

# Influential Factors of Consumer Preferences for Online Takeaway Ordering

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## Abstract:

The online food delivery service has gained immense popularity among consumers worldwide, boasting a staggering 3 billion users of food delivery apps across the globe. In this highly competitive landscape, merchants face the challenge of attracting and retaining customers. It is of paramount importance to discern the factors that influence consumer decision-making. This experimental study investigates participants' attention preferences when navigating online takeaway apps. The research involved presenting participants with various ordering pages from online takeaway apps and recording their gaze data using an eye tracker. This gaze data reflected participants' attention, which was further analyzed based on fixation count and fixation duration. The experimental findings revealed notable distinctions in the factors that different groups of consumers prioritize. Individuals with higher budgets showed significant interest in the ratings and sales information when making takeaway orders. Conversely, individuals with more budget constraints focused on cover images, delivery fees, and starting prices. These findings offer valuable insights into consumer behaviors when ordering takeaways through online apps. Furthermore, they provide actionable guidance for merchants aiming to optimize their positioning within takeaway apps to better cater to the preferences of their target customers.

**Keywords:** Takeaway, App, Eye-tracking, Budget, Preference, Consumer

## 1. Introduction

Technology has significantly enhanced the convenience of life, enabling individuals to savor food without leaving the comfort of their homes (Dutta, 2023). The evolution of the Internet has spurred the gradual expansion of the food delivery industry, with various delivery platforms offering many choices for consumers to embrace this new lifestyle (Ramesh et al., 2023; Shankar et al., 2022). According to the "Online Food Delivery (OFD) Services Global Market Report 2020–2030," the OFD market is projected to grow from \$107.44 billion in 2019 to \$154.34 billion in 2023 (Businesswire, 2023). In 2022, the number of users of food delivery apps reached a staggering 2.5 billion (Daniel, 2023). China leads the global market, boasting a market size of \$42.5 billion in 2022 (Curry, 2023). Meituan and Ele.me are the two major platforms that command roughly 90% of online takeaway orders in China (Chen, 2020). During the COVID-19 pandemic, when dining out became challenging, the market share of takeout services surged by 52% (Meena & Kumar, 2022; Morell, 2022; Rocha et al., 2022). Even after the pandemic abated, and regular dining out resumed, the demand for takeaway remains robust.

The influx of numerous takeaway restaurants onto these platforms has intensified competition (Hirschberg et al., 2016). Consequently, the challenge lies in attracting and motivating customers to place orders for restaurants

and the platforms. Extensive research in food delivery has sought to uncover strategies for customer attraction. For instance, using questionnaires, Lee delved into the influential factors and customers' traits. (Lee et al., 2017). Unlike previous studies, this research employs a more quantitative and precise approach, utilizing eye-tracking technology to directly capture changes in consumer gaze patterns while browsing takeaway apps. The results of gaze attention provide direct insights into what consumers prioritize when making ordering decisions. This study also includes consumers' budget levels for takeaway as independent variables. This approach provides a deeper understanding of how different budget levels influence consumer choices in the context of online food delivery and has practical implications. It enables online food delivery platforms to tailor their interfaces and services to high and low-budget consumers' specific preferences and needs, ultimately enhancing the user experience and increasing order placement. For restaurants, a better understanding of customer behaviors based on budget can aid in menu planning, pricing strategies, and promotional efforts to better attract and serve their target customer segments.

## 2. Method

### 2.1 Participants

The study enlisted a cohort of 22 participants (Mean

Age (M<sub>age</sub>) = 20.05, Standard Deviation (SD) = 4.41), comprising an equal distribution of both male and female individuals situated in Shanghai, China. All participants have the experience of online ordering. Each participant was tasked with navigating through six pages of an online ordering application. Before commencement, participants were duly apprised of the nature of the study, specifically that it involved eye tracking, and were provided with an overview of its general contents. All participants willingly consented to partake in the trial and formally acknowledged their agreement by signing the requisite consent form. Additionally, each participant was offered a gift upon completing the trial.

