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Article

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Food delivery competition in the digital economy: Price war strategy in a developing country

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ABSTRACT

This study investigates how consumers make decisions when using online food delivery services in Thailand, with a particular focus on the price-related factors that influence their choices. The research adopts a mixed-method approach, combining quantitative and qualitative data collection and analysis. Quantitatively, data was gathered from 392 respondents through closed-ended questionnaires, and statistical analysis software was used, employing binary regression to explore the relationship between various independent variables (including gender, age, education, marital status, income, residence, experience, reasons, information sources, frequency, and expenses) and the price war strategy, which serves as the dependent variable. Qualitatively, in-depth interviews were conducted with ten purposively selected participants. The qualitative data were analyzed using content analysis and the NVivo software program. The study's results highlight the significant influence of income and information on the price-related decisions in Thailand's online food delivery market. Moreover, consumers in Thailand prioritize factors like price sensitivity, value perception, convenience, promotions, and cultural food preferences when selecting online food delivery services. This understanding is essential for businesses operating in this market to effectively meet consumer preferences and succeed in the competitive online food delivery industry.

1. Introduction

In the digital age, globalization has undergone substantial changes, driven by the widespread adoption of the Internet, mobile communication technologies, and advancements in information and communication technology (ICT). A crucial aspect of this contemporary era of globalization involves the integration of computers and innovative ICTs, which establish a unified global communication system and shape a cohesive financial and information landscape (Limna, Kraiwanit, and Siripipatthanakul, 2023). Moreover, the digital economy has exerted a profound influence on the growth and evolution of the food delivery industry. This transformation is attributed to technological advancements and the increased use of the internet, which have revolutionized the process of ordering and delivering food, enhancing convenience and speed (Chotigo & Kadono, 2022a, 2022b; Peng, Shui, Li, & Yang, 2022). Online platforms enable customers to promptly select food items, place orders, and complete transactions digitally, whether through credit cards, online transfers, or mobile payment services like e-wallets. Consequently, these developments have streamlined the ordering and

payment processes, significantly improving efficiency and convenience. The use of social media and other online platforms has also played a role in advertising and creating awareness about online food delivery services, leading to increased customer recognition and usage. Additionally, the utilization of technology for data storage and processing enables food delivery platforms to efficiently track and manage order listings, deliveries, and customer data (Botelho et al., 2023; Humairoh & Annas, 2023; Rahmawati, Hidayah, & Paminto, 2023).

The advent of the COVID-19 pandemic precipitated a precipitous decline in the revenue streams of the foodservice industry, virtually overnight. In contrast, the implementation of stay-at-home measures as a pragmatic response to mitigate the pandemic's repercussions has significantly augmented the growth of the online food delivery sector (Tsai, Hsiao, & Chen, 2023). Food delivery apps are rapidly emerging as a mobile technology connecting catering businesses with customers through online-to-offline delivery services. These apps typically operate in collaboration with restaurants, like KFC, and online intermediaries such as Uber Eats. Customers place orders online through these intermediaries, and the food is delivered directly to their doorstep,

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emphasizing contactless delivery for safety. The popularity of these apps is driven by changing consumer habits and shifting demographics, especially among younger consumers who prefer the convenience of ordering restaurant-quality meals from the comfort of their homes rather than waiting in restaurant queues (Melián-González, 2022; Muangmee, Kot, Meekawwunchorn, Kassakorn, & Khalid, 2021). Online food delivery is the fastest-growing sector in Thailand. Mobile devices play a crucial role in this trend, with consumers increasingly using them for online shopping. Food delivery apps have become essential tools for individuals with busy lifestyles, and they also cater to those who prefer convenience over dining out. Thailand boasts a robust transport network and ranks among the top three largest food delivery markets in Southeast Asia. The COVID-19 pandemic has significantly impacted dine-in restaurants, prompting a surge in online food sales. To minimize exposure to the virus, Thai customers have turned to well-known aggregators for online food delivery services. Consequently, many restaurants have shifted their focus to delivery and takeout, which have become primary drivers of their sales and revenue growth during these challenging times (Chotigo & Kadono, 2021; Sureeyatanapas & Damapong, 2024).

Consumer behavior underscores the importance of studying and understanding consumers' responses, needs, and necessities to ensure satisfaction with the presented products or services. Marketers can effectively meet consumer needs and preferences only if they understand and perceive their identities and needs. Failure to comprehend consumers' identities, needs, likes, and dislikes would result in an inadequate response to their demands (Panitapu, 2013; Suherlan & Okombo, 2023). In decision-making theories related to consumer behavior, especially in contexts like food delivery services, the focus is on utilizing principles and reasoning to choose optimal options that align with the users' needs. This involves considering lifestyle preferences, efficiency of transportation, and flexibility, ensuring the decision-making process is user-oriented. The goal is to maximize satisfaction and minimize potential dissatisfaction from service usage, optimizing the overall experience. Theories such as the Consumer Decision-Making Model highlight the importance of understanding consumer needs, preferences, and the external factors influencing their choices, aiming to tailor services for the best possible utility and satisfaction (Bodhisundara & Pattanarangsun, 2022; Jitsoonthornchaikul, 2022; Sawetkochakul, Buriphan, & Rittiboonchai, 2023; Sriraphorn, 2023; Troise, O'Driscoll, Tani, & Prisco, 2021).

Consumer behavior in Thailand, much like in other diverse markets, is significantly influenced by a combination of socio-economic and cultural factors. Socio-economic status, including income, education, and occupation, plays a crucial role in determining what, how, and when Thai consumers buy, often dictating the level of access to various goods and services. Cultural factors, deeply rooted in Thai society, such as respect for traditions, social hierarchy, and Buddhist principles, also shape purchasing decisions, influencing preferences for certain products and brands that align with cultural values or symbols of status. Additionally, the collectivist nature of Thai culture emphasizes family and community, impacting group-based purchasing decisions rather than individual choices. Urbanization and digital penetration have introduced new trends and consumer segments, further complicating the landscape. Thus, understanding consumer behavior in Thailand requires a nuanced approach that considers the interplay of these socio-economic and cultural dimensions, tailoring marketing strategies to cater to the diverse needs and values of the Thai population (Juneja, n.d.; Kelly, Seubsman, Banwell, Dixon, & Sleight, 2015; Khaipetch, 2017; Ratanachai et al., 2023).

