

A Full-Profile Conjoint Analysis to Identify University Students' Preferences Toward Food Delivery Services: A Case Study of the Faculty of Science and Technology, UIN Sunan Kalijaga Yogyakarta

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Abstract

The rapid development of digital technology has transformed consumer behavior, particularly in fulfilling food needs through online food delivery services. University students represent one of the most active user groups due to their high mobility and preference for practical lifestyles. This study aims to analyze students' preferences toward food delivery service attributes and to identify the most influential factors in determining their choices. The research involved 100 respondents from the Faculty of Science and Technology, Universitas Islam Negeri Sunan Kalijaga Yogyakarta, using the traditional conjoint analysis method with a full-profile design approach. Six attributes were examined: type of service, price, payment method, courier service, food quality, and service quality. The results indicate that price has the highest level of importance (25.401%), followed by type of service (22.230%), service quality (16.231%), courier service (15.926%), payment method (10.960%), and food quality (9.252%). The most preferred combination of attributes includes GrabFood or GoFood services with promotional prices, uniformed couriers, diverse food options, and fast delivery. These findings suggest that promotional pricing strategies and service quality improvements are key factors for online food delivery providers to enhance customer satisfaction and attract student users.

Keywords: Conjoint analysis, full-profile design, consumer preference, food delivery services

INTRODUCTION

The advancement of digital technology has significantly transformed the way people meet their daily consumption needs. Food ordering can now be done anytime and anywhere without the need to visit restaurants physically. This convenience has been realized through the emergence of various online food delivery (OFD) services. In Indonesia, several major platforms dominate the market, including GoFood, GrabFood, and ShopeeFood. These three platforms represent the largest food-delivery services in Indonesia. GoFood and GrabFood have long been market leaders with a very high number of active users, while ShopeeFood has grown rapidly since its launch due to the strong user base of the Shopee ecosystem. The selection of these three platforms reflects the majority of consumer behavior in online food ordering.

A Nielsen Singapore market report (2019) found that 95% of Indonesian consumers had consumed ready-to-eat food within the previous three months, and 58% of them had ordered via online food-delivery applications; these findings have been reported in national media (e.g., Kompas; CNN Indonesia). These findings highlight the growing popularity of such services and reflect substantial market potential for service providers to enhance both customer satisfaction and service quality.

The increasing use of food delivery services is also evident among university students. Students represent a demographic that is digitally active, technologically adaptive, and inclined toward practical lifestyles. Their tight academic schedules and limited time often encourage them to seek fast and efficient solutions for daily needs, including meals. Consequently, online food delivery services have become a relevant option for students, both to meet daily consumption needs and to optimize time and effort.

Beyond practical considerations, students' preferences for food delivery services are shaped by multiple factors, such as price, food quality, delivery speed, courier performance, payment methods, and user experience with digital platforms. Each attribute carries varying levels of importance across consumer groups. Young consumers, including students, tend to be highly responsive to promotional pricing, seamless cashless transactions,

and fast, reliable service (Hanarti et al., 2021). Understanding these preferences is therefore crucial for service providers to develop effective and targeted marketing strategies.

To capture and interpret consumer preferences, an analytical method is required to identify the product or service attributes that most influence purchase decisions. One appropriate approach is conjoint analysis, a multivariate statistical technique designed to examine the relationships among several variables simultaneously (Hair et al., 2014). Conjoint analysis allows researchers to measure and predict consumer responses to various attribute combinations, decomposing preferences into part-worth utilities that quantify the contribution of each attribute to overall choice (Simamora, 2005). These utility values can then be used to identify the most influential attributes, predict the most preferred product configurations, and even estimate potential market share for new or improved services.

Previous studies have applied conjoint analysis across diverse contexts. For example, Arianto et al. (2024) and Jakaria et al. (2024) identified price and design as key determinants of consumer preferences in footwear and bottled water packaging, respectively. In the technology domain, Jauza and Prastawa (2024) found that camera features and storage capacity strongly influence smartphone preferences. Similarly, Supandi (2012) demonstrated the applicability of conjoint analysis in the education sector to assess students' preferences for technology-based academic services.

