

A Service of



Leibniz-Informationszentrum Wirtschaft Leibniz Information Centre for Economics

Yan, Shiqiang; Sidah Idris; Syarifah Hanum Ali

Article

A model of online food delivery system services and restaurant performance: A case study of China

Global Business & Finance Review (GBFR)

Provided in Cooperation with: People & Global Business Association (P&GBA), Seoul

Suggested Citation: Yan, Shiqiang; Sidah Idris; Syarifah Hanum Ali (2024) : A model of online food delivery system services and restaurant performance: A case study of China, Global Business & Finance Review (GBFR), ISSN 2384-1648, People & Global Business Association (P&GBA), Seoul, Vol. 29, Iss. 3, pp. 1-15, https://doi.org/10.17549/gbfr.2024.29.3.1

This Version is available at: https://hdl.handle.net/10419/305965

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.



WWW.ECONSTOR.EU

https://creativecommons.org/licenses/by-nc/4.0/

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.





GLOBAL BUSINESS & FINANCE REVIEW, Volume. 29 Issue. 3 (APRIL 2024), 1-15 pISSN 1088-6931 / eISSN 2384-1648 | Https://doi.org/10.17549/gbfr.2024.29.3.1 © 2024 People and Global Business Association

GLOBAL BUSINESS & FINANCE REVIEW

www.gbfrjournal.org for financial sustainability and people-centered global business

A Model of Online Food Delivery System Services and Restaurant Performance: A Case Study of China

Shiqiang Yan^{a,b}, Sidah Idris^{b†}, Syarifah Hanum Ali^b

^aSchool of Management Science and Engineering, Baise University, Guangxi, China ^bFaculty Business, Economic and Accountancy, Universiti Malaysia Sabah (UMS), Kota Kinabalu, Malaysia

ABSTRACT

Purpose: Through the lens of business performance theory, this study examines the effect of online food delivery system services on restaurant performance by analyzing the performance of restaurants engaged in takeaway services. The moderating effects of restaurant attributes on restaurant performance are also investigated. **Design/methodology/approach:** This research applies a positivist paradigm where a quantitative approach was selected to gather the information from the respondents based on the established sample size through G-POWER software. By applying the judgement sampling technique, the study seeks answers from the respondents through non-probability sampling. Using the software SmartPLS 3.3.3, this study analyzed 220 completed responses using the PLS-SEM approach to reach the research objectives.

Findings: The findings suggested that the basic services and click-through promotion service directly and positively affected restaurant performance. The discount service has no significant influence on the restaurant performance. The study confirms that size shown a positive interaction with click-through promotion service in relation to restaurant performance, whereas the variable of price of main dishes demonstrated a negative interaction with click-through promotion service in relation to restaurant performance. There is no substantial moderating influence of age. **Research limitations/implications:** The current study is limited to the geographical area, of Baise, Guangxi China. Therefore, generalizability and gain a better knowledge of the overall context is limited. Additionally, due to the single time period of data collection, it may not represent the long-term takeout business operation of catering businesses. **Originality/value:** The research model is valid in explaining the impact of online food delivery system services on restaurant performance. In this light, understanding these influencing relationships in this study will provide valuable insights into the operation of a takeout catering enterprise. These would also benefit the related government agencies, restaurant owners or managers, and the researchers.

Keywords: ChatGPT, ChatGPT ban, ChatGPT in education, Academic integrity

I. Introduction

Since 2020, the worldwide catering business has

faced an unprecedented crisis due to the pandemic (Jang, 2021). Restaurants, taverns, and other catering businesses are banned in public locations. These crises have made eateries rely increasingly on takeout (Oh & Yi, 2023). Due to business obstacles, many restaurants struggle with takeout (Ahuja et al., 2021).

The literature on restaurant operations has seen significant growth in recent years Nevertheless, the

© Copyright: The Author(s). This is an Open Access journal distributed under the terms of the Creative Commons Attribution Non-Commercial License (https://creativecommons.org/licenses/by-nc/4.0/) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.