The digital economy has played a significant role in enhancing convenience, speed, and overall service quality within the food delivery industry, contributing significantly to its success in the contemporary era. Consequently, studying food delivery competition in the digital economy becomes crucial. Numerous studies have delved into various aspects of food delivery. For instance, Suhartanto, Helmi Ali, Tan,

Sjahroeddin, and Kusdibyo (2019) examined the direct impact of food quality and e-service quality on customer loyalty towards online food delivery services, as well as their indirect influence through customer satisfaction and perceived value. Li, Miroso, and Bremer (2020) conducted a review of online food delivery platforms and their sustainability implications. However, there remains a gap in research, particularly concerning price war strategies, especially in developing countries like Thailand. Therefore, this study seeks to investigate consumers' decision-making processes when using online food delivery services by categorizing them based on gender, age, marital status, educational level, average monthly income, and residential address. Additionally, it aims to explore the price-related factors that influence consumers' choices in using online food delivery services. The research question guiding this study is, "Which factors affect consumer decision-making in utilizing online food delivery services in Thailand, specifically focusing on price-related determinants?" This investigation employed a mixed-methods approach, integrating both quantitative and qualitative methodologies. Quantitative data were collected from 392 individuals using structured questionnaires, and analysis was conducted using binary logistic regression to examine the relationship between various independent variables (such as gender, age, educational background, marital status, income level, place of residence, user experience, motivational factors, sources of information, usage frequency, and expenditure) and the dependent variable, the consumers' response to price competition strategies. On the qualitative front, in-depth interviews were carried out with ten individuals, chosen through purposive sampling, to provide richer, contextual insights. The qualitative data underwent content analysis utilizing NVivo software to facilitate the organization and interpretation of complex narrative data. The findings of the study underscore the significant roles that income levels and informational inputs play in shaping consumer behavior related to price in Thailand's online food delivery sector. Furthermore, the study reveals that Thai consumers consider a multitude of factors, including price sensitivity, perceived value, convenience, promotional offers, as well as cultural or regional food preferences, when choosing online food delivery services. This study's implications revolve around improving the effectiveness of online food delivery services by understanding consumer behavior and tailoring strategies to meet the diverse needs of different consumer segments. This can lead to increased competitiveness, customer satisfaction, and customer loyalty, resulting in business growth.

2. Literature review

Amid the disruptive impacts of the Thai government's response to the COVID-19 pandemic on the restaurant industry, a significant shift has occurred. Most restaurants have ceased sit-in dining and have instead embraced takeout and delivery services. These delivery services have proven invaluable, serving as a lifeline for customers confined to their homes while adhering to social distancing measures (Jandawapee, Siripipatthanakul, Phayaphrom, & Limna, 2022; Nguyen & Vu, 2020). According to Chotigo and Kadono (2022a, 2022b), food delivery services are emerging as resilient and thriving businesses during Thailand's ongoing outbreak, in contrast to the challenges faced by many other local enterprises. This shift has been driven by the restaurant industry's adaptation to the pandemic's constraints. With lockdowns in place, people have increasingly relied on food delivery and home-cooked meals. Now, as they navigate the "new normal," diners are cautious about their activities, especially dining out in crowded places like shopping malls and restaurants. Food delivery aggregators, including Grab, LINE MAN, GET, and Foodpanda, have seized this opportunity by providing rapid, convenient, and transparent ordering processes, allowing users to access a wide range of local restaurant options from the safety of their homes. This shift towards food delivery services has not only ensured continuity in dining but has also reshaped how people explore and enjoy diverse culinary choices.

In terms of a positive relationship between consumers' attitudes and their intention to adopt technology, consumers choose online services due to factors like convenience, usefulness, and other considerations, as well as their prior experiences with online platforms (Ali, Khalid, Javed, & Islam, 2021; Pillai, Kim, Haldorai, & Kim, 2022). Food is considered a low-involvement product, so consumers often make price choices based on the present moment without extensive consideration of past transactions. The time-saving aspect of online shopping, which reduces the time and effort consumers need to purchase products, is significant. However, recent literature suggests that shopping motivations can also be driven by values and the pleasure consumers derive from shopping. Additionally, online food consumption is influenced by both utilitarian and hedonic motivations (Yeo, Goh, & Rezaei, 2017).

The Technology Acceptance Model (TAM) serves as a foundational framework in understanding how users come to accept and use new technologies. It is centered on two principal components: perceived usefulness and perceived ease of use. Specifically, within the realm of online food delivery, perceived usefulness is tied to the user's conviction that the service will significantly enhance their dining convenience or streamline the food ordering process. This factor evaluates whether the technology meets users' needs and provides a tangible benefit over traditional methods. On the other hand, perceived ease of use assesses how user-friendly and navigable an online food delivery platform is perceived to be. If users find a platform straightforward and intuitive, they are more inclined to adopt and continually use the service, reflecting the direct impact of interface design and functionality on technology acceptance (Alagoz & Hekimoglu, 2012; Jun, Yoon, Lee, & Lee, 2021). Building upon the foundational principles of TAM, the Unified Theory of Acceptance and Use of Technology (UTAUT) provides a more comprehensive view by integrating additional variables that might influence a user's decision to adopt a new technology. In the setting of online food delivery services, performance expectancy is akin to perceived usefulness in TAM but focuses specifically on the user's expectations for timely, accurate, and satisfactory service. This factor underscores the importance of reliability and quality in the online food delivery sector. Effort expectancy in UTAUT expands on the concept of perceived ease of use, highlighting the importance of an effortless interaction with the technology. For online food delivery platforms, this means simplifying the order placement process, ensuring the app or website loads quickly, and making sure that the user interface is accessible to a diverse customer base, including those less familiar with digital services. Social influence, a unique aspect of UTAUT not directly covered by TAM, considers how the decisions of individuals are impacted by the views and actions of their social circle, including friends, family, and even broader societal trends. This highlights the role of social media, influencer endorsements, and word-of-mouth in the adoption of online food delivery services. Lastly, facilitating conditions refer to the user's perceptions of the technical and organizational infrastructure available to support the use of the service. This includes not just a stable internet connection and functional payment systems, but also customer support and service reliability. It is about ensuring that users have everything they need to seamlessly use the service, which can significantly reduce barriers to adoption (Karulkar, Pahuja, Uppal, & Sayed, 2019; Muangmee et al., 2021; Surya, Sukresna, & Mardiyono, 2021). In practical terms, these models provide crucial insights for businesses in the online food delivery industry. By understanding and improving factors that influence user acceptance, companies can tailor their services to meet user expectations, enhance user experience, and implement targeted marketing strategies. This not only helps in attracting new users but also in retaining existing ones, by continuously meeting or exceeding their expectations and adapting to changing consumer behaviors and technological advancements.

