities like real estate and automobiles, and services like concert tickets and travel is notable. The upper limit on the pace of e-commerce acceptance, in our opinion, has been raised, hence expanding the online channel's potential (Citi GPS, 2020). Within a few months,

as the COVID-19 evolves, the world confronts a global public health catastrophe (Wabo et al., 2015). The term "social isolation" was originally used to refer to an individual's or group's non-participation in a society's major institutions (Ambak et al., 2016). Social isolation, according to Banerjee and Rai (2020), can lead to chronic dullness and depression, which can have adverse effects on mental and physical health if left untreated for an extended period of time. Eccles (1987) defines social isolation as a human being's impartial physical separation from others, or the capability to live alone chronologically and geographically, or a circumstance wherein a human being maintains a complete or nearly complete lack of interaction as a result of emergencies that manifest in any region. Hwang et al.(2020) discovered that elderly people were more susceptible to loneliness and social isolation due to their operational reliance on family, friends, and community service assistance. Additionally, the social isolation (i.e., social distancing) caused by the COVID-19 pandemic has impacted individuals' daily lives and consumption behaviors (Barry, 1998). Individuals who are confined or socially isolated tend to prioritize their daily consumption and should exercise extra prudence when it comes to food intake. As a result, social isolation or distancing can result in the usage of online meal delivery platforms, as they allow for social bonding even when physically isolated (Sukumaran, 2021). However, previous studies have failed to demonstrate convincing evidence of how social isolation influenced online meal delivery during the pandemic.

H2: Social isolation has a negative impact on the frequency of using online food delivery during COVID-19.

2.4 IMPACTS OF THE CONTINUOUS USE OF THE ONLINE FOOD DELIVERY SERVICES

The O2O meal delivery services adoption and innovation adoption for customers' e-commerce food buying habits, according to Hansen (2005), five factors influence a person's perception of e-commerce food purchasing: perceived social norm (peer pressure), perceived compatibility (fitting with one's values and lifestyle), perceived relative advantage (time or money saved), and perceived complexity (user-friendliness of e-commerce food purchasing services) (Hansen 2005; Wang and Somogyi 2018). Consumers' innovation-adoption traits have been shown to influence their adoption of Business-to-customer food buying (Wang and Somogyi 2018; Wang, Somogyi, and Charlebois 2020). These factors should be included in the scope of customers' perceived relative values based on measurement contents utilized in

their investigations that are linked to receiving e-coupons, money-saving, or time-saving, as they all have positive effects on the adoption of O2O meal delivery services (Kang & Namkung 2019). More recent attention has focused on the provision of the popularity of online meal delivery services because of various factors, the most important being convenience (Cho et al., 2019). Food from a variety of eateries is available through an app at any time and place (Chai & Yat, 2019, Yeo et al., 2017). A restaurant review system allows consumers to compare pricing and reviews, save time (no need to cook or go out for food), and save money (no need to cook) (Blumtritt, 2020). The delivery and carry-out option is encouraged in several nations, according to official rules for restaurants reopening during pandemics (Maragoni-Santos et al., 2021). During the COVID-19, restaurants were forced to adapt, alter, and boost their business by adopting meal delivery systems (Gavilan et al., 2021). By making these tweaks, restaurants could continue to operate while dealing with the pandemic, and consumers could eat out safely. As a result, it is critical to identify consumer-relevant drivers.

The following hypothesis was formed based on the features of online meal delivery services:

H3: Consumers place a higher premium on the convenience of online food delivery during COVID-19.

H4: Consumers place a lower premium on the price benefit of online food delivery during COVID-19.

2.5 INNOVATION IN ONLINE DELIVERY SERVICES

Many platforms are already growing their logistics networks' use cases. This behavior is anticipated to pick up, as platforms improve their overall economic profiles by supplying higher-margin items in new categories like alcohol, groceries, medications, and more. These new categories aid in attracting new customer groups, increase average order value and allow for delivery stacking, which helps to improve delivery efficiency (9, Ahuja,2021). With fewer customers at the restaurant, delivery must pay a higher percentage of the fixed operating expenses, according to McKinsey Analysis (2021). If the delivery service grows to the point that additional physical kitchen space is necessary to fulfill orders, fixed expenses may climb. While enhancing total sales while delivery may seem like a smart strategy to allocate fixed costs, restaurants that focus too much on enhancing deliveries risk

cannibalizing on-site dining and compromising the quality of the dining experience, thereby reducing the basis on which their fixed costs are allocated. Finally, to create a positive net impact, restaurants must carefully measure delivery against other parts of their business. A typical restaurant would have to considerably increase overall sales to retain the same profit margin as before delivery, as illustrated in the figure.

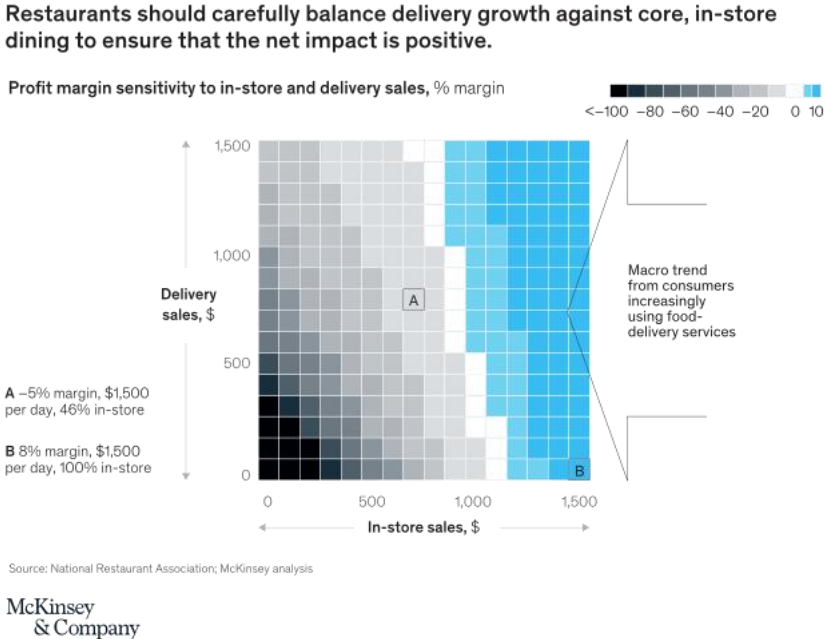


Figure 1.2 - Profit margin sensitivity to in-store and delivery sales (Source: National Restaurant Association McKinsey analysis)