Received: Dec. 27, 2023; Revised: Jan. 12, 2024; Accepted: Jan. 22, 2024

[†] Corresponding author: Sidah Idris E-mail: syaidah@ums.edu.my

predominant area of scholarly investigation has been directed towards the examination of service quality (Kukanja et al., 2023), customer behavior (Jang, 2022), determinants of online food delivery (OFD) sales (Oh & Yi, 2023), authentic leadership (Lee et al., 2016), and customer satisfaction (Gupta et al.,, 2007). There is a significant lack of scholarly material regarding the influence of services provided by OFD platform on restaurant performance. Analyzing the impact of various services provided by the OFD platform on restaurant performance in the context of online-offline competition is a topic of significant importance.

This study aims to explore the existing literature on the operational aspects of catering enterprises, focusing on their operations in an online-offline environment. In this study, we analyzed the impact of services provided by the OFD platform on RP using a sample of 220 catering enterprises operating in the takeaway sector in Baise, Guangxi, China. The results of our study contribute to the current body of literature on the effect of services provided by the OFD platform on restaurant performance (such as operational efficiency and financial performance of restaurants) and expand the research on the takeout industry, including elements such as basic services (including online food searching, ordering, and delivery services) and value-added services such as discount service and click-through promotion service. Moreover, this study presents new empirical findings concerning the moderating effects of prices of main dishes, age, and size on the relationship between different services provided by the OFD platform and restaurant performance. This study aims to offer significant insights and practical recommendations for professionals and stakeholders in this sector.

II. Literature Review and Hypotheses Development

A. Restaurant Performance (RP)

The RP is the operation benefit of restaurant and achievement of operators in a certain time. The profitability, asset operation level, solvency and subsequent development ability of the enterprise belongs to the operation benefit. The contribution of operators to the operation, growth and development of the enterprise belongs to the achievement of operators (Tian, 2021). Extensive scholarly investigation has been conducted to analyze the various aspects that impact the operational outcomes of restaurants in physical, non-digital environments. Park(2016) investigated the effects of corporate real estate (CRE) ownership for the performance of franchise restaurant companies. Chen (2018) categorizes the determinants into two primary classifications: characteristics related to restaurant operations and factors associated with the operating environment. Multiple factors contribute to the operational dynamics of a restaurant. DiPietro et al. (2011) assert that the consideration of QSC (Quality, Service, and Cleanliness) is a crucial element within the realm of corporate operations. It is important to acknowledge that distribution channels have a significant impact in the operational context (Kimes and McGuire, 2001). Based on the aforementioned findings, scholars have established various theoretical frameworks to evaluate the online RP. Numerous models have been utilized by researchers to examine the dynamic relationship between restaurants and the elements that influence them. The study has derived three significant discoveries from their investigation, which have subsequently influenced the next sections of this research.

- (1)When analyzing the correlation between RP and goal parameters, it is crucial to consider restaurant attributes.
- ②The impact of alterations in the operational context on performance levels exhibits variability among several categories of restaurants. Consequently, it is imperative to integrate

several categories of restaurants into the survey.
③The selection of data type should be congruent with the limitations imposed by the respondents, and the choice of model should be contingent upon the level of expertise in handling the data.

B. The Online Food Delivery System (OFDS) Services

Online food delivery system (OFDS) services are a series of supporting services developed by the OFD platform to integrate geographically dispersed customers and restaurants into a unified online marketplace(Furunes et al., 2019). Semi-structured interviews were conducted with eight practitioners in the takeaway industry from Baise, Guangxi, China in order to gain a full understanding of OFDS services and develop specific items for investigating their impact on RP. The items used in this interview are presented in Table 1. Prior to the commencement of the formal interview, the interviewees were provided with comprehensive explanations on the themes under discussion (Sim et al., 2021). Each interview session had a duration of roughly 90 minutes for each participant.

The interviews yielded a comprehensive and methodical comprehension of OFDS services, which can be summarized as follows:

First, the OFDS services include online store display and search, ordering and settlement, food delivery, consumer evaluation and feedback, discount promotions, click-through promotion, etc. According to the function of these services, they can be divided into basic services and value-added services.