According to Covin, Slevin, and Heeley (2000), Rao, Bergen, & Davis, (2000) and Reinmoeller (2014), price wars in a market's competitive landscape typically commence when one or more companies opt to significantly reduce their prices with the goal of gaining a

competitive advantage or expanding their market presence. This can trigger a cascading effect, prompting competitors to follow suit and escalate the competitive battle through price reductions. Various factors, including market saturation, the entry of new competitors, pressures on profitability, and competitive maneuvers, can serve as catalysts for the initiation of price wars. While consumers may initially enjoy the benefits of lower prices, prolonged price wars can negatively impact a company's profitability, hampering its ability to invest in innovation and product quality. Consequently, it is crucial for companies to thoroughly assess the implications and carefully consider both short-term and long-term consequences before engaging in a price war (Heil & Helsen, 2001; Hsieh & Vermeulen, 2014; Vlastic, Poldrugovac, & Janjovic, 2019; Wu et al., 2020).

Demographic factors hold significant importance in the examination of personal characteristics, serving as foundational elements in the development of marketing strategies. These factors substantially impact consumer behavior and are frequently utilized for market segmentation, largely due to their objective measurability and clarity. Notable demographic variables such as gender, age, education, marital status, and income are particularly critical for effective segmentation. Gender plays a pivotal role in shaping communication styles and decision-making processes, while age corresponds to diverse needs and interests. Education level significantly affects an individual's knowledge base and preferences, and marital status can identify key decision-makers within families. Income levels are indicative of consumers' purchasing power, and occupation provides insight into their lifestyles and interests. By integrating demographics alongside lifestyle and cultural influences, businesses can gain a deeper understanding of consumer predilections, enabling them to tailor their strategies more effectively and cater to the needs of a varied target audience (Kraiwanit, Limna, Wattanasin, Asanprakit, & Thetlek, 2023). Zolfaghar, Khoshalhan, and Rabiei (2010) demonstrated the significant influence of education on shaping individuals' perceptions and attitudes towards mobile advertising. In a related study, Ünal, Ercis, and Keser (2011) explored the variances in attitudes between youth and adults concerning mobile advertising, revealing that younger demographics exhibit a more favorable stance towards mobile advertising compared to their older counterparts. Kraiwanit, Jangjarat, and Atcharanuwat (2022) revealed that average monthly income significantly impacted the acceptance of financial robo-advisors, affecting individual profits, career trajectories within the financial sector, and the overarching economic framework. In a parallel vein, Shaengchart, Kraiwanit, and Butcharoen (2023) discovered a substantial correlation between income levels and the extent of individuals' internet access and engagement, with those possessing higher incomes more likely to employ the internet for work-related endeavors or other activities necessitating stable and fast connectivity. Similarly, Thetlek, Kraiwanit, Jangjarat, Limna, and Shaengchart (2023) corroborated the pivotal role of monthly income in shaping the dynamics of the token economy within the Thai context.

Social media engagement significantly impacts an individual's tendency to adopt new technologies. Positive factors, including favorable user testimonials, peer recommendations, instructional content, and marketing initiatives propagated via social media, can enhance the likelihood of technology acceptance. Conversely, encounters with adverse accounts or security concerns highlighted through these channels might deter prospective users. This dynamic underscores the critical influence of social media as a mediator in the technological adoption process (Amegbe, Zungu, & Asamoah, 2023; Kraiwanit et al., 2023; Qalati, Yuan, Khan, & Anwar, 2021). Jangjarat, Kraiwanit, Limna, and Sonsuphap (2023) confirmed that awareness and utilization of ChatGPT are affected by multiple factors, with social media usage being a prominent one. The dissemination of information through social media platforms was identified as a key factor contributing to this effect. Kraiwanit et al. (2023) highlighted the significance of social media in the decision-making process for the adoption of digital wallet services, emphasizing its dual role as both a channel for disseminating

information and a hub for social interactions. This underscores the importance of social media as a pivotal factor in influencing the usage of digital wallet technologies.

Liu (2023) delved into the dynamics of consumer behavior within the pet food market, scrutinizing the determinants that sway consumers' preferences for online versus offline purchasing channels. Amidst the burgeoning pet economy and ongoing digital transformation, the study sought to fill a void in the comprehension of consumer decision-making processes specific to this unique sector. Through an extensive survey aimed at pet owners and prospective buyers, the research evaluated how variables such as price, logistics, service quality, and product quality impact consumer behaviors. Notable outcomes of the study reveal a pronounced effect of price sensitivity on purchasing decisions, with cost-efficiency being a significant driver for online buying. Additionally, the convenience and speed of delivery were critical factors enhancing the appeal of online shopping. Novel determinants such as the quality of logistics packaging, associations with charitable causes, trust in logistics providers, and assurances of product authenticity were identified as influential in steering consumers towards online purchases. These insights emphasized the importance for companies in the digital pet food marketplace to prioritize competitive pricing, user convenience, trust enhancement, and customer-focused services to succeed.

Srimanta and Hengsadeeikul (2022) examined the personal factors influencing the purchasing behavior of undergraduate students majoring in Business Administration at Southeast Asia University, particularly concerning online food delivery. The results demonstrated that personal factors, including gender, age, academic year, income, and current residence, had a significant influence on the buying behavior of these students via online food delivery channels at Southeast Asia University.

Nguyen et al. (2019) conducted a study to examine the factors affecting consumer attitudes and intentions related to online food purchasing. Their research identified perceived usefulness, perceived ease of use, and website trust as significant determinants of consumer attitudes towards online food purchasing. Notably, perceived ease of use had the most substantial influence on shaping these attitudes. Furthermore, the study found that both attitude and website trust had a direct

and positive impact on consumers' intentions to engage in online food purchasing.