Within the digital service industry, Suci and Sari (2019) and Kartono and Tjahjadi (2021) reported that accessibility, promotional offers, and delivery speed are dominant factors influencing consumer choices in food delivery services. Fadilla and Cahyadi (2022) further emphasized the role of promotional pricing and delivery efficiency in the competitive landscape of GoFood, GrabFood, and ShopeeFood. Moreover, Nurdiansah and Widyastuti (2022) and Aryatinigrum et al. (2020) found that price discounts positively affect both consumer satisfaction and loyalty.

Based on these insights, the present study aims to analyze university students' preferences toward online food delivery services within the Faculty of Science and Technology, UIN Sunan Kalijaga Yogyakarta. The findings are expected to provide a comprehensive understanding of the most influential service attributes that shape student preferences and to offer strategic recommendations for service providers seeking to improve their quality, effectiveness, and competitiveness in Indonesia's growing digital food delivery market.

METHODS

Online Food Delivery Services

Online food delivery (OFD) services represent an innovation in information technology that connects consumers, food providers (restaurants), and couriers within a single digital system. This service enables customers to order food through an application that offers various menu options, payment methods, and flexible delivery times.

Consumer Preferences

Consumer preference reflects an individual's tendency to choose a product or service based on the expected level of satisfaction derived from specific attributes. According to Kotler and Keller (2016), preference is a component of consumer behaviour influenced by psychological, social, and situational factors. In the context of online food delivery services, preferences can be evaluated through attributes such as price, promotional offers, delivery speed, courier service quality, payment method, and food quality.

Research Data and Variables

This study employs a quantitative descriptive approach using conjoint analysis with the full-profile technique. The research population consists of students from the Faculty of Science and Technology, UIN Sunan Kalijaga Yogyakarta, who have previously used online food delivery services such as GoFood, GrabFood, or ShopeeFood. The sampling technique used is purposive sampling, targeting students who have used food delivery services at least twice within the past three months.

The attributes used in this study were determined based on a review of the relevant literature and preliminary observations of online food delivery users. The selection of attributes refers to previous studies conducted by Campbell et al. (2023), Park (2023), Persada et al. (2024), Restuputri et al. (2022), and Sumrit (2024), which consistently identified key factors influencing consumer preferences toward online food delivery services. The list of attributes and their respective levels is presented in the following table.

Table 1. Attributes and Levels of the Research Instrument

Attributes	Level	Description
Type of Online Food Delivery Service	GoFood	A food delivery service provided through the Gojek application.
	GrabFood	A food delivery service offered through the Grab application
	ShopeeFood	A food delivery service available through the Shopee application

	Others	Represents alternative or emerging platforms beyond mainstream services.
Price	Special promotion	Discounted or promotional prices.
	Regular price	Standard prices without discounts
Payment Method	Cash	Payment made in cash upon delivery
	Non-cash (top-up or digital payment)	Payments made via digital wallets, online transfers, or platform credit balances.
Courier Service	Friendly	Couriers who display polite, respectful, and positive interpersonal behavior during delivery
	Informative	Couriers who communicate clearly, provide delivery updates, or confirm directions when necessary
	Uniformed	Couriers who wear a standardized uniform, enhancing professionalism and customer trust
Food Quality	Wide variety of menu options	Merchants offer extensive menu selections, providing consumers with more choices and flexibility
	Limited menu options	Merchants provide only a small, focused, or specialized set of menu items
Quality of Delivery Service	Fast delivery	Orders are delivered promptly, minimizing customer waiting time.
	Delivery assurance	Ensures ordered items arrive correctly, intact, and as expected.
	Customer empathy	Couriers show care and attentiveness, including following special instructions or handling food delicately.

The attributes were selected because they are considered the most relevant and frequently taken into account by university students when determining their preferences for online food delivery services.