Second, basic services refer to the services that

enable restaurants to conduct online catering transactions. These basic services include online presentation, order processing, delivery, and evaluation.

Third, value-added services refer to services that have the ability to increase the RP. The value-added services encompass discount promotion (DP) and click-through promotion (CTP). The discount promotion helps merchants increase sales by discounting meals or providing coupons. Most discount promotion services are initiated by the OFD platform. The click-through promotion service helps merchants increase sales by increasing their exposure and improving their ranking in the search list. The click-through promotion service is charged based on the number of customer views.

C. Research Model and Hypotheses

Figure 1 displays the conceptual model employed



Figure 1. Conceptual model

Table 1. The questions of semi-structure interviews conducted with takeaway platform managers

NO.	Questions
1	How many value-added services does the OFD company provide?
2	Please introduce each kind of value-added services briefly.
3	What types of restaurants are applicable to each value-added service
4	Please add important information omitted by the author.

in this study. The construction of this model is conducted with the supervision of business performance theory, as outlined by Hao, Qu and Wu (2008). According to Llach Perramon, del Mar Alonso-Almeida and Bagur-Femenías (2013), the evaluation of RP can be categorized into three key dimensions: efficiency, outcomes, and competition. Efficiency is a metric that quantifies the ratio of input to output inside organizations. The outcome is a metric that signifies the level of consumer awareness and acknowledgement towards the products or services offered by the firm. Competitiveness refers to the capacity of firms to effectively adjust to the prevailing market conditions and attain advantageous positions in the market. Drawing upon scholarly discourse surrounding business performance, the notion of restaurant performance (RP) can be defined as the attainment and manifestation of a restaurant's efficacy, outcomes, and competitive edge within a specific time frame. According to Van Veldhoven et al. (2021), several key parameters that significantly influence RP include size, age, prices of main dishes.

1. Basic Service and RP

The advent of a new online market platform has resulted in a decrease in profitability for numerous traditional eateries (Chen et al., 2022). The level of competition within the delivery market is very fierce.

The restaurant's earnings may be negatively impacted by the platform's high commissions and frequent discounts (Li et al., 2020). Small restaurants frequently face higher commission rates as a result of the limited bargaining leverage they possess in relation to large OFD platforms (Li et al., 2020). The implementation of the OFD platform has resulted in the emergence of two distinct modes of profit distribution within the catering business. One key aspect pertains to the allocation of benefits between the OFD platform and the participating eateries. Another aspect to be considered is the allocation of advantages among various eateries (Feng and Chen, 2016). According to Li, Mirosa, and Bremer (2020), it is possible for restaurants to end their partnership with an OFD platform. So does the basic services offered by an OFD platform has a positive impact on the financial gains of catering enterprises? The subsequent hypothesis is posited:

Hypothesis 1: The basic services of the OFD platform has a significant positive influence on RP.

2. Discount and RP

The OFD platform launched a variety of marketing strategies, such as discounts and coupons, that required catering enterprise to cooperate in implementing their marketing (Chen et al., 2020). These messages were designed to promote lower prices and combos, which can help consumers save both cost and time (Yeo VCS, et al., 2017). For example, a personalised food combination makes the consumer feel like it was made just for him/her (Horta et al., 2022). Messages and photos are also effective strategies for improving sensation, imagination and impressing customers with discounts and promotions (Horta et al., 2022).

Innovative marketing strategies, such as promotions, enhance the adoption and utilization of OFD platforms (Gold et al., 2020). Nevertheless, it is important to note that the influence of promotions on sales over an extended period of time may not always provide favorable outcomes. The brand may experience erosion. (Guadagni and Little, 1983). An abundance of promotions tends to result in decreased internal reference prices, which are customers' evaluations of products based on their experiences and intuition. Consequently, this decrease in internal reference prices leads to poorer customer ratings of the product (Lattin and Bucklin, 1989). Promotions have the capacity to alter the purchasing patterns of customers gradually and discreetly. There was an observed increase in individual purchases, whereas a reduction in individual buy intentions was noted (Mela et al., 1998).

