Optimizing Food Delivery Provision Methods: The Role of Technology in Improving Efficiency and Customer Satisfaction

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Abstract

This research seeks to elucidate the primary determinants of customer satisfaction within the domain of food delivery services, emphasizing specifically the moderating influence of online customer reviews. The study employed multiple regression analysis to test hypotheses and moderation analysis to examine interactions between factors such as online tracking and delivery experience and customer satisfaction. Data for this study was gathered from 233 customers who utilised online food delivery services at their residences within the preceding three months. The empirical results of the research suggest that online ratings significantly moderate the relationship between various factors associated with food delivery and overall customer satisfaction. Furthermore, higher scores on online evaluations amplify the positive impact of factors such as online tracking, delivery service, and customer satisfaction conditions. The study concludes that enhancing online reputation and service quality are pivotal in cultivating a positive customer experience in the food delivery sector. This research makes a unique contribution to the field by analyzing the interplay among multiple determinants and the moderating influence of online ratings on customer satisfaction.

Keywords: Customer satisfaction, Food delivery, Online ratings, Service quality

Introduction

In the realm of food delivery, individuals use online ratings to express their experiences or opinions regarding services or platforms by assigning star ratings. A

rating can include various attributes such as delivery time, food quality, customer service, and overall client satisfaction. Tannady and Dewi (2024) observed a clear trend of increasing consumer addiction to online shopping and food ordering. The case study of Tarmidi and Wismiarsi (2024) highlights how the familiarity of Gen Z with technology motivates them to log in and continue using media platforms. Surabani (2024) proposed utilising text data analysis and data integration to enhance the online food delivery system. Chawla et al. (2024) introduced a neural network that incorporates a hierarchical cross-domain mapper designed to mitigate the new user cold start issue in product recommendations for quick-commerce grocery delivery. Additionally, the neural network takes into account the moderating influence of online ratings on customer satisfaction. The goal was to improve the quality of the recommendations. Customers provide ratings on a scale of one to five through the webpage or mobile application of the delivery platform where they collected their orders. The ratings of this food delivery service are typically indicative of its reliability, delivery speed, and food quality.

High ratings are generally associated with prompt delivery and satisfactory food, while low ratings often indicate issues such as delayed deliveries, subpar food quality, or unsatisfactory customer service. Singh and Verma (2020) used deep queue learning to evaluate a variety of factors in food delivery applications, including ratings, customer feedback, waiting/delivery time, user satisfaction, and cost. Research by Kathuria and Karhade (2019) suggests that the influence of ratings on customers in emerging economies is not common. Rahutomo et al. (2018) developed an automated grading system for the national courier industry, which achieved significant success. Sharma (2023) examined the provision of online food services, emphasising attributes that enhance customers' experiences, including service energy, place, delivery time, and pricing. The rating systems implemented by food delivery platforms like Uber Eats, DoorDash, and Grubhub play a significant role in shaping the reputations of restaurants and other food establishments. Positive reviews often act as a reliable indicator of an establishment's success, influencing customer perceptions and decision-making. Consequently, these platforms facilitate positive word-of-mouth, making establishments that garner positive feedback more likely to

attract new customers.

Over the past few years, food delivery platforms have significantly transformed the way people order food, earning well-deserved recognition from consumers (Liu & Fu, 2023). In addition, these platforms also offer new features such as courier sharing, which can help reduce delivery costs and improve customer satisfaction (Gorbushin et al., 2020). The business's profitability is heavily dependent on the number of daily orders in each city. According to Saad (2021), estimates range from 3000 to 8000. The collaboration between restaurants and couriers greatly enhances the effectiveness of these platforms. The design of the platforms plays a crucial role in facilitating this collaboration (Tuco et al., 2021).

Conversely, consistently low ratings can lead to diminished customer trust and a subsequent decline in order frequency. This negative feedback can significantly impair the financial health and market standing of the establishments involved, highlighting the pivotal role that consumer evaluations play within the food delivery sector. Delivery service companies often rely on customer feedback, specifically delivery ratings and reviews, to identify areas for improvement and enhance the overall delivery experience for their customers. In addition, this process creates a valuable feedback loop that is essential for meeting customer needs and keeping them loyal in the highly competitive online food delivery industry.

Customer satisfaction is determined by the extent to which a product or service surpasses the expectations of its consumers. It is a critical determinant of business success, as satisfied customers are more likely to demonstrate loyalty, engage in repeat purchases, and advocate for the product or service through positive word-of-mouth. This cycle of satisfaction and promotion is integral to sustaining long-term business growth and maintaining a competitive edge in the market. Nayan and Hassan (2020) study revealed that factors like user-friendly interfaces and efficient delivery times significantly influence customer satisfaction. Grab Food and Food Panda are the dominant players in this particular market. According to Modak and Sinha (2019), various aspects such as food quality, packing, delivery time, customer service, and pricing play a vital role in the online food delivery industry. However, it is often observed that these areas are not up to par. Edwards (2008) emphasised the

importance of food quality factors, such as texture and temperature, in ensuring satisfaction with hospital food service. Wang (2020) developed a satisfaction model for Meituan that focused on the quality of hardware, software, and service. The satisfied customer is typically the one who hasn't had unrealistic expectations set by misleading marketing, advertising, or past negative encounters.