Chai and Yat (2019) developed an integrated model to investigate the connections between multiple factors, such as perceived ease of use, time-saving orientation, convenience motivation, and privacy and security. Their research aimed to understand the behavioral intention of Malaysian urban residents to use online food delivery services. The results of the study affirmed that time-saving orientation, convenience motivation, and privacy and security all positively influenced the behavioral intention to utilize online food delivery services among Malaysian urban dwellers.

Keawchuer, Piriyaodom, and Ruangsang (2022) conducted research on content marketing factors influencing the use of food delivery services among Gen Y users in the Dusit District of Bangkok, Thailand, specifically focusing on infographic design. Several key factors within the marketing content infographics that affected Gen Y's decision to utilize food delivery services encompassed attractiveness, ease of comprehension, promotional offers, discounts, service quality, delivery time, food variety, and food service rating.

3. Methodology

The research study adopted a mixed-methods approach, integrating both quantitative and qualitative strategies, to gain a comprehensive understanding of the Thai online food delivery market in the context of price wars. This methodological choice enables a holistic view by combining statistical breadth with in-depth individual insights. Fig. 1 presents a schematic diagram outlining the research methodology flow utilized in the study.

3.1. Quantitative approach

For the quantitative approach, data were collected through an online questionnaire, which was meticulously developed as follows. Initially, extensive research was conducted by reviewing scholarly papers, articles, books, and reputable websites focused on price war strategy and

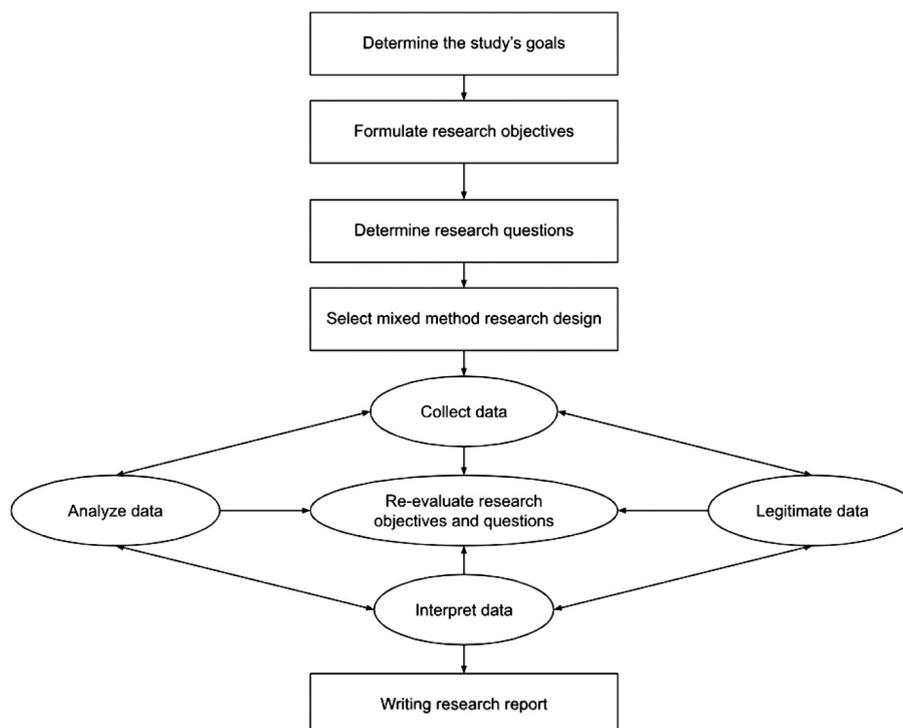


Fig. 1. The research flow diagram (Source: Authors).

food delivery competition in the digital economy. The pre-questionnaire was scrutinized by five experts from varied fields to ensure its effectiveness and relevance. These professionals included an Economist specialized in market competition, a Business Analyst with insights into the food delivery industry, a Statistical Expert focused on survey design, a Digital Economy Specialist, and a Consumer Behavior Analyst with expertise in online services. Their comprehensive backgrounds allowed for a detailed assessment, leading to high Item Objective Congruence (IOC) index values, reflecting the questionnaire's quality in addressing price wars and competition in the food delivery sector within the digital economy. This multidisciplinary evaluation ensured the questionnaire's questions were contextually appropriate, well-structured, and clear, contributing to the study's overall rigor and reliability. Remarkably, this study achieved IOC values ranging from 0.80 to 1.00, indicating the appropriateness of all questions in terms of context, language, and structure.

The finalized questionnaire was then distributed through various online platforms, including LINE, WhatsApp, and Facebook Messenger. Before respondents completed the questionnaire, they were explicitly asked for permission to use their responses for research publication. Those who declined consent had the option to opt out of participating in the survey. The target population in this study was unknown. The study's sample comprised Thai food delivery users who were at least 18 years old. The sample size for this research was determined using Yamane's formula, with a significance level (p) set at 0.5, precision levels at $\pm 5\%$, and a confidence level of 95%. The calculated minimum number required was 384 participants (Thetlek et al., 2023; Uakarn, Chaokromthong, & Sintao, 2021). Consequently, the chosen sample size of 392 participants was deemed adequate for producing precise and reliable results while minimizing the potential for abnormal data distribution. A convenience sampling method was employed. Data collection for the online survey was conducted over a four-month period, spanning June to September 2023. This extended duration was instrumental in capturing contemporaneous and pertinent data, thereby facilitating the observation of emergent trends and variations. Such an approach significantly augmented the research findings' accuracy and reliability. The data collection phase was concluded upon achieving robust and indicative results.

The selected variables for the study on the Thai online food delivery market—such as gender, age, education, marital status, income, residence, usage experience, reasons for usage, information sources, usage frequency, and expenses—were critical in understanding consumer behaviors and market segmentation in the context of price wars. These variables were strategically chosen to reflect demographic diversity, socioeconomic status, and consumer preferences, which are essential for analyzing how different customer segments might respond to competitive pricing strategies. They allowed for a comprehensive analysis of market dynamics, aiding in the development of targeted business strategies and understanding price sensitivity among consumers. This focused selection helped in identifying key factors influencing consumer decisions in the online food delivery industry, making them more relevant for this specific study's goals than other potential variables. The data underwent comprehensive analysis using a combination of descriptive statistics, including percentages, means, and standard deviations. Additionally, a robust statistical technique known as multiple regression was utilized to further analyze and extract valuable insights from the dataset.