Conjoint Analysis

Conjoint analysis is a multivariate analytical technique used to evaluate various combinations of attributes and their corresponding levels within a product or service (Simamora, 2005). This method allows researchers to measure consumers' assessments of specific combinations of attributes through assigned scores or rankings.

Conjoint analysis is employed to determine the relative importance of each attribute according to consumers and to estimate the utility value (part-worth) of every attribute level. The combination of attributes and levels forms a set of stimuli, which are used to construct a preference model represented by part-worth values that reflect consumers' evaluations of different attribute combinations (Supranto, 2010).

The basic mathematical model of conjoint analysis can be expressed as follows:

$$\mu(x) = \sum_{i=1}^m \sum_{j=1}^{k_i} a_{ij} x_{ij} \quad (1)$$

Where:

$\mu(x)$ = total utility or the part-worth function

a_{ij} = part-worth value, representing the utility of the i -th attribute associated with its j -th level

x_{ij} = dummy variable for the i -th attribute and its j -th level, with the following conditions

1, if the j -th level of the i -th attribute is present or selected.

0, if the level is not selected

Part-Worth prediction calculation process:

a) Determining the constant value for the i -th factor, calculated using the following equation:

$$c_i = \frac{\sum_{j=1}^{k_i} \bar{y}_{ij}}{k_i} \quad (2)$$

where \bar{y}_{ij} represents the mean utility score for level j of factor i , and k_i is the total number of levels in factor i .

b) Determining the deviation value for the i -th factor using the following equation:

$$D_{ij} = \bar{y}_{ij} - c_i \quad (3)$$

where D_{ij} represents the deviation of level j from the mean constant value c_i .

- c) Calculating the standardization value, expressed as:

$$Z = \frac{\sum_{i=1}^m k_i}{\sum_{i=1}^m \sum_{j=1}^{k_i} D_{ij}^2} \quad (4)$$

Where,

$\sum_{i=1}^m k_i$ = total number of all levels

$\sum_{i=1}^m \sum_{j=1}^{k_i} D_{ij}^2$ = total sum of squared deviations computed across all levels and observations

- d) Determining the standard deviation, calculated as:

$$SD = D_{ij}^2 \times \frac{\sum_{i=1}^m k_i}{\sum_{i=1}^m \sum_{j=1}^{k_i} D_{ij}^2} \quad (5)$$

- e) Estimating the part-worth value, obtained from the following equation:

$$a_{ij} = \sqrt{D_{ij}^2 \times \frac{\sum_{i=1}^m k_i}{\sum_{i=1}^m \sum_{j=1}^{k_i} D_{ij}^2}} \quad (6)$$

where a_{ij} represents the estimated utility (part-worth) value of level j in factor i .

- f) Range of part-worth

The importance level of a factor I_i is measured based on the range of part-worth, using the formula:

$$I_i = \{\max(a_{ij}) - \min(a_{ij})\}, \text{ for each factor } i$$

- g) The relative importance weight W_i of each factor is then normalized and expressed as:

$$W_i = \frac{I_i}{\sum_{i=1}^m I_i} \quad (7)$$

RESULT AND DISCUSSION

Descriptive Analysis

Descriptive analysis was conducted to provide a general overview of the characteristics of the respondents who participated in the study. These characteristics include gender, age, and study program of students from the Faculty of Science and Technology, UIN Sunan Kalijaga Yogyakarta, who served as respondents in this research on student preferences toward online food delivery services.

Table 2. Attributes and Levels of the Research Instrument

Level	Category	Frequency	Percentage
Gender	Female	68	68.00%
	Male	32	32.00%
Age	18-19	21	21.00%
	20-21	31	31.00%
	22-23	36	36.00%
	24-25	8	8.00%
	26-27	1	1.00%
Study Program	Biology	18	18.00%
	Physics	13	13.00%
	Chemistry	16	16.00%
	Mathematics	15	15.00%
	Industrial Engineering	18	18.00%
	Informatics	20	20.00%

Based on Table 2, the majority of respondents in this study were female, totaling 68 individuals (68%), while male respondents accounted for 32 individuals (32%). This indicates that female students participated in this study at a higher rate than their male counterparts.