The level of customer service provided before, during, and after a purchase greatly impacts customer satisfaction. These factors include being prompt, approachable, and having the ability to address issues quickly. Consumers want to have the assurance that their money is well-spent. Fragkos et al. (2024) conducted a study that revealed a lack of consistency between online food delivery information and raters' real-time recognition. However, the lack of precision in the results emphasize the necessity for specific sentiment analysis tools that can identify languages with limited developer support. In addition, the development of industry-specific lexical resources is crucial, as they contribute to the depth of specialised knowledge that decision-makers rely on. The main focus of this study by Kalantarzadeh Tezerjany (2024) was to evaluate how novelty-seeking affects consumer satisfaction. Yim and Yoo (2020) conducted a study that explored the connections between the level of MFOA usage, customer satisfaction and restaurant performance in dine-in restaurants. The research employed real transaction data and crowdsourced reviews to gather insights, providing a robust basis for analysis. Even though the product or service is of exceptional quality, customers might become dissatisfied if they believe they have paid an excessive amount. Ease of use, accessibility, and convenience are the primary factors that contribute to customer satisfaction in industries where convenience is the main product characteristic. By establishing effective channels for customer feedback and promptly addressing their concerns, you can greatly enhance customer satisfaction by demonstrating the value you place on their opinions. Developing and nurturing enduring connections with customers can result in heightened satisfaction levels and enhanced loyalty in the long run.

This study investigated the diverse factors influencing customer satisfaction (CS) within the food delivery industry. It was considered a model with multiple

independent variables (IVs) and a dependent variable (DV). The entire study delves into various advancements in understanding how food delivery services influence customer satisfaction. It also highlights the role of online ratings in moderating this relationship.

Literature Review and Hypotheses

Online tracking offers real-time order monitoring, alleviating delivery time concerns and potentially enhancing customer satisfaction (CS). Additionally, online ratings significantly influence the quality of this service, as businesses aim to maintain or improve their performance. Similarly, when a delivery service achieves excellent ratings, customers will perceive online tracking as more trustworthy and dependable, resulting in increased customer satisfaction. Prompt delivery (JIT) is a crucial element in ensuring customer satisfaction. Delays in delivery can lead to customer irritation and disappointment. Prompt order delivery enhances customer satisfaction with the service. Favourable online ratings may strengthen the potential influence of JIT on customer satisfaction (CS).

Customers' quality expectations for JIT will be higher if a delivery service consistently receives high ratings for timely deliveries, it enhances its reputation and customer satisfaction through reliable service. Meeting these expectations will result in increased customer satisfaction. Several factors influence the customer's satisfaction, including the accuracy of the order, the delivery person's demeanour, and the quality of the packaging. This is the point at which negative experiences transform into satisfaction. A delivery service with a strong reputation for providing a positive experience is likely to have customers who are more forgiving of occasional mistakes and overall satisfied with the service. External factors such as traffic, weather, and staffing levels can have an important influence on the delivery process and customer satisfaction. Factors such as adverse weather conditions or traffic congestion can lead to delays and customer dissatisfaction. Online ratings may moderate the influence of asissting conditions on consumer satisfaction through the influence they have on customer perceptions. Delivery services with a satisfied customer base may appear more adept at handling challenging situations, resulting in a reduced impact on

customer satisfaction.

Sergeevna et al. (2024) argues for the scientific basis of optimising indoor location-based services (LBS) by addressing practical challenges that can enhance user satisfaction and the usefulness of these services. Bunarunraksa and Nuangjamnong (2022) identified various factors that had a substantial impact on online food delivery in Bangkok during the COVID-19 outbreak. There are several factors to consider, such as environmental quality, convenience motivation, perceived price, promotion and discount, online tracking, and transaction. Customer reviews and ratings have a significant impact on customer satisfaction and loyalty when it comes to online shopping (Daud et al., 2016). According to Engler et al. (2015), the ratings are established by evaluating how well the product's actual performance aligns with customers' initial expectations. As stated by Otto and Wagner (2011), online retailers have the ability to use neural networks to gain valuable insights into the various factors that impact customer satisfaction. The quality of online retail services is influenced by factors such as the web atmosphere and perceived value (SastryT & Rao, 2017).

Website environment and navigational target can moderate the relationship between perceived value and satisfaction, ultimately influencing website loyalty (Nsairi & Khadraoui, 2013). Borghi et al. (2023) observed that implementing service robots in the hospitality industry could enhance customer satisfaction, particularly through improved customer-robot interactions. Sari et al. (2023) identified a significant positive relationship between online customer reviews, ratings, and customer satisfaction, indicating a substantial influence of both variables. Noerhartati et al. (2023) identified several factors that can influence client satisfaction in lady-managed restaurants, including food variety and pricing. Rana et al. (2023) emphasized influencers' role in influencing purchase intentions. They found that positive satisfaction and integrity in online review ratings and content contribute to more effective purchase intentions.