Restaurants that choose to continue providing dine-in and delivery clients must adjust their prices. Those that prefer price stability may raise overall menu prices to offset the additional costs of delivery. Instead, restaurants might develop distinct, more expensive delivery menus. "It's no surprise that delivery comes with an added cost," Chipotle's chief financial officer said in February. Offering delivery can help eateries cut costs during this time of disruption while also making the transition back to normal working circumstances easier after COVID-19 is no longer a problem. Thousands of operators have been able to provide uninterrupted service in a period of significant uncertainty due to the speed with which they have adapted to new rules, technology, and ways of working," adds Furlong (Hussey, 2020). According to Datassential study (2020), when COVID-19 social distancing rules are repealed, half of U.S. consumers will claim they will continue to purchase delivery and takeout. Consumers are demanding short delivery times and better quality. Technology is making its mark on delivery, with more robust apps and other avenues for ordering becoming increasingly popular. Food delivery service operators may also want to explore offering hand sanitizer as an add-on. Uber is

testing drone delivery for UberEats in San Diego. Competition in food delivery service will increase as volume grows. To prevent customer pinch points, food delivery service providers are measuring the precise delivery time and distance a product will endure, as well as imposing geographical boundaries for sensitive menu items (Hussey, 2020). Expanding day parts provide new opportunities for online delivery services. Previous research has established that consumers who use online meal delivery services exhibit a number of objectively quantifiable traits before the pandemic. 86 percent of the time, consumers request delivery to their homes, and 74% of transactions take place on weekends (Hirschberger et al. 2017). Additionally, 43% of respondents who used online meal delivery services in 2017, indicated that they did so instead of an in-person lunch at a restaurant. The statistics from Morgan Stanley (2017) show that this number grew from 38% a year ago, indicating that online channels have resulted in incremental cannibalization. As time goes on, several lines from KerryDigest (2020) suggest that the growth in food delivery service in Europe is attributable to a new customer trend of ordering on any day of the week, as opposed to weekends prior to COVID-19. Due to the fact that many individuals in Europe work from home, new dayparts such as breakfast and lunch are becoming available for delivery. Desserts, shared meals, and comfort foods, for example, have seen an increase in orders. Afternoon snacking is on the rise in North America, with consumers demonstrating interest in both food and beverage snack products (Hussey, 2020). Restaurants generally cooperate with a single third-party delivery service, according to Hussey (2020,13), and every operation has its own set of benefits. In the wake of COVID-19, businesses considering offering delivery for the first time should research what other companies are doing to relieve fears and promote restaurant, driver, and consumer safety. Several companies, like as Deliveroo and Uber Eats, have developed contactless "leave at your door" services to help drivers and customers comply with social distancing regulations. As a result, this study anticipated that the coronavirus modifies a customer's willingness to utilize online meal delivery services during a pandemic and proposed the following hypothesis:

H5: The diversity of food delivery categories has a positive impact on the growth of food delivery platforms used during the COVID-19.

2.6 CONCERN OF COVID-19 IMPACTS ON ONLINE FOOD DELIVERY

Online meal delivery services face difficulties in maintaining food safety and hygiene standards, as food provided via online food delivery platforms may also be contaminated as a result of the delivery operations added to the regular restaurant business model. Packaging, Temperature control, and the usage of adequate food containers in the delivery operation are also issues with online meal delivery services (Maimaiti et al., 2018). As a result, clients may have a greater negative when they use online food delivery services, as they are unable to inspect the restaurants' and personnel' hygiene in person (Hong et al., 2018 16). As a result of lockdown measures prompted by health problems and the ensuing economic harm, consumers may face collective panic, dread, worry, and uncertainty (Ahmed et al., 2020). While the COVID-19 outbreak is still ongoing, the future remains uncertain, and everyone is worried about what will happen in the future. The new habits we developed during lockdown will follow us for the rest of our lives. A yearning for isolation, a desire for a smaller, more intimate network of contacts, a greater awareness of germs in public spaces, and more time spent at home are among them. Meeting up with friends around a table of food takes on a social dimension beyond simply satisfying one's hunger. Eating is a sensory experience that involves more than just food. We eat to enjoy one other's company, to strengthen our social bonds, and to gain pleasure from sharing moments and experiences with others. This is described as convivial (Phull et al., 2015). Going to a restaurant is an joyful and exciting experience that boosts one's self-esteem (Dixit, 2020). This is especially apparent in Mediterranean cultures (Poole and Blades, 2013). Consumers' concerns about COVID-19 pandemic may affect how they enjoy restaurants (Zwanka and Buff, 2020), as they become more concerned about health and hygiene, as well as knowing which ingredients are utilized in meals, where they come from, how they are made, and who prepares them. As a result, mobile meal delivery services are being used to shift consumption to safer and more controlled areas, such as the home (Rabobank, 2020). As a result of changing customer behavior in response to the COVID-19 outbreak, the food delivery industry has entered a new race in which health and hygiene take priority. Customers demand assurance from meal delivery apps that the food is safe and hygienic (Al Amin et al, 2021). "Food delivery hygiene," according to Al Amin et al (2021), is the ability of the deliveryman to keep food delivery services safe and clean. According to Chandrasekhar et al. (2019), the most common problem was not only a lack of hygiene in the kitchen, but also during the delivery process. Restaurants will be inspected to evaluate the quality of food delivered as well as compliance

with proper hygiene and sanitation standards in order to address the issue in the kitchen (Al Amin et al, 2021). Concerning deliverymen, quality managers must ensure that their delivery guys follow proper hygiene standards on a daily basis (Hwang, 2020). As a result, clients who are excited about meal delivery services' cleaning practices are more inclined to utilize online delivery services.

Therefore, the following moderation hypothesis has been proposed, based on previous studies:

H6: Hygiene issues more negatively influence customers' intention of using online food delivery during COVID-19.

H7: Fear has a negative impact on the frequency of using online food delivery during COVID-19.

H8: Precautions are correlated with users' concerns about using online food delivery services.

2.7 DEMOGRAPHICS

Scholars have investigated demographic characteristics to better understand customers' acceptance of offline vs. online purchases over the years, and they have repeatedly demonstrated that demographics have a substantial influence on the customer online shopping behavior (Korgaonkar & Wolin, 1999; Donthu & Garcia, 1999; Koyuncu & Lien, 2003; Brown, Pope, & Voges, 2003; Naseri & Elliott, 2011). Regarding the significance of demographics in online shopping adoption, Naseri & Elliott (2011) found that income, education, sex, and age are the most relevant demographic variables when it comes to consumer behavior. In previous research on online customer behavior, age is one of the most studied demographic variables (Chang, Cheung, & Lai, 2005). Several studies have found that, on average, older persons are less likely to shop on the internet. As a result, aging has a detrimental impact on the online activity adoption (Donthu & Garcia, 1999; Joines, Scherer, & Scheufele, 2003; Naseri & Elliott, 2011). According to Roy Dholakia and Uusitalo (2002), because elderly customers are often less comfortable with technology, they are more apprehensive about online transactions. In terms of gender, several research have shown that males make more internet purchases than females (Donthu & Garcia, 1999; Koyuncu & Lien, 2003; Brown et al., 2003; Naseri & Elliott, 2011). Nevertheless, depending on the product/service category, it appears that this pattern has a number of outliers. Indeed, women

are more likely than males to purchase for online food, entertainment services , and apparel (Naseri & Elliott, 2011). Men, on the other hand, are less worried about the hazards involved with online purchases of products and services (Bartel Sheehan, 1999; Kolsaker & Payne, 2002) Additionally, more educated customers are more likely to engage in online buying (Koyuncu & Lien, 2003), spend more money online, and make more frequent online purchases (Burroughs & Sabherwal, 2002). Additionally, greater education levels are associated with better capacity to handle uncertainty and increased self-efficacy, both of which contribute to an individual's ability to cope with online transactions (Burroughs & Sabherwal, 2002).