3.2. Qualitative approach

For the qualitative approach, data were collected via interviews. This method was chosen because it allows for the collection of in-depth, context-specific data that is rich and detailed directly from users of digital wallets. The development and validation of the interview questions were thoroughly conducted to ensure the collection of meaningful data regarding digital wallet usage within the online food delivery

sector. Initially, a comprehensive literature review was performed to pinpoint the main themes and existing research gaps. The crafted questions aimed to garner in-depth insights into participants' experiences, preferences, and behavioral patterns concerning digital wallet usage, probing into their frequency of use, motivations behind their payment method choices, and perceptions of security and convenience. These draft questions underwent meticulous refinement through consultations with three specialists in business, social science, and qualitative research to confirm their clarity, neutrality, and effectiveness. The finalized questions were carefully sequenced, starting from broad topics to build rapport, and gradually narrowing down to more specific areas pertinent to the research objectives, facilitating a natural flow of dialogue during the interviews. Please refer to the appendix for the list of interview questions. Strict protocols were established in accordance with ethical standards. These protocols explicitly excluded individuals below the age of 18 from participating in the study to safeguard the rights and well-being of vulnerable populations. Participants were provided with comprehensive information about the research objectives, and a clear and unequivocal statement emphasized their voluntary participation and the right to withdraw from the study at any point if they chose to do so. Conducted in English, the interviews offered the flexibility of being held either in person or remotely, with audio recordings employed to aid in the meticulous analysis of the discussions. These measures were proactively implemented to address potential ethical concerns and uphold the principles of participant rights, autonomy, and informed consent.

According to Sebele-Mpofu (2020), a minimum of six to ten interviews is considered the optimal number to achieve data saturation in qualitative research. Thus, the study required the participation of ten Thai individuals with prior experience in online food delivery. To be included, participants needed to meet the following three requirements: 1) Participants had to be at least 18 years old, in accordance with the legal age for financial transactions on online food delivery applications; 2) Participants had to be Thai citizens residing in Pathum Thani, Thailand, to ensure their experiences were within the Thai context; and 3) Participants had to have recent experience with online food delivery. By applying these criteria, the study ensured that participants were capable of providing insightful opinions about their experiences. Purposeful sampling was employed. Every interview was recorded verbatim to maintain a textual record of conversations. The identified themes and patterns were analyzed and interpreted in line with the study's objectives, involving drawing conclusions and making inferences to explain research findings.

The chosen qualitative research method, content analysis, was used to achieve this goal. In addition, to enhance the depth and scope of data analysis, NVivo software was employed. NVivo is well-regarded in qualitative research for its effectiveness in managing and analyzing qualitative data. It facilitated systematic coding, cross-referencing, and the identification of significant trends in the dataset (Limna, 2023). The combination of content analysis and NVivo allowed for a thorough analysis and interpretation of data gathered from in-depth interviews, contributing to a nuanced understanding of the study subject and bolstering the study's credibility and depth.

4. Result

A comprehensive dataset was amassed from a cohort of 392 Thai food delivery users in Bangkok, Thailand, who willingly engaged in the study by diligently completing online questionnaires. Subsequent to data collection, a meticulous process of coding and rigorous analysis was diligently undertaken to effectively align with and fulfill the research objectives.

As depicted in Table 1, the chi-square value of 26.837 surpasses the critical value at a significance level of 0.05, considering the presence of 11 degrees of freedom. This observation signifies that the dependent variable is significantly influenced by all the independent variables

Table 1
Omnibus test of the model’s performance using all the independent variables.

		Chi-square	df	Sig.
Step 1	Step	26.837	11	0.005
	Block	26.837	11	0.005
	Model	26.837	11	0.005

encompassed within the model. In essence, this indicates that the combined influence of the independent variables carries substantive significance in determining the outcome of the dependent variable.

As presented in Table 2, the model, characterized by an R-squared value of 0.092, indicates that it elucidates roughly 9.2% of the variance in the outcome. Furthermore, the significance value of 0.05 underscores that the relationship between the independent variables and the dependent variable holds statistical significance at the 5% level.

As indicated in Table 3, the classification results reveal that the model, incorporating all independent variables, demonstrated the capability to predict the price war strategy in Thailand with an accuracy rate of 66.8% for cases, employing a cut-off value of 0.500 or 50%.

The predictive regression equation of Model 1 using the coefficients from Table 4 can be described by the following equation:

$$P = \frac{1}{1+e^{-z}} \text{ Model 1 where } P \text{ is a price war strategy in Thailand, and } Z = -3.240 + 0.206(\text{Income}) + 0.795(\text{Information}).$$

The statistical significance of each independent variable is elucidated in Table 4. The results indicate that, with regard to the dependent variable, namely the price war strategy in Thailand, income and information emerge as significant contributors. In contrast, gender, age, education, marital status, residence, experience, reasons for usage, frequency of usage, and expenses did not demonstrate statistical significance. The analysis reveals that a unit increase in income corresponds to a 1.229-unit increase in the price war strategy, while a unit increase in the variable “information” is associated with a substantial 2.213-unit increase in the price war strategy.

As depicted in Table 5, the chi-square value of 20.331 surpasses the critical value at a significance level of 0.05, considering the presence of 2 degrees of freedom. This observation signifies that the dependent variable is significantly influenced by all the independent variables encompassed within the model. In essence, this indicates that the combined influence of the independent variables carries substantive significance in determining the outcome of the dependent variable.

As presented in Table 6, the model, characterized by an R-squared value of 0.070, indicates that it elucidates roughly 7% of the variance in the outcome. Furthermore, the significance value of 0.05 underscores that the relationship between the independent variables and the dependent variable holds statistical significance at the 5% level.

As indicated in Table 7, the classification results reveal that the model, incorporating the significant independent variables, demonstrated the capability to predict the price war strategy in Thailand with an accuracy rate of 66.1% for cases, employing a cut-off value of 0.500 or 50%.

The predictive regression equation of Model 2 using the coefficients from Table 8 can be described by the following equation:

$$P = \frac{1}{1+e^{-z}} \text{ Model 2}$$

where P is a price war strategy in Thailand, and $Z = -1.338 + 0.191(\text{Income}) + 0.757(\text{Information})$.

Table 2
The model summary using all the independent variables.

Step	–2 log likelihood	Cox & Snell R square	Nagelkerke R square
1	475.363 ^a	0.066	0.092

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than 0.001.