In their study, Nishida and Nishi (2022) presents a technique that enables the efficient dispatching and conflict-free routing of AGVs. The goal is to achieve just-in-time transportation and minimise the overall completion time of tasks. In actual industrial plants with complex organizing processes, congestion may arise when AGVs need to wait for loading and unloading tasks or when there is an excessive number of

stocked items. Just-in-time transportation is necessary for both inventory reduction and supplying goods only when needed. In a recent study by Su et al. (2022), the focus was on examining the impact of various factors such as the technology acceptance model (TAM), mobile service quality (M-SERQUAL), and personalisation and privacy on customers' trust and subsequent loyalty towards mobile food delivery apps (MFDAs). Previous research has highlighted the food delivery service sector's limited availability of online ratings, fast-ordering features, and customer-generated content within the food delivery service sector of the food industry. .

A number of recent surveys (Leo et al., 2022; Smith & Heriyati, 2023; Tech, 2020; Zhongcao, 2022) have brought attention to the significant influence that service quality, personal innovativeness, perceived severity, ease of use, and information quality have on consumer satisfaction within the online food delivery sector. Several factors can affect the impact of just-in-time delivery on customer satisfaction. We need further research to better understand the impact of online ratings on this relationship. Samah et al. (2024) developed a web application system for Twitter sentiment analysis in Malaysian online food delivery services. This system enables customers to compare various suppliers and select the most appropriate one based on their sentiments. Rachmawati et al. (2024) found that several key factors significantly influence customer loyalty in the context of a delivery service in Indonesia. These factors include consumption loyalty, brand trust, and delivery service. Muliasari et al. (2024) identified several key factors that consumers use to differentiate between products, including intention to use, price, packaging safety, promotion, and actual use. Okon et al. (2024) conducted a study demonstrating the critical role of customer feedback, especially online reviews, in assessing service quality within the Nigerian hospitality industry.

This system enables customers to compare various suppliers and select the most appropriate one based on their sentiments. Rachmawati et al. (2024) found that several key factors significantly influence customer loyalty in the context of a delivery service in Indonesia. These factors include consumption loyalty, brand trust, and delivery service. The study highlights several key factors that play a significant role in customer satisfaction. These factors include service quality, food quality, price, promotions, and privacy. According to the study, service quality has a significant impact on the other

factors. Eaint (2024) emphasised the positive impact of e-service quality on customer satisfaction and trust, achieved through enhancements in fulfilment and contact. Sinha et al. (2021) conducted an analysis to investigate the relationship between user satisfaction and the quality of the application.

In a recent study, Sinha et al. (2021) examined the connection between service quality, customer satisfaction, and loyalty through the use of an app. Alalwan (2020) presents a model that integrates the extended Unified Theory of Acceptance and Use of Technology (UTAUT2) with online review, online ranking, and online monitors from MFOAs. In a study conducted by Chakraborty (2019), various client risk factors were analysed, including the app's information quality, payment system and design, customer services, customer satisfaction, and food quality. The levels of determinants are represented by quality and administration quality. Ganesh and Malavika (2020) conducted research on the fast-growing food aggregator businesses, which have expanded their customer base by providing exceptional customer service. The industry has established a reputation as a food aggregator by effectively utilising technology as a key driver of success.

Allah Pitchay et al. (2022) study found that social influence, information quality, price-saving orientation, and time-saving orientation all have a positive and significant effect on attitude. This enhances the intention to use the desired application. The consumer's attitude greatly impacts their intention to use online food delivery services. Ta et al. (2023) has examined the unique supply chain features of crowdsourced delivery (CD) in the context of e-commerce. However, there is a lack of research on customer responses to this emerging delivery service. Surabani (2024) suggested that incorporating text analytics and smart data integration into food delivery systems could address issues and improve user satisfaction. Gârdan et al. (2021) provides a comprehensive analysis of how the adoption of technology in the food delivery sector improves the consumer experience. The engaging nature of these technologies is an important component of the compensatory mechanism aimed at mitigating the impact of the pandemic. Talha Talukder et al. (2022) suggested a food delivery system that utilises block chain and smart contracts to address these problems. Our main goal is to get rid of commission schemes and decrease service delays caused by a large number

of orders. Online food delivery systems (OFDS) have greatly increased the restaurant industry's presence in the e-commerce sector (Gunden et al., 2020). Lee et al. (2019) examines consumers' motivations for using OFDS and proposes that the quality of information provided by these platforms influences users' intentions to use food delivery software applications.