When launching promotions, e-retailers should improve their estimation of reservation prices and consider practical situations to estimate the probability of customers' purchases (Jedidi et al., 2003). **Hypothesis 2:** The discount service of the OFD platform has a significant positive influence on RP.

3. Click-through Promotion Service and RP

Sponsored or paid searches are increasingly being recognized as a novel avenue for consumer acquisition and brand competitiveness within the realm of business practices (Chan et al., 2011). The OFD platform offers consumers the service of restaurant retrieval and functions as a search engine. A search engine is an online tool utilized by businesses and customers to effectively locate and acquire desired products or services by inputting relevant search keywords into a designated search platform (Cheng et al., 2018). The search engine operation consists of the following stages.

First, relevant terms are extracted from the data provided by enterprises that have engaged in retrieval services.

Second, the search queries of customers are matched with the terms utilized by corporations.

Third, the outcome of the matching process is displayed to the client as a search result (Cheng et al., 2018).

In order to maintain customer appeal, platforms will exclusively impose charges on companies rather than customers (Eisenmann et al., 2006). Therefore, the acquisition of click-through promotion service and the subsequent augmentation of impressions on the OFD app can serve as a viable strategy for restaurants to enhance their financial gains.

The customers exhibit a preference for directing their attention towards smaller results as a means of minimizing the time and effort expended in evaluating various possibilities (Montgomery et al., 2004). There is a positive correlation between the position of a link in a searching result list and its likelihood of being clicked (Ansari et al., 2003). According to previous studies (Hoque et al., 1999; Feng et al., 2007), it has been observed that the click-through rate (CTR) tends to exhibit an exponential decrease as the ad position decreases. Furthermore, the majority of clicks are received by the first few spots. The financial implications of advertisements and the economic worth of clicks are additional significant variables that impact the revenue of merchants. The profitability of higher ranks can often surpass that of lower classes, despite their elevated costs (Jerath et al., 2011).

A click-through promotion service has the potential to enhance RP. Nevertheless, the impact of clickthrough promotional business on merchant revenue can fluctuate among various eateries. The subsequent hypothesis is formulated:

Hypothesis 3: Purchasing the click-through promotion service has a significant positive influence on RP.

4. Factors Moderating the Influence of OFDS Services on RP

Van V. et al. (2021) set collaboration, size, age, prices of main dishes as independent variables for their analysis of the financial performance of restaurants. Zhao et al. (2018) found that the location, scale, and grade of merchants can affect the profit changes of merchants after joining the platform. After analyzing the data of sales and online reviews of six restaurants for two years and eight months, Fernandes (2021) built a model to forecast sales performance by both live social media customer feedback and historical sales data. Their research showed that the restaurant type is an important factor influencing RP. DiPietro, R. et al. (2011) found a 'V' curve relationship between different types of restaurants. The moderating influence of scale, age, and prices of main dishes on the relationships between OFDS services and online RP is still unclear. The following hypothesis is developed:

Hypothesis 4a: The size will positively moderate the influence of basic services on RP.

Hypothesis 4b: The size will positively moderate

the influence of discount service on RP.

- **Hypothesis 4c:** The size will positively moderate the influence of click-through promotion service on RP.
- **Hypothesis 4d:** The age will positively moderate the influence of basic services on RP.
- Hypothesis 4e: The age will positively moderate the influence of discount service on RP.
- **Hypothesis 4f:** The age will positively moderate the influence of click-through promotion service on RP.
- **Hypothesis 4g:** The prices of main dishes will positively moderate the influence of basic services on RP.
- **Hypothesis 4h:** The prices of main dishes will positively moderate the influence of discount service on RP.
- **Hypothesis 4i:** The prices of main dishes will positively moderate the influence of click-through promotion service on RP.