Table 3
Classification table for back-testing (including all the independent variables).

	Observed	Predicted		Percentage correct	
		No	Yes		
		Step 1	Price war		No
		Yes	18	241	93.1%
Overall percentage					66.8%

The cut-off value is 0.500.

Table 4
Variables in the model using all the independent variables to price war strategy in Thailand.

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Gender	0.123	0.231	0.284	1	0.594	1.131
	Age	–0.070	0.167	0.175	1	0.676	0.933
	Education	0.139	0.190	0.530	1	0.467	1.149
	Status	0.192	0.278	0.478	1	0.489	1.212
	Income	0.206	0.103	4.004	1	0.045	1.229
	Residence	–0.026	0.236	0.012	1	0.914	0.975
	Experience	1.864	1.145	2.649	1	0.104	6.450
	Reason	–0.119	0.138	0.743	1	0.389	0.888
	Information	0.795	0.202	15.409	1	0.001	2.213
	Frequency	–0.037	0.077	0.230	1	0.631	0.964
	Expense	–0.054	0.111	0.234	1	0.629	0.948
	Constance	–3.240	1.365	5.637	1	0.018	0.039

^a Variable(s) entered in step 1: Gender, age, education, status, income, residence, experience, reason, information, frequency, expense.

Table 5
Omnibus test of the model’s performance using only significant variables.

		Chi-square	df	Sig.
Step 1	Step	20.331	2	0.001
	Block	20.331	2	0.001
	Model	20.331	2	0.001

Table 6
The model summary using only significant variables.

Step	–2 log likelihood	Cox & Snell R square	Nagelkerke R square
1	481.869 ^a	0.051	0.070

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than 0.001.

Table 7
Classification table for back-testing (including only significant variables).

	Observed	Predicted		Percentage correct	
		No	Yes		
		Step 1	Price war		No
		Yes	23	236	91.1%
Overall percentage					66.1%

The cut-off value is 0.500.

The statistical significance of each independent variable is elucidated in Table 8. The results indicate that, with regard to the dependent variable, namely the price war strategy in Thailand, income and information emerge as significant contributors. The analysis reveals that a unit increase in income corresponds to a 1.210-unit increase in the price war strategy, while a unit increase in information is associated with a substantial 2.131-unit increase in the price war strategy.

In the analysis of the interview data, a combination of the NVivo

I definitely pay attention to loyalty rewards. When a platform has a loyalty program that gives me points or discounts for repeat orders, it encourages me to stick with them. It feels like they are valuing my loyalty (Respondent 9).

4.4. Cultural preferences and food variety

Thai consumers may prioritize cultural and regional food preferences. The availability of a wide range of food options, including traditional and regional dishes, plays a significant role in their choices. Some consumers are willing to pay more for authentic and diverse culinary experiences.

The availability of traditional and regional dishes is a significant factor. I have a soft spot for Northern Thai cuisine, and I am always on the lookout for restaurants that serve it. If I find a platform that offers these dishes, I am more inclined to use it, even if it is slightly more expensive (Respondent 3).

In a diverse and multicultural country like Thailand, having a variety of food options is a game-changer. It means that no matter what mood I am in or who I am ordering for, I can find something that suits everyone's tastes. I appreciate platforms that offer a wide range of food options. If they have traditional dishes, international cuisines, and fusion creations, it makes the experience even better (Respondent 8).

Cultural and regional food preferences play a substantial role in my choices when it comes to ordering food online. I am not alone in this; many of us in Thailand have diverse tastes. Also, Thai food is very popular among my many foreign friends. Moreover, I often crave traditional or regional dishes that remind me of my hometown or family recipes. So, when a food delivery platform offers these options, I am more inclined to use their service (Respondent 10).

5. Discussion

The interplay between income levels and the accessibility of information significantly impacts the strategic decision-making process within Thailand's online food delivery industry, particularly concerning the deployment of price war strategies. From an economic perspective, the price elasticity of demand is crucial. In contexts where consumers have limited disposable income, they are more sensitive to price changes. Therefore, businesses may engage in price wars to capture the price-sensitive segment of the market. As income levels rise, however, consumers may become less sensitive to price changes, reducing the effectiveness of price wars. This relationship suggests that companies might tailor their pricing strategies based on the average income level of their target demographics, in alignment with [Grunert et al. \(2023\)](#) and [Han, Ma, Addo, Liao, and Fang \(2023\)](#). In terms of information asymmetry, when consumers have less information, there is a greater disparity between what buyers and sellers know. In the context of the online food delivery industry, if consumers are well-informed about the prices and quality of different services, they can make more informed decisions, reducing the effectiveness of aggressive pricing strategies. However, if information is scarce or difficult to access, companies might engage in price wars to signal value or quality, attracting consumers who are making decisions based on limited information, corresponding to [Mavlanova, Benbunan-Fich, and Koufaris \(2012\)](#) and [Grashuis \(2024\)](#). Furthermore, the accessibility of information can significantly affect consumer behavior. Informed consumers are likely to compare prices across platforms before making a purchase decision, leading to heightened price competition among service providers. Consumers perceive the price as an indicator of value. As consumers become more informed, they might be more likely to engage with platforms that offer

more transparent and competitive pricing, influencing the intensity of price wars, aligning with [van Boom, van der Rest, van den Bos, and Dechesne \(2020\)](#) and [Liu, Wei, and Gao \(2022\)](#). The socio-economic context of Thailand, characterized by varying income levels across different regions and demographic groups, can lead to differentiated market strategies. In areas with lower average incomes, consumers may prioritize price over other factors such as delivery speed or food variety, prompting companies to engage more aggressively in price wars. Conversely, in areas with higher income levels, consumers may value convenience, quality, and brand reputation over price, leading to less intense price competition, in accordance with [Barahona and Chulaphan \(2017\)](#), [Bodhisundara and Pattanarangsun \(2022\)](#), and [Khaipecth \(2017\)](#).