## 2.2 Stimuli

The stimuli employed in this study consisted of ordering pages sourced from Meituan, a prominent platform for takeaway services in China. A total of six distinct ordering pages were utilized, each corresponding to a single restaurant. Six diverse restaurant types were deliberately selected to mitigate any potential bias arising from individual food preferences. Each page was presented to participants for fifteen seconds. Noteworthy regions of interest, referred to as Areas of Interest (AOIs), within each page were categorized as follows: Minimum Order Price, Delivery Fee, Cover Photo, Time and Distance of Delivery, Rating, Monthly Sales, and Average Price. The presentation sequence of these six pages remained consistent for all participants.

## 2.3 Design and Procedure

A cohort of 22 participants was randomly recruited within a shopping mall setting. Subsequently, participants were directed to assume a seated position before a screen. This screen was connected to a Tobii 4C eye tracker laptop. Participants were apprised of the task, which involved the selection of takeaway options from an array of choices. Upon successful calibration of the eye-tracking equipment, the experimental session formally commenced. The screen presented a sequence of six distinct takeaway ordering pages during the trial. Each of these stimuli was displayed individually for 15 seconds. The Tobii 4C eye tracker recorded the participants' gaze as they navigated through the presented stimuli.

Upon the completion of the experimental phase, a post-trial survey was administered. This survey inquired about the participants' typical budget for individual takeaway meals. Participants' responses were used to categorize them into two groups: those with budgets below thirty RMB (referred to as the "Low-budget Group") and those with budgets exceeding thirty RMB (referred to as the "High-budget Group"). The entire task, encompassing the

experimental session and the subsequent survey, required approximately five minutes to conclude. As a token of appreciation for their participation, participants received gifts. The designated Areas of Interest (AOIs) included Cover Photo, Time and Distance, Monthly Sales, Delivery Fee, Average Price, and Minimum Order Price.

## 2.4 Data analysis

Eye tracking parameters, including Total Fixation Duration (TFD) and Fixation Count (FC), were used for further statistical analyses. These parameters reflect people's attention to each AOI. To examine participants' attention, single-factor ANOVA was performed within Group A and Group B, respectively, to determine the attention preferences when ordering a takeaway. In addition, the between-subject T-test of TFD and FC was carried out between Group A and Group B to examine the effects of the budget on their attention.

## 3. Results

### 3.1 Single-factor ANOVA analyses on TFD and FC within Group A and Group B

In Group A, individuals with a lower meal budget paid the most attention to the Cover Photo for TFD (M=2.17, SD=1.95), which was significantly higher (F=14.90, p<0.05) than other AOIs. In terms of FC, those with a low budget also focused on the Cover Photo the most (M=7.32, SD=5.71), and this was significantly higher (F=18.41, p<0.05) than other AOIs.

In Group B, individuals with a high meal budget showed the most interest in Monthly Sales for TFD (M=2.43, SD=3.09), which was significantly higher (F=8.13, p<0.05) than other factors. Similarly, for FC, individuals with a high budget also paid the most attention to Monthly Sales (M=6.58, SD=4.12), and this was significantly higher (F=11.48, p<0.05) than other factors."

### 3.2 T-test analyses on TFD and FC of Delivery Fee between Group A and Group B

TFD for Delivery Fee in Group A (M=0.96, SD=0.95) was significantly longer (p<0.05, t=1.66) than in Group B (M=0.71, SD=0.70). T-test analyses also revealed that the FC in Group A (M=3.37, SD=3.08) for Delivery Fee was significantly greater (p<0.05, t=1.66) than in Group B (M=3.33, SD=3.20).

### T-test analyses on TFD and FC of Time and Distance between Group A and Group B

The results indicate that there was no significant difference in TFD between Group A (M=1.43, SD=1.56) and Group B (M=1.28, SD=1.39) for Time and Distance (p>0.05, t=1.66). Similarly, for FC related to Time and Distance, there was no significant difference between Group A

(M=4.27, SD=3.31) and Group B (M=4.92, SD=4.70) ( $p>0.05$ ,  $t=1.67$ ).