According to the above discussion, the current study has put forward the following hypothesis:

H1. *Online tracking positively influences customer satisfaction in Online Food Delivery Services.*

H2. *Just in Time (JIT) positively influence customer satisfaction in Online Food Delivery Services.*

H3. *Delivery Experience (DE) positively influence customer satisfaction in Online Food Delivery Services.*

H4. *Facilitating Conditions (FC) positively influence customer satisfaction in Online Food Delivery Services.*

H5. *Online Rating Moderates the relationships between Online tracking, Just in Time, Delivery Experience, Facilitating Conditions and Customer Satisfaction in online food delivery services.*

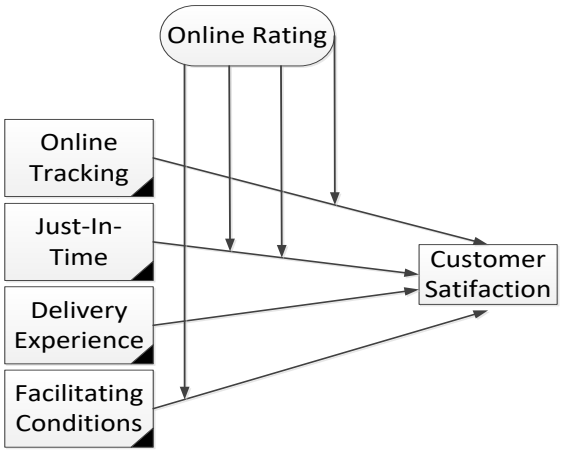

Figure 1: Proposed Framework

Methodology Sampling and Data Collection

This study seeks to explore the impact of customer satisfaction in the food delivery industry, with a specific emphasis on the role of online ratings as a moderator.

A sample of 233 customers who had used online food delivery services in the previous three months was included in the data collected by researchers. By limiting respondents to this specific time period, researchers ensured that they would rely on the most up-to-date events, thus reducing the potential for misinformation. Furthermore, focusing on customers who have placed online orders in the past three months allows for the gathering of current data, as organisations strive to enhance their online ordering systems. The objective of prioritising existing customers was to gather relevant and current data on the factors that contribute to customer satisfaction in the rapidly evolving food delivery industry.

Descriptive Statistics

The descriptive statistics in Table 1 depict the characteristics of the questionnaire items used in this study. Each row contains numbered data, which includes the number of responses (N), minimum and maximum values, mean, and standard deviation (SD). The number of responses (N) remains constant at 233 for all questionnaire items.

Table 1: Descriptive statistics of questionnaire items

Items	N	Min	Max	Mean	S.D.
OT1	233	2	5	3.01	0.564
OT 2	233	2	5	3.25	0.501
OT 3	233	2	5	4.26	0.614
OT 4	233	2	5	3.67	0.697
CS1	233	2	5	3.24	0.597
CS 2	233	2	5	3.19	0.701
CS 3	233	2	5	4.16	0.581
CS 4	233	2	5	4.11	0.537
CS 5	233	2	5	3.10	0.561
JIT1	233	2	5	3.57	0.670
JIT 2	233	2	5	4.64	0.658
JIT 3	233	2	5	2.98	0.722
JIT 4	233	2	5	3.19	0.787
DE1	233	2	5	3.54	0.797
DE 2	233	2	5	4.08	0.669
DE 3	233	2	5	3.14	0.598
DE 4	233	2	5	4.13	0.648
DE 5	233	2	5	3.33	0.847
FC1	233	2	5	3.60	0.569
FC 2	233	2	5	3.08	0.667
FC 3	233	2	5	2.94	0.705
FC 4	233	2	5	4.14	0.779
OR1	233	2	5	3.19	0.569
OR 2	233	2	5	3.22	0.547
OR 3	233	2	5	4.12	0.668

The scores for each item range from 2 to 5, representing the scale used for the questionnaire responses. The means of the values for each item indicate the average values given by the participants. The standard deviations (S.D.) provide information about the dispersion of responses around the mean for each item.

Factor Analysis

The confirmatory factor analysis, which used data from a questionnaire, presents its results in Table 2. The analysis focuses on four factors: Online Tracking (OT), Online Rating (OR), Delivery Experience (DE), and Facilitating Conditions (FC). The table displays three columns for each factor, including the alpha coefficient, the accountable percentage of variance, and the Kaiser-Meyer-Olkin (KMO) statistics. In this case, Cronbach's alpha assesses factors' internal consistency and reliability. Higher Cronbach's alpha values, such as 0.864 and 0.821, were found for the integrated data and deprivation level, respectively, indicating greater measurement reliability of the factor. This demonstrates that the variables within a factor are highly interconnected and closely associated with all other factors in the construct. The factors can account for the extent of variability in notable variables, as quantified by the percentage of explained variation. Factors that have a higher proportion of explained variance, such as the unfair treatment index (55.69%), are more likely to accurately represent the body and boundaries they are associated with. Multivariate analysis employs the KMO statistic to assess the reliability of data for conducting factor analysis. The high Kaiser-Meyer-Olkin (KMO) values of R (0.884) and E (0.854) indicate that the data is suitable for factor analysis. This suggests that we can combine the provided variables into a smaller number of factors that share a common variance.