Finally, income has a favorable correlation with the adoption of internet purchasing (Donthu & Garcia, 1999; Koyuncu & Lien, 2003). Kinsey (2011), using the New Theory of Consumer Behavior (Michael & Becker, 1973; Pollak & Wachter, 1975), discovered that when the value of time increases, customers prefer the transaction method (credit card) that results in the least amount of time lost. Additionally, Naseri & Elliott (2011) argued that persons with greater wages work longer hours, which adds to their increased interest in online buying. Finally, customers with greater earnings have the option of "buying" when faced with the service selection "make vs purchase," resulting in increased experience across a broader range of services (Keaveney & Parthasarathy, 2001).

In general, it is predicted that the prior demographic factors would react similarly in relation to meal delivery applications throughout this study. As a result, the following hypotheses are suggested:

H9: Young adults are the biggest proponents of online food delivery services.

H10: People with more income have less contradict to pay higher delivery fee

METHODOLOGY

The exploratory design was chosen for the current study because it is the most appropriate way for describing the features of a certain population in relation to the online meal delivery

services, and for understanding in comparison of the willingness before and during COVID-19. To understand the general characteristics or opinions of a group of people, primary data about the market under investigation is gathered, specifically, a quantitative survey was used as the primary empirical study instrument. This survey sought information from a vast number of participants in order to compile the data necessary to examine the features of the market's customers. By utilizing a consistent survey, structured data may be acquired from a single primary source. Because this thesis attempts to describe individuals' willingness to use online meal delivery platforms prior to and during COVID-19, the survey sample includes persons of any gender and age who have heard about the concept of online food delivery platforms. To facilitate data collection, an internet survey platform was used to deliver the surveys to participants. Numerous platforms were investigated, but Qualtrics was selected due to its ease of dissemination, familiarity, and user-friendliness for both researchers and participants. In terms of language, English was chosen as the survey language because the sample consists of customers from a variety of nations and English is the most widely spoken language among this demographic. Additionally, the phrasing of items was carefully chosen to ensure that the survey is simple to understand and that no questions are misconstrued. There are 24 questions in the preliminary survey. These questions are connected with the study's general and specific research questions and are designed to elicit information from participants to answer the study's research questions. Primary data were acquired from 341 respondents using an online survey utilizing a convenience sampling procedure. The first section of the survey informed participants about the study's goal. In the second section, participants were given yes or no questions to determine their prior experience with food delivery in general. Following that, an explanation of the platform-based food ordering service was given to ensure that all attendees were aware of the service. The participants were then asked whether they had utilized the service before and during COVID-19 as a comparison. This divided the poll into two sections: have used or have not used. For one thing, the third part for users asked participants to rate their degree of agreement with 2 criteria connected to the online food delivery attributes: convenience and price benefit, for other, people who do not use online food delivery before COVID-19, were asked about potential challenges and concerns on hygienic issues. After that, users of online food delivery

during COVID-19 were asked the same 2 criteria connected to the online food delivery attributes: convenience and price benefit, then different potential challenges and concerns on hygienic issues, fear and social isolation with the mentioned service in the third section for

people who do not use online meal delivery during COVID-19. The next question in this section was designed to assess users' attitudes on increase of delivery fees during COVID-19 and their level of agreement on precautions that can reduce concerns of the pandemic. The last section of the online survey was similar for both non-users and users and contained demographic questions for the participant.

Measurement of variables – online survey

From the perspective of features on food delivery platforms for those who have used. Multiple scales were created for each meal delivery aspect. When studying attitudinal and behavioral components, Likert scales are often utilized (Boone & Boone, 2012). As a result, the five-point Likert scale was utilized to assess such factors. The scale ranges from One to Five , with 1 indicating "Strongly Disagree" and 5 indicating "Strongly Agree."

The item scales were based on prior work on online food ordering and its influence with COVID-19, which were subsequently updated for meal delivery via applications. To begin, the item scales for convenience were developed using the theoretical framework described as well as research by Yeo, Goh (2017), and (Cho et al., 2019). Second, Kang and Namkung (2019) believe that the price benefit is one of the consumers' perceived relative values related to online meal delivery services.

From the perspective of features on food delivery platforms for those who have not used them. The five-point Likert scale was utilized once again for the key hurdles and concerns. Hong et al., (2018) research on computerized meal ordering provided the basis for the items for felt hygienic issues and perceived fear for contact (Ahmed et al., 2020). Delivery services facilitate social connection even while physically distanced, resulting in social isolation or distancing (Sukumaran, 2021). Finally, the absence of social connection was borrowed from Ahuja et al. (2003)'s study on online customer purchase behavior.

ANALYSIS

4. 1 Demographic Statistics

The questionnaire was given via an online survey to 341 consumers of online food delivery services, along with an explanation of the research aims. Along with the survey being posted on the Wechat group, the target sample received an e-mail and Whatsapp message outlining the purpose of the research and encouraging each user to participate in the survey. Numerous times, respondents were contacted via online contacts and e-mails. There were 341 online surveys distributed to users of online meal delivery services, with 280 legitimate responses. Hair et al. (1998) 's study was utilized to calculate the sample size. Additionally, within age groupings, the majority of responses were under the age of 65, with the largest age group being 35-64 years old. Additionally, the majority of them (80 percent) were employed or self-employed. Consider the following table for demographic data:

Table 1 Age

| | N | Percent |
|-------------------------------|-----|---------|
| Millennials (18-34 years old) | 46 | 16.4 |
| 35-64 years old | 203 | 72.5 |
| 65 years old and older | 24 | 8.6 |

According to the above table, there are 46 Millennials (18-34 years old), 203 Millennials (35-64 years old), and 24 Millennials (65 years and older), accounting for 16.4%, 72.5%, and 8.6%, respectively.

Table 2 Employment Status

| | N | Percent |
|------------------------|-----|---------|
| Student | 39 | 12.04 |
| Employed | 133 | 41.05 |
| Self-employed | 128 | 39.51 |
| Not currently employed | 13 | 4.01 |
| Other | 11 | 3.40 |

Looking at Table 2, it is apparent that people who are employed or self-employed are the dominant group on online food ordering, which counted for 41.05% and 39.51% respectively.

4.2 Results of data analysis

Emerging data indicates that demand for food delivery services (unlike other sharing economy services) has surged dramatically in the aftermath of the COVID-19 shelter-in-place order (Chen et al. 2020). Indeed, The New York Times reports that while Uber's ride-sharing service saw an 80 percent decline in April 2020, UberEats saw an 89 percent spike in demand (Conger and Griffith 2020). As a result, food delivery is a particularly interesting sharing economy topic for our investigation to focus on.