### 3.4 T-test analyses on TFD and FC of Rating between Group A and Group B

T-test analyses reveal that TFD for Group B (M=1.56, SD=2.53) was significantly higher ( $p\leq 0.05$ ,  $t=1.67$ ) than for Group A (M=0.93, SD=1.15). Similarly, for FC related to Rating, Group B (M=3.69, SD=2.72) scored significantly higher ( $p\leq 0.05$ ,  $t=1.66$ ) than Group A (M=2.95, SD=2.09).

### 3.5 T-Test Analysis on TFD and FC of Minimum Order between Group A and Group B

T-test analyses compared TFD and FC for Minimum Order between Group A and B. The TFD for Group A (M=0.76, SD=0.84) was found to be significantly longer ( $p<0.05$ ,  $t=1.66$ ) than that of Group B (M=0.47, SD=0.50). Additionally, the FC for Group A (M=2.87, SD=2.70) with Minimum Order was significantly higher ( $p<0.05$ ,  $t=1.66$ ) compared to Group B (M=1.85, SD=1.68).

### 3.6 T-Test Analysis on TFD and FC of Average Price between Group A and Group B

In this analysis, T-Test results revealed that the TFD for Group A (M=0.70, SD=0.66) did not show a significant difference ( $p>0.05$ ,  $t=1.66$ ) when compared to Group B (M=0.68, SD=0.67) concerning Average Price. Similarly, the FC of Group A (M=2.90, SD=2.24) did not exhibit a significant difference ( $p>0.05$ ,  $t=1.66$ ) compared to Group

B (M=2.73, SD=2.70).

### 3.7 T-Test Analysis on TFD and FC of Cover Photo between Group A and Group B

The T-Test analysis for Cover Photo revealed that the TFD of Group A (M=2.17, SD=1.95) did not show a significant difference ( $p>0.05$ ,  $t=1.66$ ) when compared to Group B (M=1.95, SD=1.73). Similarly, the FC of Group A (M=7.32, SD=5.71) did not exhibit a significant difference ( $p>0.05$ ,  $t=1.66$ ) compared to Group B (M=6.38, SD=5.37).

### 3.8 T-Test Analysis on TFD and FC of Monthly Sales between Group A and Group B

T-test analyses revealed that the TFD for Group B (M=2.43, SD=3.09) was significantly longer ( $p<0.05$ ,  $t=1.68$ ) than that of Group A (M=1.06, SD=0.83). Additionally, the FC of Group B (M=6.58, SD=4.12) was also significantly higher ( $p<0.05$ ,  $t=1.66$ ) compared to Group A (M=4.36, SD=3.36).

### 3.9 Single-Factor ANOVA Analysis on TFD and FC for All Participants

The single-factor ANOVA analyses demonstrated that participants, in general, focused the most on the Cover Photo (M=2.09, SD=1.87) when it came to TFD, and this difference was statistically significant ( $F=16.64$ ,  $p<0.05$ ). For FC, the Cover Photo (M=6.98, SD=5.59) was also found to be the most attractive, with a significant difference ( $F=26.51$ ,  $p<0.05$ ).

**Table 1: TFD and FC of Group A and Group B**

Groups	Eye Tracking Parameters	Rating	Cover Photo	Time and Distance	Monthly Sales	Delivery Fee	Average Price	Minimum Order
Group A	TFD(s)	0.93	2.17	1.43	1.06	0.96	0.70	0.76
	FC	2.95	7.32	4.27	4.36	3.37	2.90	2.87
Group B	TFD(s)	1.56	1.95	1.28	2.43	0.71	0.68	0.47
	FC	3.69	6.38	4.92	6.58	3.33	2.73	1.85

## 4. Discussion

The primary objective of this study is to investigate the key factors influencing individuals when making food orders through takeaway platforms. To accomplish this, this study employed the eye tracking method, as it directly reflects what aspects of the ordering process individuals focus on. During the trial, participants were presented with six order pages and were tasked with viewing these pages and making order decisions. Subsequently, participants were categorized into a low-budget group

(Group A) and a high-budget group (Group B) based on their responses in the post-trial survey. Participants' gaze attention was quantified using Total Fixation Duration (TFD) and Fixation Count (FC). The statistical analysis of the data revealed that individuals with higher budgets paid more attention to "Monthly Sales." In comparison, those with lower budgets strongly emphasized the "Cover Photo." Additionally, individuals with higher budgets considered "Rating" to be an important factor, whereas those with lower budgets paid more attention to "Minimum Order" and "Delivery Fee."