Table 2: Results of confirmatory factor analysis of questionnaire data

	Cronbachs Alpha	% of Variance	KMO Statistics
Online Tracking (OT)	0.785	38.64	0.799
Online Rating (OR)	0.864	46.25	0.884
Delivery Experience (DE)	0.821	55.69	0.854
Facilitating Conditions (FC)	0.764	47.34	0.801

Table 2 reports the correlation between factors - Online Tracking (OT) - IV, Online Rating (OR) Moderator, Just-in-time (JIT) - IV, Delivery Experience (DE) - IV,

Facilitating Conditions (FC) - IV and Customer Satisfaction (CS)- DV. Many of the correlations reported in the table are significant.

Correlation Matrix of Questionnaire Data

Table 3 provides the correlation matrix for all variables: Online Tracking (OT), Online Rating (OR), Just-in-time (JIT), Delivery Experience (DE), Facilitating Conditions (FC), and Customer Satisfaction (CS). The numbers in the table are Pearson correlation coefficients. The correlation coefficients provide information about the strength and direction of association between each pair of variables. Significant coefficients are marked by asterisks (* for 0.05 level and ** for 0.01 level, both of these being two-tailed).

Table 3: Correlation matrix of questionnaire data

	Online Tracking (OT)	**Online Rating (OR)**	**Just-in-time (JIT)**	**Delivery Experience (DE)**	**Facilitating Conditions (FC))**
Online Tracking (OT)					
Online Rating (OR)	.154*				
Just-in-time (JIT)	-.036*	.045*			
Delivery Experience (DE)	-.087	-.019*	.010*		
Facilitating Conditions (FC)	.119	-.240	.170	.187	
Customer Satisfaction (CS)	.299*	.345*	.260	.250*	.274

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed)

Online Tracking (OT) and Online Rating (OR) are positively correlated moderately (r = 0.154*), meaning that an increase in online tracking is followed by an increased online rating. As just-in-time (JIT) delivery does not have a significant effect on variables of the matrix. The existence of a strong positive correlation between Delivery Experience (DE) and Facilitating Conditions (FC) (r = 0.170*) indicates that a successful delivery experience is associated with favourable facilitating conditions. Facilitating Conditions (FC) significantly correlated with Online Rating (OR) (r = -0.240**) and Customer Satisfaction (CS) (r = 0.274*), implying that less favourable facilitating conditions are associated with higher ORs and lower CSs. Customer satisfaction (CS) is seen to have strong positive correlations with Online Tracking (OT) (r=0.299*) and Online Rating (OR) (r=0.345*), implying that higher levels of online tracking and positive online ratings are associated with more customer satisfaction.

Multiple-Regression Analysis

Multiple regression analysis was performed to examine the relationship between Customer Satisfaction (CS) and the independent variables: Online Tracking (OT), Just-in-time (JIT), Delivery Experience (DE), and Facilitating Conditions (FC) (see Table 4). The table displays the standardised coefficients (Beta), R-squared (R2), adjusted R-squared (Adjusted R2), and F-statistics. The beta coefficients indicate the strength and direction of the relationships between the dependent variable and the independent variables, while considering the impact of other variables in the model. The R-squared (R2) value quantifies the extent to which the independent variables in a model explain the variation in the dependent variable (CS). The adjusted R-squared (Adjusted R2) is a statistical measure that considers the number of independent variables in a model and offers a more precise evaluation of the model's ability to explain the variation in the dependent variable. The F-statistic determines the overall significance of the regression model, suggesting that at least one independent variable has a significant impact on the dependent variable. The standardised coefficients (Beta) of Online Tracking (OT), Just In Time (JIT), Delivery Experience (DE), and Facilitating Conditions (FC) indicate their significant contributions to predicting Customer Satisfaction (CS). About 35.8% of the variability in Customer Satisfaction (CS) can be explained by the independent variables in the model, as indicated by the R2 value of 0.358. The adjusted R-squared value of 0.294 is a conservative estimate because it takes into account the number of independent variables in the model. The F-statistic of 26.37 is highly significant ($p<0.01$), suggesting that the model is significant and at least one independent variable significantly explains Customer Satisfaction (CS).

Table 4: Regression results

	Standardized Coefficients Beta	R2	Adjusted R2	F
Online Tracking (OT)	.257*	.358	.294	26.37**
Just-in-time (JIT)	.314*			
Delivery Experience (DE)	.229**			
Facilitating Conditions (FC)	.348*			

a. Dependent Variable: Customer Satisfaction (CS)
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Results and Hypothesis Testing

Table 5 presents a brief overview of the results obtained from our hypothesis testing. It centres on the connection between the independent variables: Online Tracking (OT), Just-in-time (JIT), Delivery Experience (DE), and Facilitating Conditions (FC). The table displays both the test results and the corresponding p-values. The proposed hypotheses for each factor suggest a positive relationship with overall satisfaction. The test findings are used to determine the validity of the hypotheses, based on the significance of the p-values. The topic of online tracking (OT): The hypothesis of a positive relationship with overall satisfaction is supported ($p < 0.001$), indicating statistical significance. The concept of just-in-time (JIT) is a strategy that aims to optimise production and inventory management by delivering materials and goods exactly when they are needed, minimising waste. The hypothesis of a positive relationship is braced by a statistically significant p-value of 0.021, indicating a slightly stronger association than the OT. Delivery Experience (DE): The hypothesis of a positive relation with overall satisfaction is reinforced by a statistically significant p-value of 0.000. Facilitating Conditions (FC): The null hypothesis of a positive relationship to overall satisfaction is accepted (p-value = 0.034), indicating a statistically significant association, albeit with a higher p-value compared to the other variables.