H1: Online food delivery platform is used more frequently during the pandemic than before. (Q3,Q10)

Table 3 Use Online Food Delivery Frequency BEFORE COVID-19

| | N | Percent |
|------------------------|----|---------|
| Never | 18 | 6.4 |
| Less than once a month | 18 | 6.4 |
| Once a month | 70 | 25.0 |
| A few times a month | 83 | 29.6 |
| Once a week | 55 | 19.6 |
| A few times a week | 9 | 3.2 |
| Everyday | 9 | 3.2 |

As can be seen from the above table, before the pandemic, 18 people never ordered, counting for 6.4%, another 18 people ordered less than once a month, accounting for 6.4%; 70 people, counting for 25.0%, said to order "Once a month". 83 people chose a few times a month, counting for 29.6%. The rate was 19.6% at "Once a week" and 3.2% at a few times a week, there are 3.2% of "Everyday" response.

Table 4 Use Online Food Delivery Frequency DURING COVID-19

| | N | Percent |
|------------------------|----|---------|
| Never | 14 | 5.0 |
| Less than once a month | 39 | 13.9 |
| Once a month | 74 | 26.4 |
| A few times a month | 60 | 21.4 |
| Once a week | 42 | 15.0 |
| A few times a week | 16 | 5.7 |
| Everyday | 4 | 1.4 |

As can be seen from the above table, during COVID-19, 5.0% of people never ordered. 13.9% of people returned “Less than once a month”, 26.4% of people said they have ordered "Once a month", the rate was 15.0% at “Once a week” and 5.7% at a few times a week, there are 1.4% of “Everyday” response.

Table 5 Paired Samples Test

| | Mean | N | Std. Deviation | t | p | |
|--------|--|------|----------------|------|-------|-------|
| Pair 1 | How often do you use online food delivery DURING COVID-19? | 3.55 | 267 | 1.37 | -0.21 | 0.034 |
| | How often do you use online food delivery BEFORE COVID-19? | 3.76 | 267 | 1.35 | | |

The significance value of paired T-test was 0.034, less than 0.05. Therefore, at the 0.05 significant level, there was a significant difference in the use frequency of Online food delivery platform before and during COVID-19. Hypothesis 1 is not valid.

H2: Social isolation has a negative impact on the frequency of using online food delivery during COVID-19 (Q10, Q17)

Table 6 ANOVA of Social isolation and the frequency of using online food delivery

| ANOVA ^a | | | | | | |
|--|------------|----------------|----|-------------|-------|--------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 7.584 | 3 | 2.528 | 3.812 | .0049 ^b |
| | Residual | 59.022 | 89 | .663 | | |
| | Total | 66.606 | 92 | | | |
| a. Dependent Variable: Q10 | | | | | | |
| b. Predictors: (Constant), Q17_3, Q17_1, Q17_2 | | | | | | |

The P-value of the F-test is 0.0049, less than 0.05, so the linear regression model reflects that social isolation has a significant impact on the frequency of online food delivery during COVID-19.

Table 7 Coefficients of Social isolation and the frequency of using online food delivery

| Coefficients ^a | | | | | | |
|----------------------------|------------|-----------------------------|------------|---------------------------|--------|------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.942 | .609 | | 4.834 | .000 |
| | Q17_1 | -.295 | .116 | -.167 | -2.542 | .012 |
| | Q17_2 | -.304 | .133 | -.032 | -2.288 | .007 |
| | Q17_3 | -.388 | .127 | -.006 | -3.055 | .005 |
| a. Dependent Variable: Q10 | | | | | | |

The regression coefficients of the three questions of Q17 on Q10 are negative and significant at the level of 0.05, so social isolation has a significant negative impact on online food delivery. Thus, hypothesis 2 is true.

H3: Consumers place a higher premium on the convenience of online food delivery during COVID-19. (Q6, Q13)

Table 8 Paired Samples Test

| | | Mean | N | Std. Deviation | t | p |
|--------|---|------|-----|----------------|--------|-------|
| Pair 1 | the convenience of online food delivery before COVID-19 | 3.22 | 108 | 0.72 | -0.119 | 0.906 |
| | the convenience of online food delivery during COVID-19 | 3.23 | 108 | 0.77 | | |

As can be seen from the above table, there was no statistically significant difference in convenience of online food delivery before and during COVID-19 ($t=-0.119$, $P=0.906>0.05$).

H4: Consumers place a lower premium on the price benefit of online food delivery during COVID-19. (Q7, Q14)

Table 9 Paired Samples Test 2

| | | Mean | N | Std. Deviation | t | p |
|--------|---|------|-----|----------------|--------|-------|
| Pair 1 | the price benefit of online food delivery before COVID-19 | 3.31 | 108 | 0.75 | -1.111 | 0.269 |
| | the price benefit of online food delivery during COVID-19 | 3.39 | 108 | 0.68 | | |

What stands out in the above table was that there was no statistically significant change in the price benefit of online food delivery before and during COVID-19 ($t=-1.111$, $P=0.269>0.05$).

H5: The diversity of food delivery categories has a positive impact on the growth of food delivery platforms used during the COVID-19. (Q5, Q12)

Table 10 Paired Samples Test 3

| | | Mean | N | Std. Deviation | t | p |
|--------|---|------|-----|----------------|--------|-------|
| Pair 1 | order food online regarding before COVID-19 | 3.18 | 236 | 0.71 | -3.277 | 0.001 |
| | order food online regarding during COVID-19 | 3.30 | 236 | 0.66 | | |

As can be seen from the above table, the different mealtime categories in food ordering before and during pandemic is statistically significant ($t=-3.277$, $P < 0.01$), and the results indicate that the score in food ordering during pandemic is significantly higher than that before the pandemic.

Table 11 Frequency

| main types of items you order before COVID-19 | Responses | | Percent of Cases |
|---|-----------|---------|------------------|
| | N | Percent | |
| Ready-made meal | 33 | 8.6% | 13.0% |
| Fast food | 88 | 23.0% | 34.6% |
| Coffee or bubble tea | 86 | 22.5% | 33.9% |
| \$Q4 ^a Vegetables or fruits | 89 | 23.2% | 35.0% |
| Packaged food | 46 | 12.0% | 18.1% |
| Groceries or daily necessities | 29 | 7.6% | 11.4% |
| Other (please specify) | 12 | 3.1% | 4.7% |
| Total | 383 | 100.0% | 150.8% |

a. Dichotomy group tabulated at value 1.

In Table 9, it is clear that before COVID-19, in the distribution of main types of food ordering, 33 people chose ready-made meal, 88 people chose Fast food, accounting for 8.6%, 23.0% respectively, and 86 people chose Coffee or bubble tea, accounting for 22.5%, 23.2% of

people prefer Vegetables or fruits, 12.0% of people chose Packaged food, 7.6% of people chose Groceries or Daily necessities.