In terms of age, the 22–23-year-old group was the most dominant, consisting of 36 respondents (36%), followed by the 20–21-year-old group with 31 respondents (31%), and the 18–19-year-old group with 21 respondents (21%). Meanwhile, the 24–25-year-old and 26–27-year-old groups were relatively smaller, representing 8% and 1% of the total respondents, respectively. These findings suggest that most respondents were within the productive age range typical of active university students in their middle to final semesters.

Regarding study programs, respondents came from six departments within the Faculty of Science and Technology. The largest proportion was from the Informatics program with 20 students (20%), followed by Biology and Industrial Engineering, each with 18 students (18%). The Chemistry program contributed 16 students (16%), Mathematics had 15 students (15%), and Physics included 13 students (13%). This distribution demonstrates that the research sample adequately represented all study programs within the faculty, with a relatively balanced composition.

Overall, the respondent profile in this study reflects a diverse population of students in terms of both age and academic discipline, thereby providing a reasonably representative overview of the preferences of students from the Faculty of Science and Technology toward online food delivery services.

Stimuli Design

The initial stage in conjoint analysis involves determining the stimuli, which are combinations of various attributes and their respective levels used as the foundation for the experimental design. Each combination of attributes and levels produces a single product or service profile that will be evaluated by respondents to identify their preferences.

The stimuli were developed using the orthogonal design method, a statistical technique aimed at generating a set of profiles that are mutually independent (uncorrelated among attributes) while still efficiently representing all possible combinations (Hair et al., 2014). This method enables researchers to obtain an optimal number of combinations without having to test every possible attribute combination, which would otherwise be extremely large in a full factorial design.

Using the orthogonal design approach, this study produced 16 stimuli combinations, which served as the basis for assessing respondents' preferences toward online food delivery services, as presented in the following table.

Table 3. Stimuli Design Based on Orthogonal Design

Stimuli	Type of Service	Price	Payment Method	Courier Service	Available Food Quality	Service Quality
1	ShopeeFood	Special promotion	Digital payment	Informative	Limited menu	Fast delivery
2	GoFood	Special promotion	Digital payment	Uniformed	Limited menu	Fast delivery
3	ShopeeFood	Special promotion	Tunai	Friendly	Limited menu	Customer empathy
4	GoFood	Regular price	Tunai	Friendly	Variety of menu	Fast delivery
5	GrabFood	Special promotion	Digital payment	Friendly	Variety of menu	Fast delivery
6	GrabFood	Regular price	Tunai	Informative	Limited menu	Fast delivery
7	Others	Regular price	Tunai	Uniformed	Limited menu	Fast delivery
8	Others	Special promotion	Digital payment	Friendly	Variety of menu	Fast delivery
9	ShopeeFood	Regular price	Tunai	Friendly	Variety of menu	Fast delivery
10	GrabFood	Special promotion	Tunai	Uniformed	Variety of menu	Customer empathy
11	Others	Special promotion	Tunai	Informative	Variety of menu	Delivery assurance
12	GoFood	Regular price	Digital payment	Friendly	Limited menu	Delivery assurance
13	Others	Regular price	Digital payment	Friendly	Limited menu	Customer empathy
14	GoFood	Special promotion	Tunai	Friendly	Limited menu	Delivery assurance
15	ShopeeFood	Regular price	Digital payment	Uniformed	Variety of menu	Delivery assurance

16	GoFood	Regular price	Digital payment	Informative	Variety of menu	Customer empathy
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Presentation Method and Validity Test

In this study, the full-profile method was employed as the presentation technique. This method is the most commonly used approach in conjoint analysis, as it provides a more realistic depiction of respondents' preferences toward complete combinations of attributes. Each profile presented to the respondents contains all the research attributes with predetermined levels, allowing respondents to evaluate each combination comprehensively, similar to an actual decision-making situation (Hair et al., 2014; Simamora, 2005).