Table 5: Results of hypothesis testing

Hypothesis	Relationship with overall satisfaction	Testing result (P value)	Hypothesis
Online Tracking (OT)	Positive	0.000	Accepted
Just-in-time (JIT)	Positive	0.021	Accepted
Delivery Experience (DE)	Positive	0.000	Accepted
Facilitating Conditions (FC)	Positive	0.034	Accepted

Moderating Analysis

Table 6 displays the results of the moderation testing. The table examines the moderating effect of Online Rating (OR) on the relationships between the independent variables (Factor) and the dependent variable, Customer Satisfaction (CS). The table presents the sample size (N), standardised coefficients (Betas) for each factor, R-square (R2) before and after including the moderator, and F-statistics. The study shows that Online Ratings (OR) have a moderating effect on the relationships between different

factors and Customer Satisfaction (CS), using standardised coefficients (Beta) for all factors. Adding Online Rating (OR) as a moderator in the regression model boosts the R2 value from 0.311 to 0.366. The increase indicates that a moderator variable greatly impacts the model's ability to explain Customer Satisfaction (CS). The F-statistic of 18.97 ($p < 0.01$) suggests that the overall model is statistically significant. It also suggests that Online Rating (OR) plays a significant role in moderating the relationships between the independent variables and Customer Satisfaction (CS).

Table 6: Testing Moderation

Variablea	N	OT	JIT	DE	FC	R2	Adjusted R2	F
Online Rating (OR)	233	.254*	.314	.287**	.366*	.311	.284	18.97**

Dependent Variable: Customer Satisfaction (CS)
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Discussion

The research results have clearly identified the key factors that influence customer satisfaction in the food delivery industry. The multiple regression analysis reveals that Online Tracking (OC), Just-in-time (JIT), Delivery Experience (DE), and Facilitating Conditions (FC) collectively influence Customer Satisfaction (CS) significantly. These factors are closely tied to customer satisfaction, as they reflect the outcome of a customer's experience with food delivery services. The statistical results of the predicted hypothesis tests confirm the five hypotheses that suggest positive impacts of each independent variable on overall satisfaction. The indicated associations are supported by statistically significant p-values, emphasising the importance of avoiding time waste through the use of OT, JIT, DE, and FC. Moreover, Online Rating (OR) is believed to play a crucial role in moderating the relationship between predictors and variables that impact Computer Security (CS).

Adding the 'OR' variable to the model enhances its explanatory power in the field of computer science. It also recognises that customers' online ratings have a moderating effect on the relationships between OT and JIT, OT and DE, OT and FC, and OT and CS. The research highlights the significance of online reviews in shaping consumers' satisfaction and expectations when using a food delivery platform. The

research findings demonstrate various aspects of customer satisfaction in food delivery, including online tracking progress, on-time delivery, delivery process smoothness, facilitating conditions, and online ratings. The collection of customer insights empowers food delivery brands to identify and address customer needs, leading to the redesign of processes and strategies. This, in turn, enhances the likelihood of meeting customer expectations and improving overall satisfaction. Optimising website tracking systems, implementing time delays, ensuring timely deliveries, and facilitating favourable circumstances all contribute to meeting customer expectations. In addition, actively maintaining and enhancing positive online reviews can strengthen customer loyalty in a competitive market niche. Future research should explore additional determinants or variables that may influence customer satisfaction with food delivery services. Continuous studies can assess the growth of customer satisfaction over time and evaluate the impact of long-term interventions and improvements on customer loyalty and retention rates.

Online tracking refers to the collection of user data by websites and online platforms for targeted advertising, personalized user experiences, and behavioural analysis. Customer satisfaction is a measure of a customer's overall perception of a product, service, or experience. The presence and quality of online ratings significantly influence the extent of measuring and tracking brand satisfaction online. For example, a company that consistently monitors customers' online activities but receives consistently low ratings may be perceived as infringing on customer privacy and eroding their trust, ultimately leading to reduced customer satisfaction. The hypothesis proposes that customer satisfaction may be influenced by online tracking, which could be affected by the ratings given by customers. Reading ratings and reviews regarding the speed of delivery may influence the satisfaction levels of clients. Customers subjected to online tracking reported higher levels of satisfaction with the shopping process, according to the study. Additionally, the results indicate that the association between online ratings and this relationship is moderately significant. This suggests that the ratings customers receive influence their satisfaction with online tracking. An increase in ratings is likely to incentivize online monitoring's positive impact on satisfaction levels.