Table 12 Frequency 2

| main types of items you order during COVID-19 | Responses | | Percent of Cases |
|---|-----------|---------|------------------|
| | N | Percent | |
| Ready-made meal | 29 | 7.0% | 11.6% |
| Fast food | 76 | 18.4% | 30.5% |
| Coffee or bubble tea | 95 | 22.9% | 38.2% |
| \$Q11 ^a Vegetables or fruits | 106 | 25.6% | 42.6% |
| Packaged food | 56 | 13.5% | 22.5% |
| Groceries or daily necessities | 42 | 10.1% | 16.9% |
| Other (please specify) | 10 | 2.4% | 4.0% |
| Total | 414 | 100.0% | 166.3% |

a. Dichotomy group tabulated at value 1.

In Table 10, in the distribution of main types of orders during COVID-19, 7.0% of people chose ready-made meals, and 18.4% of people chose Fast food. There are 22.9% on Coffee or Bubble Tea, and 25.6% on Vegetables or fruits, Packaged food 56 (13.5%), 12.0% of people chose Packaged food, 13.5%, 10.1% of people chose Groceries or daily necessities.

H6: Hygiene issues more positively influence customers' intention of using online food delivery during COVID-19 (Q8, Q15)

Table 13 Paired Samples Test 4

| | Mean | N | Std. Deviation | t | p | |
|--------|--------------------------------|--------|----------------|------|--------|-------|
| Pair 1 | | | | | | |
| | Hygiene issues before COVID-19 | 3.0916 | 91 | 0.75 | | |
| | Hygiene issues during COVID-19 | 3.1529 | 91 | 0.75 | -0.890 | 0.376 |

As can be seen from the above table, there was no statistically significant difference in hygiene issues related to online food delivery before and during COVID-19. ($t=-0.890$, $P=0.376>0.05$).

H7: Fear has a negative impact on the frequency of using online food delivery during COVID-19 (Q10, Q16)

Table 14 ANOVA of Fear impact and the frequency of using online food delivery

| ANOVA ^a | | | | | | |
|--|------------|----------------|----|-------------|-------|-------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 32.544 | 3 | 10.848 | 5.435 | .007b |
| | Residual | 179.606 | 90 | 1.996 | | |
| | Total | 212.15 | 93 | | | |
| a. Dependent Variable: Q10 | | | | | | |
| b. Predictors: (Constant), Q16_3, Q16_1, Q16_2 | | | | | | |

The P value of F-test P value is 0.007, which is less than 0.05, so Fear has a significant influence on online food delivery as a whole.

Table 15 Coefficients of Fear impact and the frequency of using online food delivery

| Coefficients ^a | | | | | | |
|---------------------------|------------|-----------------------------|------------|---------------------------|--------|------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.883 | .623 | | 4.629 | .000 |
| | Q16_1 | -.448 | .141 | -.019 | -3.174 | .002 |
| | Q16_2 | -.428 | .141 | -.115 | -3.037 | .003 |
| | Q16_3 | -.413 | .145 | -.017 | -2.846 | .004 |

a. Dependent Variable: Q10

The regression coefficients of the three questions of Fear on online food delivery are all less than 0, and their significance is all less than 0.05. Therefore, Fear has a significant negative impact on online food delivery at the significance level of 0.05. Hypothesis 7 is true.

H8: Precautions are correlated with users' concerns about using online food delivery services. (Q19, (Q3, Q10))

Table 16 One-way Anova

| | N | Mean | Std. Deviation | F | p |
|------------------------|----|------|----------------|-------|-------|
| Never | 15 | 3.41 | 1.00 | | |
| Less than once a month | 17 | 2.85 | 0.62 | | |
| Once a month | 68 | 3.41 | 0.85 | | |
| A few times a month | 82 | 3.48 | 0.72 | 1.767 | 0.106 |
| Once a week | 54 | 3.44 | 0.72 | | |
| A few times a week | 9 | 3.43 | 0.75 | | |
| Everyday | 8 | 3.69 | 0.76 | | |

Data from this table shows there was no statistically significant difference in preventive measures among people with different ordering frequencies before the pandemic.

(F=0.492, P =0.742>0.05).

Table 17 One -way Anova 2

| | N | Mean | Std. Deviation | F | p | Turkey |
|------------------------|----|------|----------------|-------|--------|---|
| Never | 14 | 3.50 | 0.69 | | | |
| Less than once a month | 39 | 2.97 | 0.74 | | | |
| Once a month | 73 | 3.23 | 0.75 | | | |
| A few times a month | 59 | 3.70 | 0.64 | 6.678 | <0.001 | Everyday、 A few times a month、 Once a week>Less than once a month、 Once a month |
| Once a week | 42 | 3.68 | 0.77 | | | |
| A few times a week | 15 | 3.38 | 0.91 | | | |
| Everyday | 4 | 4.29 | 0.34 | | | |

It can be seen from the above table that, during COVID-19, people with different ordering frequencies had statistically significant differences in preventive measures ($F=6.678$, $P<0.001$), and multiple comparison results suggested that the scores of “Every day”, “A few times a month” and “Once a week” on preventive measures were significantly higher than those of “Less than once a month” and “Once a month” on preventive measures.

H9: Young adults are the biggest proponents of online food delivery services both before and after the pandemic.

Table 18 Different age group use online food delivery frequency BEFORE COVID-19

| age | | Frequency | percentage |
|-------------------------------|------------------------|-----------|------------|
| Millennials (18-34 years old) | Never | 3 | 6.5% |
| | Less than once a month | 5 | 10.9% |
| | Once a month | 13 | 28.3% |
| | A few times a month | 11 | 23.9% |
| | Once a week | 8 | 17.4% |
| | A few times a week | 1 | 2.2% |
| | Everyday | 1 | 2.2% |
| 35-64 years old | Never | 13 | 6.4% |
| | Less than once a month | 12 | 5.9% |
| | Once a month | 51 | 25.1% |
| | A few times a month | 61 | 30.0% |
| | Once a week | 41 | 20.2% |
| | A few times a week | 8 | 3.9% |
| | Everyday | 5 | 2.5% |
| 65 years old and older | Never | 1 | 4.2% |
| | Once a month | 4 | 16.7% |
| | A few times a month | 10 | 41.7% |
| | Once a week | 6 | 25.0% |
| | Everyday | 2 | 8.3% |

From the data in Table 15, before the pandemic, in the group of the Millennials (18-34 years old) 6.5% chose Never, 10.9% chose Less than once a month, and 28.3% chose once a month, 23.9% choose A few times a month, 17.4% choose Once a week, and 2.2% choose A few times a week, another 2.2% choose Everyday. Among 35-64 years old, 13 people choose Never accounting for 6.4%, 12 people choose Less than once a month, accounting for 5.9%, and 51 people choose once a month, accounting for 25.1%. 61 people choose "A few times A month", accounting for 30.0%; 41 people choose "Once A Week", accounting for 20.2%; 8 people choose "A few times A week", accounting for 3.9%; and 1 person chooses "Everyday",

accounting for 4.2%. Among 65 years old and older, 1 person chose Never accounting for 4.2%, 4 people chose Once a month, accounting for 16.7%, and 10 people chose a few times a month, accounting for 41.7%. Six people (25.0%) chose Once a week and two (8.3%) chose every day.