Additionally, it is evident that, concerning the dependent variable of the price war strategy in Thailand, two independent variables, namely income and information, emerge as noteworthy contributors. These findings highlight the importance of both income levels and the accessibility of information in influencing and shaping the price war strategy within the context of Thailand's online food delivery industry. The significant influence of income suggests that variations in individuals' income levels can substantially impact their engagement in price wars within the online food delivery sector. This insight underscores the role of economic factors in driving competitive pricing strategies. The results concur with [Kraiwanit et al.'s \(2022\)](#) findings, indicating that the average monthly income had an impact on the acceptance of financial robo-advisors in terms of their influence on profits, careers in finance, and the overall economic system, and vice versa. [Shaengchart et al. \(2023\)](#) uncovered that income significantly influenced individuals' internet access and usage. Individuals with higher incomes tend to utilize the internet for purposes such as work or other activities that demand a reliable and high-speed connection. [Thetlek et al. \(2023\)](#) also confirmed that monthly income played a significant role in influencing the token economy in Thailand. Furthermore, the significance of the "information" variable implies that the availability and access to relevant data and insights can have a considerable impact on the formulation and execution of price war strategies. In an era of digital economy and online food delivery, the ability to acquire and utilize information effectively can provide companies with a competitive edge in making informed pricing decisions. The findings are consistent with prior research conducted by [Withupassakan, Kraiwanit, Shaengchart, Jangjarat, and Virunhaphol \(2022\)](#), which highlighted that several communities in Thailand promote social initiatives, such as hospital contributions through public broadcasting. Thus, residents within these communities can access information via speakers installed on utility poles. This approach enables donors to engage in social activities and contribute to the greater societal well-being, even if they lack digital literacy. Moreover, [Jangjarat et al. \(2023\)](#) affirmed that ChatGPT awareness and usage were influenced by various variables, including social media usage. Information dissemination on social media platforms played a significant role in this influence. Additionally, [Kraiwanit et al. \(2023\)](#) revealed the dual role of social media as both an information distribution channel and a center for social interactions, establishing it as a vital component in the decision-making process for adopting digital wallet services.

In the context of online food delivery services in Thailand, consumers place high importance on price sensitivity, value perception, convenience, promotions, as well as cultural food preferences when choosing online food delivery services. They carefully assess menu prices, delivery fees, and the perceived value of the service. Consistent with [Liu's \(2023\)](#) findings that emphasize the substantial impact of price sensitivity on consumer decisions, competitive pricing strategies were found to drive online purchases, as consumers frequently sought cost-effective alternatives. While cost matters, they prioritize convenience and are willing to pay slightly more for time-saving and user-friendly ordering processes. In line with [Granheim, Løvhaug, Terragni, Torheim, and Thurston \(2022\)](#), it is evident that digitalization is infiltrating various

aspects of the food environment, giving rise to innovative approaches to food acquisition and distribution, such as online grocery shopping and food delivery services. These transformations carry the potential to influence the accessibility of food and modify the geographical proximity to physical stores, consequently reshaping the time commitments associated with conventional in-person shopping. Liu (2023) also confirmed that convenience and efficiency also played pivotal roles in consumer decision-making. Faster shipping and efficient logistics were favorable factors that contributed to the popularity of online shopping. Furthermore, promotions, discounts, and loyalty programs strongly influence their choices, making them feel they are getting more for their money. In accordance with the study conducted by Napawut, Siripipathanakul, Phayaphrom, Siripipattanakul, and Limna (2022), electronic promotion played a pivotal role in shaping customers' intentions to make purchases through Shopee in Thailand. Lastly, the presence of a diverse range of food options, which includes traditional, regional, and multicultural dishes, significantly influences their choices. These findings are consistent with prior research conducted by Putra, Putra, and Novianti (2023), which covers various aspects, such as the authenticity of traditional cuisine, social media marketing and promotions, local destination insights, and culinary tourism ventures. Notably, a substantial portion of the shared visuals was dedicated to showcasing local culinary delights. This analysis underscores the central role of food as a primary attraction in ASEAN tourism online, rather than a mere supporting element for tourism activities.

6. Conclusion

This study delved into the decision-making process of consumers when using online food delivery services in Thailand, with a particular emphasis on the price-related factors shaping their choices. The study's findings underscore the substantial impact of income and information on price-related decisions within Thailand's online food delivery market. Additionally, consumers in Thailand prioritize several factors when selecting online food delivery services, including price sensitivity, value perception, convenience, promotions, and cultural food preferences.

Businesses in Thailand's online food delivery sector should utilize insights from the study to refine their strategies and operational practices. They can begin by implementing dynamic pricing strategies that cater to the varied income levels of their customer base, ensuring affordability without compromising profitability. This involves analyzing market data to set flexible prices that can adapt to demand fluctuations and customer sensitivity. Enhancing the accessibility of information regarding pricing, menu options, and promotions through user-friendly digital platforms is also essential. This could mean revamping websites and mobile apps for easier navigation, clearer display of deals, and personalized content based on user preferences. Marketing strategies should be meticulously designed to resonate with different consumer demographics, employing data analytics to segment the market and create targeted campaigns. This could include specialized promotions for students, office workers, or families, depending on the business's core audience segments. Expanding the menu to include a wider array of options that cater to cultural tastes, dietary restrictions, and current food trends will address diverse consumer needs. Incorporating traditional Thai dishes, vegan or gluten-free options, and internationally inspired cuisine can attract a broader clientele. Improving the convenience of the ordering and delivery process is crucial. This can involve optimizing the online ordering system for speed and efficiency, providing real-time updates on order status, and ensuring that delivery services are prompt and reliable. Offering multiple payment options, including cash on delivery, credit cards, and mobile payment systems, can also enhance user convenience. Actively soliciting and acting on customer feedback is vital for continual service improvement. This could be facilitated through online surveys, feedback forms within the app, and encouraging reviews on social media platforms. Regularly monitoring and adapting to emerging market trends, such as sustainability

concerns or new dietary fads, will keep the business relevant and appealing to modern consumers. Ensuring that all staff, from chefs to delivery personnel, are adequately trained and committed to maintaining high quality and service standards will help in building a loyal customer base. Regular training sessions, performance monitoring, and customer service workshops can aid in achieving these high standards. Lastly, forging strategic partnerships with local suppliers, popular eateries, or influencers can enhance the service's appeal and extend its reach. Collaborations can lead to exclusive menu items, promotional events, or co-marketing campaigns, thereby attracting new customers and enriching the customer experience. By adopting these detailed strategies, online food delivery businesses in Thailand can enhance customer satisfaction, foster loyalty, expand their market presence, and secure a more robust competitive position in the industry's dynamic landscape.