The main advantage of the full-profile method lies in its ability to reduce the number of comparisons required from respondents through the implementation of a fractional factorial design. This design ensures that each attribute level has an equal opportunity to be paired with levels of other attributes without necessitating the use of all possible combinations found in a full factorial design, which would be exceedingly large.

The next stage involved conducting a validity test for the generated stimuli. Good validity indicates that the stimuli adequately represent the studied attributes and levels, making them suitable for subsequent conjoint analysis. In this research, the validity test was applied to the 16 stimuli produced through the orthogonal design in the previous stage. Testing was performed on 30 respondents using the Pearson Product-Moment correlation between the score of each item and the total score. The criterion used was that an item is considered valid if the calculated correlation value r exceeds the table value r at a significance level of $\alpha = 0.05$. Based on the number of respondents ($n = 30$), the r value was 0.361. The results of the test are presented in the following table.

Table 4. Questionnaire Validity Test Results

No.	Stimuli	Correlation	R Table	Decision
1	Stimuli 1	0.382	0.361	Significant
2	Stimuli 2	-0.269	0.361	Not Significant
3	Stimuli 3	0.409	0.361	Significant
4	Stimuli 4	0.496	0.361	Significant
5	Stimuli 5	0.403	0.361	Significant
6	Stimuli 6	0.707	0.361	Significant
7	Stimuli 7	0.581	0.361	Significant
8	Stimuli 8	0.121	0.361	Not Significant
9	Stimuli 9	0.617	0.361	Significant
10	Stimuli 10	0.184	0.361	Not Significant
11	Stimuli 11	0.374	0.361	Significant
12	Stimuli 12	0.834	0.361	Significant
13	Stimuli 13	0.745	0.361	Significant
14	Stimuli 14	0.248	0.361	Not Significant
15	Stimuli 15	0.839	0.361	Significant
16	Stimuli 16	1	0.361	Significant

Based on Table 4, it can be seen that out of the 16 tested stimuli, 12 stimuli were found to be significant, while 4 stimuli (Stimulus 2, Stimulus 8, Stimulus 10, and Stimulus 14) were deemed not significant because their correlation values r were lower than the table value $r = 0.361$. Consequently, these four stimuli were excluded from the questionnaire to maintain the quality of the research instrument. The validity test was then repeated for the remaining 12 stimuli, and the results were found to be consistent and met the validity criteria.

The next stage was to conduct a reliability test to assess the consistency of respondents' answers to the items in the questionnaire. Reliability indicates the extent to which a measurement instrument produces consistent results when administered repeatedly to the same subjects. In this study, the reliability test employed the Cronbach's Alpha coefficient, where an instrument is considered reliable if the Cronbach's Alpha value is greater than 0.60. The results of the reliability test for the 12 validated stimuli are presented in the following table.

Table 5. Reliability Test Result

Cronbach's Alpha	N of Items
0.915	12

Based on the results of the reliability test, the Cronbach's Alpha value was 0.915 for the 12 validated stimuli. This value falls within the 0.81–1.00 range, which, according to reliability classification standards, is categorized as “very high.”

Therefore, it can be concluded that the research instrument possesses excellent internal consistency and can be relied upon to consistently measure students' preferences for online food delivery services.

Conjoint Analysis Results

Conjoint analysis was conducted to determine the relative importance (importance value) of each attribute and the utility estimate of each attribute level for online food delivery services that reflect the preferences of students in the Faculty of Science and Technology, Sunan Kalijaga State Islamic University Yogyakarta. The results of data processing using the full-profile method are presented in the following table:

Table 6. Results of Conjoint Analysis of All Respondents

Attributes	Level	Importance Level	Estimated Value (Utility)	Std. Error
Type of Online Food Delivery Service	GoFood	22.230	0.133	0.034
	GrabFood		0.082	0.027
	ShopeeFood		-0.089	0.020
	Others		-0.126	0.024
Price	Special promotion	25.401	1.852	0.061
	Regular price		0.926	0.030
Payment Method	Cash	10.961	0.050	0.013
	Non-cash (top-up or digital payment)		-0.005	0.013
Courier Service	Friendly	15.926	-0.002	0.018
	Informative		-0.067	0.020
	Uniformed		0.069	0.027
Food Quality	Wide variety of menu options	9.252	0.052	0.015
	Limited menu options		-0.052	0.015
Quality of Delivery Service	Fast delivery	16.231	0.001	0.017
	Delivery assurance		-0.006	0.022
	Customer empathy		0.005	0.025
Constant			2.161	0.038

Based on the results presented in Table 6, the attribute with the highest level of importance is “Price” (25.401), indicating that price is the most dominant factor influencing students' preferences in selecting online food delivery services. This finding reinforces previous studies suggesting that discounted or promotional pricing strongly attracts young consumers, such as university students, as it provides a higher perceived value for money.

The second most influential attribute is the type of online food delivery service (22.230), where GoFood and GrabFood show the highest positive utility values of 0.133 and 0.082, respectively. This indicates that these two platforms are preferred by respondents compared to ShopeeFood and other services.

Furthermore, the attributes of service quality (16.231) and courier performance (15.926) also exhibit substantial influence on students' preferences. Within the courier performance attribute, the “uniformed” level records the highest utility value (0.069), suggesting that consumers tend to favor couriers with a professional and easily identifiable appearance.

The payment method attribute (10.960) demonstrates relatively lower importance compared to other attributes, with nearly identical utility values for cash (0.005) and non-cash (-0.005) options. This indicates that payment method is not a major determinant in respondents' service choices.

Meanwhile, the food quality attribute (9.252), particularly the level “varied menu options,” shows a positive utility value (0.052), suggesting that menu diversity is a notable consideration, although not as influential as price or service type.

The constant value of 2.161 reflects an overall positive inclination toward online food delivery services among respondents.

In summary, the conjoint analysis reveals that students' preferences are primarily influenced by price, followed by the type of delivery service and service quality. The most preferred combination of attributes among

respondents consists of GrabFood or GoFood, special promotional pricing, uniformed couriers, diverse food options, and fast delivery. It is important to note that these findings specifically reflect the preferences of students from the Faculty of Science and Technology at UIN Sunan Kalijaga Yogyakarta.

The characteristics of students in the Faculty of Science and Technology at UIN Sunan Kalijaga—such as educational background, daily activities, consumption patterns, and technological familiarity—may differ from those of students in other faculties or at other universities. Therefore, these research findings cannot be generalized to other populations, including students from different universities or non-student groups such as office workers or high school students, who may have different needs and consumption behaviors.

CONCLUSION

Based on the results of the conjoint analysis regarding the preferences of students from the Faculty of Science and Technology, Sunan Kalijaga State Islamic University Yogyakarta, toward online food delivery services, the following conclusions can be drawn:

1. Price is the most influential attribute affecting student preferences, with a relative importance value of 25.401%. This finding indicates that students tend to choose food delivery services offering special promotional prices rather than regular pricing.
2. The next most influential attributes are type of service (22.230%), service quality (16.231%), and courier performance (15.926%). In contrast, payment method (10.960%) and food quality (9.252%) show relatively lower importance in shaping students' preferences.
3. The most preferred attribute combination among students is GrabFood with special promotional pricing, friendly couriers, varied food options, and fast delivery. Another favourable combination includes ShopeeFood with special promotional pricing, non-cash (top-up) payment, informative couriers, limited food options, and fast delivery.

Overall, the findings suggest that cost efficiency and delivery speed are the primary factors influencing students' decisions when choosing online food delivery services, whereas food quality and payment methods play a less dominant role.

These insights are valuable for food delivery service providers, as they highlight the importance of focusing on promotional pricing strategies, enhancing delivery efficiency, and improving courier professionalism and friendliness to increase customer satisfaction and loyalty among university students.

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