Table 19 Different age groups use online food delivery frequency DURING COVID-19

| age | Frequency | percentage |
|-------------------------------|------------------------|------------|
| Millennials (18-34 years old) | Never | 2 4.3% |
| | Less than once a month | 9 19.6% |
| | Once a month | 11 23.9% |
| | A few times a month | 8 17.4% |
| | Once a week | 7 15.2% |
| | A few times a week | 3 6.5% |
| | Everyday | 1 2.2% |
| 35-64 years old | Never | 10 4.9% |
| | Less than once a month | 25 12.3% |
| | Once a month | 58 28.6% |
| | A few times a month | 46 22.7% |
| | Once a week | 32 15.8% |
| | A few times a week | 11 5.4% |
| 65 years old and older | Everyday | 3 1.5% |
| | Never | 2 8.3% |
| | Less than once a month | 5 20.8% |
| | Once a month | 4 16.7% |
| | A few times a month | 5 20.8% |
| | Once a week | 3 12.5% |
| | A few times a week | 1 4.2% |

From the data in Table 16, before the pandemic, in the group of the Millennials (18-34 years old) 4.3% chose Never, 19.6% chose Less than once a month, and 23.9% chose once a month, 17.4% choose A few times a month, 15.2% choose Once a week, and 6.5% choose A few times a week, another 2.2% choose “Everyday”. Among 35-64 years old, 10 people choose Never accounting for 4.9%, 20 people choose Less than once a month, accounting for 12.3%, and 58 people choose once a month, accounting for 28.6%. 46 people choose "A few times A month", accounting for 22.7%; 32 people choose "Once A Week", accounting for 15.8%; 11 people choose "A few times A week", accounting for 5.4%; and 3 person chooses "Everyday", accounting for 1.5%. Among 65 years old and older, 2 people chose Never accounting for 8.3%, 4 people chose Once a month, accounting for 16.7%, and 5 people chose a few times a month, accounting for 20.8%. 3 people (12.5%) chose Once a week and 1 (4.2%) chose every day.

H10: People with more income have less contradict to pay higher delivery fees. (Q18, Q23)

Table 20 One-way Anova 3

| Income | N | Mean | Std. Deviation | F | p |
|-------------------|-----|------|----------------|-------|-------|
| 0 – 3000 | 26 | 3.15 | 0.74 | | |
| 3000 – 5000 | 77 | 3.30 | 0.62 | | |
| 5000 – 10000 | 120 | 3.33 | 0.66 | 0.492 | 0.742 |
| Over 10000 | 37 | 3.34 | 0.63 | | |
| Prefer not to say | 6 | 3.20 | 0.40 | | |

It is apparent from this table that the difference of people with different incomes in paying more freight is not statistically significant ($F=0.492$, $P=0.742>0.05$).

DISCUSSION

Overall, the research objectives were addressed, and the results of this research will undoubtedly aid in gaining to a deeper understanding of the online food delivery sector.

To begin, linear regression model is applied to H2 and H7, The ANOVA of the regression model was used to test the overall effect, as we can see, the data related to fear and social isolation shows both two factors have a significant negative impact on online food delivery, stating that most people agree that food orders decrease due to fear and social isolation during the COVID-19 period, which indicates that the hypothesis is valid.

Second, the results demonstrated that there are no statistically significant differences in convenience and price benefit between the time before COVID-19 and the period during COVID-19 ($p=0.906$; $p = 0.269$). As a result, hypotheses H3 (Consumers put a larger premium on online food delivery convenience during COVID-19.) and H4 (Consumers place a lesser premium on the pricing advantage of online food delivery during COVID-19.) are also rejected.

Surprisingly, the projected beneficial effect of hygienic issues does not materialize, and there is no statistically significant change in hygiene issues associated with online meal delivery prior and during the COVID-19 The Paired samples test analysis yielded a $P=0.269 > 0.05$, indicating that the hypothesis about hygiene issues should be rejected. These results are rather discouraging. It's conceivable that this is because, even if we assume that the living environment will change consumers' behaviors and that health problems will be an influential factor influencing our online delivery ordering during COVID-19, the investigation and research proved that this hypothesis is not valid, from which we may find a potential consumption behavior: the vast majority of consumers around the world prioritize quality and price over health issues (Ha et al., 2021), consumption habits may exist permanently. They were unconcerned about their health and were always dependable. As a result, the existence of a long-term consuming habit may be the component that this theory does not verify. In addition, 39% of consumers' consumption behavior during the COVID-19 is hardly affected, and only 17% of consumers are concerned about health problems. This indirectly proved our point according to the below figure which is highlighted by Li and Wang's Four Dimensions of Consumer Behavior (2021). As a result, the existence of a long-term consuming habit may be the component that this theory does not verify. This is an essential topic for future investigation.

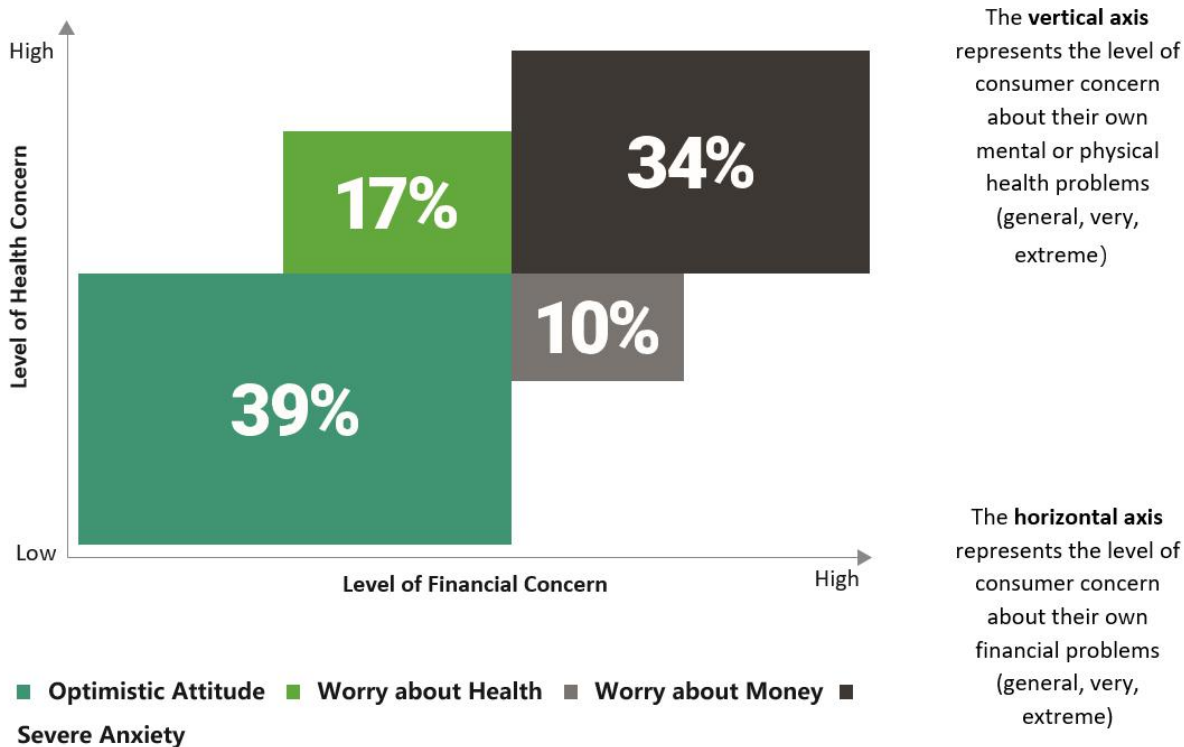


Figure 1.3 - Level of health / financial concerns (Source: Accenture China Consumer Research: Post-epidemic report)

Another unexpected conclusion was the difference in paying delivery fees; the data shows the attitude of persons with various incomes are willing to pay more for delivery fees is not statistically significant ($p=0.742>0.05$). As a result, H10 (People with more income have less contradict to pay higher delivery fees.) is turned down.