From an academic perspective, this study contributes to the understanding of consumer behavior in the context of online food delivery services. It employs a mixed-method approach, combining quantitative and qualitative research techniques, which can serve as a valuable methodological model for future studies in similar domains. The study's focus on price-related factors and their impact on consumer decisions adds to the body of knowledge regarding consumer behavior in e-commerce and food service industries. Additionally, the identified factors such as income and information sources can serve as significant variables for future research on consumer choice modeling and pricing strategies in the online food delivery sector. This research provides a foundation for further exploration in the field of consumer behavior and e-commerce, especially online food delivery services, in Thailand and similar markets. This study sheds light on the consumer decision-making process in Thailand's online food delivery industry but faces limitations due to its small sample size, narrow data collection timeframe, and reliance on convenience sampling, which may affect the generalizability and timeliness of the results. To enhance future research, it is imperative to increase and diversify the participant base across different demographics within Thailand to capture a broader range of consumer perspectives. Implementing longitudinal studies will allow for the observation of consumer behaviors and market trends over time, providing a clearer understanding of evolving dynamics. Transitioning to robust random sampling methods, such as stratified sampling, will improve the representativeness of the study. It is also essential to explore the psychological and cultural factors influencing consumer choices through qualitative research methods. Conducting comparative studies across different Thai regions or internationally will highlight unique consumer behaviors. Additionally, keeping pace with emerging market trends and integrating these into studies will ensure their ongoing relevance. Employing experimental designs will help in establishing causality, crucial for effective marketing strategies. Collaborating with industry stakeholders and adopting a multidisciplinary approach will deepen the research's impact. Lastly, regular updates to the research approach are necessary to maintain its relevance in a rapidly changing market. By adhering to these steps, future research can overcome existing limitations and provide more profound, actionable insights, aiding businesses in staying competitive in the dynamic online food delivery sector.

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CRediT authorship contribution statement

Rattawut Nivornusit: Conceptualization, Formal analysis, Investigation, Methodology, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing, Data curation.
Tanpat Kraiwani: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources,

Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Pongsakorn Limna:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used ChatGPT to check for spelling and grammar errors. After using this tool, the authors

reviewed and edited the content as needed and take(s) full responsibility for the publication's content.

Declaration of competing interest

The authors declare no conflict of interest.

Data availability

Data will be made available on request.

Appendix A. Appendix

The questionnaire used in the interviews are listed below:

Your responses to this questionnaire are essential for data analysis and interpretation. Consequently, we ask for your assistance in answering the questionnaire based on your opinions and facts. The information you provide in this questionnaire will be kept confidential to analyze the data obtained.

- 5 = Strongly Agree.
- 4 = Agree.
- 3 = Neutral.
- 2 = Disagree.
- 1 = Strongly Disagree.

A.1. Section 1: demographic profile

1 Gender

- Male
- Female

2 Age

- 18–25 years old
- 26–35 years old
- 36–45 years old
- 46–55 years old
- Over 55 years old

3 Education

- Lower than Bachelor's Degree
- Bachelor's Degree
- Master's degree
- Higher than Master's degree

4 Status

- Single
- Married
- Divorce

5 Income

- Less than 10,000 THB or equivalent
- 10,001–20,000 THB
- 20,001–30,000 THB
- 30,001–40,000 THB
- More than 40,000 THB

6 Domicile

- Bangkok metropolitan and surrounding areas
- Provincial

A.2. Section 2: Behavior in using online platform services for food delivery

1 What online platform do you have the most experience with ordering food?

- GrabFood
- LINE MAN Wongnai
- Foodpanda

- Robinhood
 - ShopeeFood
- 2 The reason for choosing to use the online platform for ordering food?
- Convenience
 - Promotions for new and old customers
 - Free delivery
 - Fast and accurate
 - Other
- 3 How do you know about the online platform services for ordering food?
- Advertising/Public Relations through TV, radio or newspapers
 - Online media/Line/Facebook/Instagram/Youtube
 - Recommendations from food delivery staff/acquaintances/friends
- 4 How often do you use online platforms for ordering food?
- Every day
 - 1–5 times per week
 - Once every two weeks
 - Once a month
 - Uncertain
- 5 How much do you typically spend on ordering food through online platforms per transaction?
- Less than 100 THB or equal
 - 101–200 THB
 - 201–300 THB
 - 301–400 THB
 - 401–500 THB
 - More than 500 THB

A.3. Section 3: Opinions on the pricing strategy for using online platforms for food delivery

Pricing strategy	5	4	3	2	1
Do you think that food prices on online platforms are more expensive than dining in at restaurants?					
Do you think there should be a sales promotion campaign such as offering free delivery for food orders priced at 70 baht or more?					
Do you think there should be coupons or discounts available for ordering food throughout the month for both new and existing customers?					

The questionnaire was administered in the Thai language to ensure cultural relevance and enhance the comprehension among participants, who were primarily native Thai speakers. This approach facilitated accurate responses and increased the validity of the data collected by reducing language barriers and misunderstandings.

The questions used in the interviews are listed below:

1. How do menu prices and delivery fees influence your decision to use online food delivery services?
2. Can you describe a situation where the food quality justified a higher price for an online food delivery order?
3. How do you balance cost with factors like food quality and convenience when choosing an online food delivery service?
4. In your experience, how do delivery fees impact your overall satisfaction with online food delivery services?
5. How important is the convenience of using online food delivery services in your daily life?
6. To what extent are you willing to pay a premium for the time-saving benefits of online food delivery?
7. How does the user interface of food delivery apps affect your ordering experience?
8. Can you share an experience where the convenience of online food ordering was compromised by inaccuracies or unreliable service?
9. How do promotions and discounts influence your choice of online food delivery platforms?
10. Can you describe how a specific promotion or discount led you to choose one service over another?
11. How do exclusive discounts during certain hours or for specific restaurants impact your decision-making?
12. What role do loyalty rewards play in your continued use of a particular online food delivery platform?
13. How does the availability of traditional and regional dishes affect your choice of online food delivery services?
14. In what ways does the variety of food options available on a platform influence your satisfaction with online food delivery?
15. How do your cultural or regional food preferences guide your choices when ordering food online?

Note: Within the framework of this survey, it is pertinent to acknowledge that not every question is directed towards each participant. A deliberate exclusion of certain queries is executed to guarantee their applicability to particular respondents, thereby ensuring the relevance of the survey content to individual participants' experiences and contexts.

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