III. Method

Researchers face difficulties in obtaining reliable financial data for online restaurants due to the absence of cross-verification for the correctness of financial information (Haber and Reichel, 2005; Runyan et al., 2008). This poses a challenge for research focused on online food restaurants. Nevertheless, it is considered appropriate to depend on self-reported subjective interpretations of performance, as these subjective measures are well aligned with objective performance indicators (Jaworski & Kohli, 1993; Slater & Narver, 1994).

According to suggestions provided by managers of OFD platforms, a six-month period is deemed adequate for comprehensively assessing the impact of OFDS services on RP. The target respondents for this study are specifically restaurant managers that are actively involved in take-out business and possess a strong understanding of value-added services (VAS). A compilation of prominent restaurants from the two dominant OFD platforms in Baise, Guangxi, China has been created with the assistance of managers from these platforms. The present study utilizes purposive sampling, supplemented by a simple random selection method from the provided list.

A. Population and Sample

Applying G* Power 3.1 (Faul et al., 2009) software to estimate the minimum required sample size with the setting as follows: $f^2 = 0.3$ (medium), a = 0.05. The number of latent variables were selected via power analysis and the power was set at 95% (Gefen et al., 2011). The minimum sampling size with the 4 latent variables is 134. However, according to Gefen et al. (2011) in their theory of sampling, increasing the sample size improves the accuracy of studying the target population in a research project. This is beneficial since it reduces the impact of outliers in data processing and ensures the development of statistically meaningful results. Finally, large sample size can generate significant results for the variables in this study and is vital to improve the findings' generalizability (Patel et al., 2003). The researchers initiated contact with a total of 427 online restaurants through telephone communication. Out of this sample, a total of 294 restaurant managers expressed their willingness to take part in the study. Following this, online questionnaires were distributed to the restaurant managers via WeChat and QQ. A total of 220 valid survey responses were collected, constituting the sample population for this study.

B. Measurement

All the items utilized in this study were derived from well-established scales crafted by previous scholars (Atuahene and Li, 2002; Xie et al.,2006; Derrien et al., 2020; de Sousa et al., 2020). The author selected 15 items, with guidance from two experienced senior academics who have expertise in researching RP. These items were specifically chosen to align with the unique characteristics of OFDS services. Following this, the items underwent translation into Chinese through the back-translation technique. To guarantee translation accuracy, four academics conducted separate translations of the items from English to Chinese and vice versa. The researchers utilized a Likert scale with five points, ranging from "strongly disagree" to "strongly agree", in order to refine the items.

This questionnaire was distributed to 30 respondents who operate takeout restaurants in Baise, Guangxi, China. The scale was modified according to their feedback to make it understandable to restaurant managers.

Size, age, prices of main dishes are significant determinants of RP (Van et al., 2021). During the semi-structured interviews, several respondents highlighted that the impact of OFDS service on different types of restaurants is not the same.

IV. Result

This research model are built using reflective variables based on the fundamental conceptual model. Given the limited sample size and the non-normal distribution of the data, this study utilized Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the hypothesis (Hair et al., 2017). The research model was analyzed using SmartPLS 3.3.3 (Lee and Hallak, 2018).

A. Demographic Profile of the Respondents

This study consists of 164 ordinary restaurants (74.5%) and 56 ghost kitchens (25.5%). The description of the demographic profile of the respondents is described in Table 2.

B. Assessing Common Method Bias (CMB)

During Harman's single factor test, four factors

Variable	Variable Items		Percent(%)	
To theme of diving ones	Yes	164	74.5	
is there a timing area	No	56	25.5	
	Lower than 1 year	91	41.4	
	1 to 3 years	74	33.6	
Age of the restaurant	3 to 5 years	33	15	
	5 to 7 years	11	5.0	
	Above 7 years	11	5.0	
	Lower than 1 year	91	41.4	
	1 to 3 years	74	33.6	
Age of takeaway business	3 to 5 years	34	15.5	
	5 to 7 years	11	5.0	
	Above 7 years	10	4.5	
	Lower than 20	29	13.2	
	20 to 50	91	41.4	
Size(m ²)	50 to 90	56	25.5	
	90 to 150	29	13.2	
	Above 150	15	6.8	