Further, One-way ANOVA was utilized to investigate the differences in the frequency of online ordering and the safeguards taken before and during COVID-19. There was a significant difference in the use frequency of online food delivery platform before and during COVID-19 ($p=0.034<0.05$). However, the difference in preventative measures among participants with varied ordering frequencies during COVID-19 is statistically significant ($F=0.492$, $p=0.742>0.05$). Given that Turkey compares the mean difference between groups, the group that is most different from the others may be discovered. "Everyday," "A few times a month," and "Once a Week" scored much higher on preventative measures than "Less than once a month," "Once a month."

Indeed, the categories of people's online order increase, the result shows the difference of food types and mealtime in food ordering before and during COVID-19 was statistically

significant ($t=-3.277$, $P<0.01$), since the range of offerings has increased and new day parts such as breakfast and lunch are becoming available for delivery.

Lastly, the results confirmed that users are younger people who are either employed or self-employed. To be more specific, different age groups have different changes in frequency of online ordering before and during COVID-19; 41.3 percent of Millennials order food online more than a few times a month before COVID-19, compared to 45.7 percent during COVID-19, indicating a slight increase; on the other hand, 56.6 percent of people aged 35 to 64 order food online more than a few times a month. With the emergence of COVID-19, young people's ordering patterns indicate a greater likelihood of utilizing the suggested service.

CONCLUSIONS

In today's world, ordering food is simpler than ever by using a food delivery platform, the findings show that customers understand the idea and have utilized meal delivery services. These customers purchase food online a few times a month, which is different from the period before and during COVID-19. Thus, our research concludes that this paradigm is well-established among customers.

The quantitative research indicates that customers appreciate convenience and price benefits both prior to and following COVID-19. The findings showed that the changes between the two eras are minor. So, without the impact of the external environment, customers evaluate convenience and price advantage equally.

Concerns prohibiting people from using online food delivery services. Contrary to expectations, there was no variation in the importance of sanitary concerns while utilizing online food delivery prior and during the COVID-19. ANOVA (one way) indicated that these findings were not statistically significant.

During the COVID-19 period, the data related to fear and social isolation are showing effects on online ordering frequency, stating that most people agree food orders increase due to social isolation and are more concerned when ordering food online due to their fear of viral transmission, indicating that the hypotheses are valid. Also, this study found that supplying additional categories such as alcohol, prescription pharmaceuticals, groceries, and more helps consumers deal with the difficulty of getting everyday goods during quarantine time. These new categories help to enhance the average order value and enable delivery stacking (Ahuja, 2021).

This study has examined that those with greater ordering frequencies paid more attention to preventative actions throughout the pandemic, proving customers' trust in preventive measures performed during COVID-19 which align with the new WHO standards that during COVID-19, all food providers must focus on avoiding COVID-19 entry. Food delivery companies have to recognize their risks to food businesses and take actions to prevent COVID-19 spread. Because food deliveries involve a delivery person and food, there is a high chance of getting COVID-19. (Canadian Institute of Food Safety, 2020).

In general, the research questions were addressed, and the findings of this research will undoubtedly contribute to the advancement of knowledge on online food delivery services.

The findings show that consumers' usage of online food delivery platforms during pandemics does not rise and that their value of convenience and price advantage does not alter with time and external environment changes. As previously stated, once consuming patterns established it will not be altered due to external factors. At the same time, we discovered that our future target group is young people, they have always been the strongest advocates of online delivery services. In the future, user-run enterprises will have issues in retaining and developing new offerings. The results fully addressed the second research question. During COVID-19, we discovered three characteristics that have been shown to limit the utilization of online delivery platforms: 1. Social isolation 2. Fear 3. Epidemic prevention measures. Due to the fear generated by the COVID-19, people will be anxious that restaurants will not adhere to proper food preparation practices, resulting in the virus being introduced into the food, additionally, if the delivery person is infected, and neither he nor the receiver is adequately protected, he or she may become infected as well. When combined with the government's stringent epidemic prevention efforts, people who stay indoors prefer to shop at supermarkets and cook at home, which is safer. The third research question established the importance of delivery platforms with diverse categories, which contribute positively to user satisfaction and fully conform to the consumer market, which is not difficult to imagine during the outbreak of COVID-19. According to a previous study (Li, 2020) in the food delivery industry overview in China, which noted that consumption of early delivery times at noon and night time, later, with the gradual diversification of delivery categories, consumers expand to the whole day. With the industry's continued development, categories that are diverse, suit user wants, collect user input, and are regularly updated and optimized, will progressively get more consumer favor in the coming years.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE WORKS

When it comes to the overall weaknesses and limitations of the investigation. First, due to COVID-19, the study was conducted online. Online research excludes low-income or technologically challenged populations. This population's data may be vital to improving online food delivery access and use. Concerning limits, a convenience sample was employed to collect data, which amounted to 341. A typical concern is that the population may not be represented by a convenience sample. Although convenience samples can generate treatment effect estimates that are similar in significance and direction to population-based samples, Mullinix et al. Further research may investigate the impact of new online meal delivery developments in different regions and post-COVID-19. A new paradigm of internet food delivery services is being explored by the food and restaurant industry in response to COVID-19. After the pandemic, the increased practice of working from home may open new businesses, including online food delivery services breakfasts. Online meal delivery firms will have to innovate to meet rising demand. Research is required to develop goods that travel well and keep food quality. The pandemic has encouraged home cooking, and it is expected to persist post-pandemic. They don't have a restaurant and only deliver food (some businesses also have pick-up options). Some ghost kitchens share cooking space with restaurants, while others employ dedicated ghost kitchen shared kitchens and food prep rooms (Newton, 2021). The food delivery industry is rapidly expanding. The world will undoubtedly alter in the coming years, both in terms of big actors and how delivery apps operate. The fight for better terms for restaurants and drivers continues, but food delivery apps are also losing money. Meanwhile, ghost kitchens offer a new business model, and indie delivery services help eateries compete. Whatever the industry's future contains, these trends show that mobile ordering will continue to expand and improve. (Sherred, 2019)

The research does not differentiate between food delivery platforms like Eleme, Meituan, and Uber Eats. The survey only examines customers' views of food delivery platforms. Thus, the study methodology can be used for multiple food delivery platforms.