Online ratings can greatly impact the relationship between JIT and customer satisfaction, potentially reducing their correlation. A company's exemplary achievement is when it consistently meets the specific needs of its customers and receives positive reviews for its speed and effectiveness, resulting in maximum customer satisfaction. Insufficiently executed JIT services can lead to customer dissatisfaction and a decline in service ratings, thereby affecting customer satisfaction (JITs should be performed well in order they do not end up having customers who are dissatisfied). This hypothesis suggests that customer satisfaction with just-in-time delivery may be influenced by online ratings of the delivery service. Customers' satisfaction with delivery time may be influenced by online ratings and reviews of the delivery service. The study found a clear link between just-in-time delivery and customer satisfaction. Additionally, it has been discovered that online ratings serve as a mediator in this relationship. The online ratings that customers view can impact the influence of just-in-time delivery on satisfaction. Timely deliveries can positively impact customer satisfaction.

Hypothesis H3 suggests that the connection between delivery experience and customer satisfaction may be influenced by the quality or quantity of online ratings. A positive delivery experience, characterised by fast and reliable shipping, proper packaging, and effective communication, can significantly enhance customer satisfaction, especially when these experiences are highlighted in positive online ratings and reviews. In contrast, negative customer reviews can further decrease satisfaction with the service. The influence of delivery experience on customer satisfaction may be influenced by online ratings of perceived quality in delivery services. The level of consumer satisfaction with delivery can vary based on internet ratings and feedback. The study found a relation between customer satisfaction and the delivery experience. Based on the data, it can be inferred that online restaurant ratings have a moderating effect on this relationship. The online ratings provided by the audience have an influence on the customers' satisfaction with the delivery experience. The enhanced ratings can contribute to higher guest satisfaction and improved returns.

Facilitating conditions in the context of customer satisfaction encompass factors such as user-friendly website or app interfaces, availability of customer support, clarity

of instructions, and overall customer experience. The impact of online ratings on the connection between facilitating conditions and customer satisfaction is mediated by the quality of the ratings. This hypothesis posits that the influence of facilitating circumstances, such as external student services like climate and traffic, may vary in relation to the online ratings of the delivery service. The information on service providers' websites regarding delivery conditions can significantly impact customer satisfaction. The study's results indicates a positive correlation between favourable conditions and customer satisfaction. The study's findings suggest that online ratings have an additional moderation effect. The mediating role of assissting conditions on satisfaction refers to the conditional effect of online reviews on satisfaction, which is influenced by the opinions expressed in the reviews. Higher ratings can enhance the impact of positive effects and increase pleasure.

Implications and Recommendations

This study contributes to the existing literature by providing insights into the key factors that influence the customer experience in the food delivery industry. The study examines a variety of factors that contribute to customer satisfaction, such as tracking potential customers online, shipping options (including just-in-time and direct-to-warehouse), delivery experience, and factors that facilitate online shipment. It emphasizes the influence of each of these factors on customers' overall satisfaction ratings.

Online reviews greatly influence how audiences perceive a brand, according to the study's findings. Having a strong online reputation is essential for the success of food delivery businesses. Companies must prioritise monitoring and responding to customer feedback and online reviews. Feedback significantly influences customer satisfaction, as evidenced by their online ratings. The investigation highlights the importance of consumer preferences, which are influenced by both technology (such as online tracking) and traditional quality factors (such as delivery experience), in ensuring customer satisfaction. Utilising technological advancements strategically is crucial in the food delivery industry. It helps companies improve service quality and meet customer expectations. In addition, this greatly contributes to improving customer

satisfaction. The findings have important implications for service providers and industry strategy development in the food delivery sector. Service providers who participated in the research can use the information to enhance their management, standardise their services, and formulate strategies for their clients. Therefore, one of the goals that companies can aim for is implementing strong online tracking systems, ensuring prompt deliveries, and providing customers with an exceptional experience. By doing so, companies can earn the trust and loyalty of their customers.

Given the strong correlation between online tracking practices and customer satisfaction, it is vital for food delivery services to prioritise the implementation of a reliable online tracking system. It is crucial for these systems to provide timely notifications and accurate updates on the status and location of an order, ensuring a seamless tracking experience for customers. Utilizing online channels for tracking and reporting can increase customer satisfaction by alleviating concerns and anxieties about package delivery times. The timing of supply plays a crucial role in determining customer satisfaction. Timely food deliveries are essential to meet customer needs and reduce waiting time. This may entail enhancing delivery route plans, establishing connections with delivery personnel, and potentially utilising technology to accurately predict and manage delivery times. Ensuring prompt and reliable deliveries can greatly enhance customer satisfaction and loyalty. Delivery experience encompasses a broad range of factors, such as the precision of orders, the conduct of delivery personnel, and the quality of packaging. The objective of food delivery services is to enhance customers' experience by meticulously optimising every step of the delivery process. For instance, guiding the delivery team to uphold exceptional customer service, verifying the accuracy of order packaging, and promptly resolving any issues or concerns that may arise.