Single-factor ANOVA analyses conducted on Group A revealed that the Total Fixation Duration (TFD) and Fixation Count (FC) of the Cover Photo in the low-budget group were significantly higher than the other variables. Furthermore, in inter-group analyses, these values were also significantly greater than those of the high-budget group (Group B). These findings suggest that individuals with limited budgets exhibit a heightened interest in cover photos when placing orders for takeout. On online takeaway platforms, restaurants utilize cover images to attract consumers. These images often showcase their most popular dishes or feature prominent brand logos, effectively highlighting their identity. By its nature, visual content conveys information more intuitively and is generally more appealing to individuals, making it a valuable tool for capturing consumer attention (Li & Xie, 2019; Xia et al., 2020). A survey of existing merchants on takeaway platforms showed that low-priced restaurants are more inclined to utilize images of popular dishes as their store pictures. In contrast, larger brand stores with higher prices favor brand logos as visual representations. This choice of imagery aligns with the distinct decision-making processes of low-budget individuals, who face comparative constraints when making selections. For them, the cover images serve as a quick means to discern the price range of a restaurant, aiding in the exclusion of high-priced and over-budget options, thus saving time. In contrast, high-budget individuals enjoy a broader array of choices when ordering takeout and are less confined by price considerations, obviating the need to assess the merchant's price level.

The between-group T-test revealed that individuals with limited budgets exhibit greater concern for delivery fees and minimum order requirements than those with higher budgets. This heightened sensitivity to such factors can be attributed to the constraints imposed by their limited budget. When delivery fees are excessively high, the overall cost of a meal can surpass the budgetary limits. In cases where the total meal cost is fixed, a substantial delivery fee can diminish the available budget for the meal itself, necessitating either a reduction in the number of items ordered or a selection of fewer food items. Minimum order requirements directly impact the final order price, with higher requirements translating into higher costs for customers. This is particularly undesirable for individuals with limited budgets who seek to avoid these additional expenses (Bennett, 2023).

The single-factor ANOVA analysis conducted on Group B revealed that individuals with high budgets prioritize monthly sales over other factors. Furthermore, the T-test results indicated that individuals with higher budgets

emphasize restaurant ratings more than their low-budget counterparts. This finding suggests that people with ample financial resources are particularly discerning about the actual qualities of the restaurants they patronize. Individuals with high budgets exhibit a unique behavior when ordering takeout; they are relatively indifferent to budget constraints, enabling them to explore diverse dining options (Ritchie, 2023). Additionally, their focus is keenly directed towards food quality and taste, as highlighted by various studies (Ganel, 2023; French et al., 2019; Zhang & Xiang, 2019). For these discerning diners, high monthly sales signify a popular restaurant, indicating a large customer base. Moreover, a high rating reflects elevated customer satisfaction, denoting superior quality and better taste experiences (Caramela, 2023). Consequently, these high-budget individuals utilize monthly sales and ratings as efficient metrics to swiftly identify high-quality restaurants while filtering out establishments that do not meet their standards.

This study can be enhanced in several aspects. Participants were instructed to browse specific pages within a fixed duration in this experiment. However, in a real-life scenario, individuals ordering takeout can freely swipe through the app to compare and select the restaurants that pique their interest. In future research, trials could better emulate a realistic setting. Furthermore, this study incorporated only two budget ranges. Subsequent researchers could explore additional budget ranges to draw more precise conclusions concerning various consumer segments.

## 5. Conclusion

This experiment investigates the influential factors that affect online takeaway ordering. The budget per meal is included as an independent variable. The dependent variable is people's gaze attention, which reflects their priorities. The eye-tracking results suggest that individuals with higher budgets pay more attention to the restaurant's rating and monthly sales when viewing ordering pages. In contrast, those with lower budgets focus more on cover images, delivery fees, and minimum order price. These findings enhance our understanding of consumer behavior in ordering takeout through apps. Furthermore, they provide valuable insights for merchants to strategically position themselves and make necessary improvements to attract their target customers.

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