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ANNEXES (OPTIONAL)

Online Survey

Start of Block: Block 1

Q1 Dear participant,

The purpose of this research project is about "Online food delivery". This is a research project being conducted by Zhiyu at NOVA IMS.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time. The procedure involves filling out an online survey that will take approximately 8 minutes. Your responses will be confidential and we do not collect identifying information such as your name, email address, etc.

Clicking on the "Agree" button below indicates that:

- you have read the above information
- you voluntarily agree to participate

If you do not wish to participate in the research study, please decline participation by clicking on the "Disagree" button.

- Agree (1)
- Disagree (2)

End of Block: Block 1

Start of Block: Default Question Block

Page Break

Q2 Have you ever used online food delivery BEFORE COVID-19?

- No (6)
- Yes (7)

Q3 How often do you use online food delivery BEFORE COVID-19?

- Never (1)
- Less than once a month (2)
- Once a month (3)
- A few times a month (4)
- Once a week (5)
- A few times a week (6)
- Everyday (7)

Q4 What are the main types of items you order using the online food delivery platform BEFORE COVID-19

- Ready-made meal (1)
- Fast food (2)
- Coffee or bubble tea (3)
- Vegetables or fruits (4)
- Packaged food (5)
- Groceries or daily necessities (6)
- Other (please specify) (7) _____

Q5 Please choose how likely to order food online regarding the following occasion BEFORE COVID-19.

| | Extremely unlikely (1) | Somewhat unlikely (2) | Neither likely nor unlikely (3) | Somewhat likely (4) | Extremely likely (5) |
|------------------------------|------------------------|-----------------------|---------------------------------|-----------------------|-----------------------|
| For breakfast (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| For lunch (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| For dinner (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| For snacks or appetizers (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| On random timings (5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| For having parties (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Others (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q6 Given the general nature of online food delivery services, please mark your level of agreement with the following statement regarding the degree of convenience BEFORE COVID-19:

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|---|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| I believe that ordering food online saves my time and effort. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Online food delivery platforms offer a wide selection of restaurants. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| On the whole, I believe that this service is convenient and meets my needs. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q7 Given the general price benefit of online food delivery services, please mark your level of agreement with the following statements BEFORE COVID-19:

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|--|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| Using an online food delivery service saves money. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Online food delivery platforms offer cheap deals. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Online food delivery service offers better value for my money. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q8 Please indicate your level of agreement with the following statements related to hygiene issues, that might prevent you from starting using food delivery services.

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|--|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| I would feel worry about the hygiene issues when using online food delivery services. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I would enjoy hot and fresh food which would lead to less hygiene problems. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I was concerned about the health condition of the delivery men. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Negative news about food delivery hygiene on the Internet can influence my decision to order food. (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q9 Have you ever used online food delivery services DURING COVID-19?

- No (6)
- Yes (7)

Q10 How often do you use online food delivery DURING COVID-19?

- Never (1)
- Less than once a month (2)
- Once a month (3)
- A few times a month (4)
- Once a week (5)
- A few times a week (6)
- Everyday (7)

Q11 What are the main types of items you order using the online food delivery platform DURING COVID-19

- Ready-made meal (1)
- Fast food (2)
- Coffee or bubble tea (3)
- Vegetables or fruits (4)
- Packaged food (5)
- Groceries or daily necessities (6)
- Other (please specify) (7) _____

Q12 Please choose how likely to order food online regarding the following occasion DURING COVID-19.

| | Extremely unlikely (1) | Somewhat unlikely (2) | Neither likely nor unlikely (3) | Somewhat likely (4) | Extremely likely (5) |
|------------------------------|------------------------|-----------------------|---------------------------------|-----------------------|-----------------------|
| For breakfast (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| For lunch (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| For dinner (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| For snacks or appetizers (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| On random timings (5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| For having parties (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Others (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q13 Given the general nature of online food delivery services, please mark your level of agreement with the following statement regarding the degree of convenience DURING COVID-19:

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|---|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| I believe that ordering food online saves me time and effort. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Online food delivery platforms offer a wide selection of restaurants. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| On the whole, I believe that this service is convenient and meets my needs. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q14 Given the general price benefit of online food delivery services, please mark your level of agreement with the following statements DURING COVID-19:

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|--|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| Using an online food delivery service saves money. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Online food delivery platforms offer cheap deals. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Online food delivery service offers better value for my money. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q15 Please, indicate you level of agreement with the following statements related to hygiene issues, that might prevent you from start using food delivery services.

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|--|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| I would feel worry about the hygiene issues when using online food delivery services. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I would enjoy hot and fresh food which would lead to less hygiene problems. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I was concerned about the health condition of the delivery men. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Negative news about food delivery hygiene on the Internet can influence my decision to order food. (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q16 Please, indicate your level of agreement with the following statements related to your fear of COVID-19, which might prevent you from starting using online food delivery services.

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|---|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| I have concerns of using online food delivery services because of my fear of COVID-19. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I'm not willing to order since COVID-19 would threat on my health. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I have been avoiding ordering food using online food delivery services because of my fear of the spread of the virus. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q17 Please, indicate your level of agreement with the following statements related to the social isolation of COVID-19, which might prevent you from starting using food delivery services.

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|---|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| Unwilling to pick up food since doorstep delivery service is banned (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Suspension of the restaurant. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I have more time staying at home to cook by myself. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q18 What is your attitude towards the increase on delivery fees DURING COVID-19

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|--|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| I feel that the overall delivery service is cost-effective. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I'm willing to pay more since it's unsure how many people will stick to delivery and I'm afraid I could not order next time. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I'm willing to pay more if it can help drivers and staff of the restaurant. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I'm not willing to pay more since I get the same service compared with the one before the pandemic. (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I'm not willing to pay more, since paying more on online delivery service makes me give up ordering | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

again. (5)

Q19 Which of the following precautions on COVID-19 would let you feel more secure in ordering delivering food?

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|--|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| I would be less concerned when delivery men wear masks. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I would be less concerned if I could choose contactless delivery. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I would be less concerned if food and utensils from online food delivery platforms were disinfected. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q20 My willingness to order food through online delivery platforms in the future is:

- Much weaker (1)
- Slightly weaker (2)
- No change (3)
- Slightly stronger (4)
- Much stronger (5)

Q21 Please indicate your age:

- Millennials (18-34 years old) (1)
- 35-64 years old (2)
- 65 years old and older (3)

Q22 Please indicate your gender:

- Male (1)
- Female (2)
- Prefer not to say (3)

Q23 Please indicate your monthly income:

- 0 – 3000¥ (1)
- 3000- 5000¥ (2)
- 5000- 10000¥ (3)
- Over 10000¥ (4)
- Prefer not to say (5)

Q24 Which of the following best describes your current employment status?

- Student (1)
- Employed (2)
- Self-employed (3)
- Not currently employed (4)
- Other (5)

End of Block: Default Question Block