A streamlined delivery service will result in higher customer satisfaction and a higher chance of repeat business. Various factors, including weather conditions, traffic, and external events, can negatively impact the delivery process, potentially leading to customer dissatisfaction. In addition to factors that may be beyond the control of food delivery services, operators can implement measures to mitigate any potential negative impacts. This could involve devising strategies for adverse weather conditions and

streamlining delivery routes to cut down on road time. In addition, it is crucial to promptly inform customers of any unforeseen situations. By effectively implementing operational conditions, food delivery services can maintain high service quality and ensure customer satisfaction. Studies show that online reviews have a major impact on customer satisfaction. Online food delivery service management must actively monitor and promptly address customer feedback and reviews to effectively manage their online reputation. A key strategy for companies to maintain positive online ratings is to consistently deliver high-quality service, promptly address customer needs, and actively engage with them. Effective online reviews do not function independently; collaborating with other elements like tracking and delivery can lead to customer satisfaction, loyalty, and positive word-of-mouth. .

Limitations

It is possible to introduce bias into the sampling procedure through various means. Biases related to participants' demographics or geographical location can significantly affect the validity of the study. Biases have the potential to affect the credibility and overall reliability of the results. It's worth noting that different customer segments may not necessarily have the same opinions. The research may utilise data collected from the participants through surveys and questionnaires, potentially leading to the influence of their responses and the presence of social desirability bias. It is possible that individuals may provide responses that they believe are socially acceptable or do not accurately reflect their true opinions and experiences. Consequently, the data collected may be unreliable. The study's design is cross-sectional, providing data at one time-point only, and therefore does not establish causality in the relationship between the variables. Longitudinal studies provide reliable evidence and valuable insights into the duration and impact of these factors on customer satisfaction. They also enable the analysis of temporal changes and trends. This study may not cover all the factors that determine customer satisfaction in the food delivery industry. The survey may have overlooked important factors such as prices, menu diversity, or customer service quality, resulting in less comprehensive data. The study may produce findings that are specific to this particular cultural or regional

context, making it difficult to apply to other cultural and regional contexts. Culture, consumer behaviour, and market conduct may have an impact on customer satisfaction that was not considered in the study's analysis.

Future Directions

Explore the various cultural and regional differences that impact customer satisfaction in the food delivery industry. Explore how cultural norms, tastes, and socioeconomic differences influence customer perceptions and behaviours. Comparative studies conducted in various cultural and regional contexts can reveal both commonalities and differences in the dynamics of customer satisfaction. Analyse how emerging technologies like artificial intelligence, robotics, and drone delivery impact consumer satisfaction with food delivery services. Examine how these technologies enhance the delivery experience, improve effectiveness, and shape customers' perceptions of service quality and satisfaction. Examine the cross-sectoral elements by investigating customer satisfaction through the use of hybrid business models that integrate grocery delivery, meal kit services, and partnerships between restaurants and third-party delivery services. Explore the effects of industry-specific factors on customer satisfaction and analyse how interactions between sectors influence overall satisfaction levels.

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Appendix: Survey Instrument

Online Tracking	
1. Tracking system from online food delivery application quite accurate and reliable. 2. Tracking system helps me to save my time as I can check when my order will arrive. 3. Tracking system can help me to save cost as I can check my order through online food delivery application without calling to ask my order. 4. Tracking system on online food delivery application always updates my order from start until completed.	(Bunarunraksa & Nuangjamnong, 2022).
Customer Satisfaction	
1. I am satisfied with ordering food from an online food delivery application. 2. I need to invite my friends and other people to order food from an online food delivery application. 3. I am satisfied with the services of online food delivery application. 4. Online food delivery application is easy to use and order. 5. I am happy to order food delivery application.	
Just-In-Time	(Kinyanjui, 2016)
1. Use of JIT improves quality 2. Use of JIT improves reliability of suppliers 3. The organization uses JIT system to improve customer service 4. Use of JIT improves timely delivery of goods and services	
Delivery Experience	
1. I like the Food Delivery provision method that allows me to order food at any time I am hungry. 2. I like the Food Delivery provision method for locating the delivery address on the map. 3. I like the Food Delivery provision method of free delivery for specific orders. 4. I like the Food Delivery provision method to know about the estimated time of delivery. 5. I like the Food Delivery provision method for realtime tracking of the delivery person.	(Fakfare, 2021)
Facilitating Conditions	
1. I have the resources necessary to use mobile food order apps. 2. I have the knowledge necessary to use mobile food order apps. 3. Mobile food order apps are compatible with other technologies I use.	

4.	I can get help from others when I have difficulties using mobile food order apps.	
	Online Rating	
1.	Customer ratings provided in mobile food order apps have helped me to learn about the product.	(Alalwan, 2020)
2.	Customer ratings provided in mobile food order apps have improved my understanding of the quality of the product's features.	
3.	Customer ratings provided in mobile food order apps were useful in order to evaluate the quality of product specifications/features.	