Table 2. Merchant respondents' profile

Variable	Items	Frequency(n=104)	Percent(%)	
	Lower than 3	53	24.1	
Number of smalesses	4 to 5	90	41.9	
Number of employees	6 to 9	67	30.5	
	Above 10	10	4.5	
	Lower than 30RMB	152	69.09	
The prices of main dishes	30 to 60 RMB	53	23.83	
	Above 6 RMB	15	7.08	

Table 2. Continued

were presented and the most-co-variance explained by one factor was 41.2 percent lower than the threshold of 50%. As unrotated factor analysis of all study items generated four factors in total explaining 76.3 percent of the variance. Given that a single factor solution did not arise, and a general factor did not account for most of the variance, common method variance was not regarded as a substantial threat in this research (Podsakoff and Organ, 1986).

C. The Measurement Model

The data pertaining to reliability are presented in Table 3. The data highlights the strong internal consistency reliability of the measures, as evidenced by their composite reliability. The range of Cronbach's alpha values observed in this study is between 0.834 and 0.969, which exceeds the established minimum threshold of 0.60 (Hair et al., 2017). Furthermore, the composite dependability values for the several measures range from 0.889 to 0.979, surpassing the suggested criterion of 0.70 as proposed by J.C. Nunnally (1978). Follow the guidelines proposed by Fornell and Larcker's (1981), the average variance extracted (AVE) for each measure exceeds 0.50. The square root of AVE, denoted by the bold element on the diagonal in Table 4, is greater than the elements located below the diagonal. These elements depict the relationship between structures. This finding provides assurance of the discriminant validity of the variables.

The outer loading elements estimated by the least

squares method (Least Squares) are shown in Table 3. These data range from a minimum value of 0.771 to a maximum value of 0.97. Significantly, each item exhibited a higher loading on its respective construct than others. In addition, it is worth noting that the factor loading for each item on its respective construct exhibited a considerable level of statistical significance (p < 0.0001).

D. The Structural Model

The methodology was employed to develop interaction terms by multiplying the indicators of the predictor and moderator constructs (Al-Gahtani et al., 2007). Using a hierarchical approach, we compared models including interaction variables to those that did not. Figure 2 presents the outcomes of the structural model without moderator variables. The beta route coefficients provide insights into the extent to which various OFDS services influence the performance of restaurants, highlighting the variances in their impact. The beta path coefficients for basic services and click-through promotion service are 0.434 (p < 0.05) and 0.355 (p < 0.001), respectively. Both basic services and click-through promotion service have a beneficial impact on RP, with basic services having a more significant benefit compared to click-through promotion service. The observed directionality exhibits both expected characteristics and a statistically significant relationship. On the other hand, it can be concluded that the discount service has no substantial impact on the performance of restaurants. This is supported by the beta path coefficient of -0.029, which is not statistically significant at the 0.05 level (p=0.645 > 0.05).

To concisely describe the findings of the research, we excluded the statistically insignificant moderator constructs, such as age. The beta values of all path

Table	23.	Evaluation	of	measurement	model
-------	-----	------------	----	-------------	-------

Dimensions	Items		Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	
	al. Joining the delivery platform has increased your sales.	0.863		0.926	0.714	
	a2. Joining the delivery platform has increased your customer traffic.	0.863	0.9			
a. The basic services	a3. Joining the delivery platform has increased your visibility.	0.839				
	a4. Joining the delivery platform has expanded your market.	0.823				
	a5. Joining the delivery platform has increased your income.	0.837	-			
	b1. The introduction of discounts and concessions has increased your daily order volume.	0.97			0.94	
b. The discount promotion service	b2. The introduction of discounts and concessions has has increased your customer traffic.	0.982	0.969	0.979		
	b3. The introduction of discounts and concessions has increased your click through rate.	0.956	_			
	c1. Purchase promotional services to make your store more busy.	ase promotional services to make your 0.841 more busy.				
c. Recommendation service	c2. The purchase promotion business has increased the number of new customers for you.	0.904	0.836	0.901	0.752	
	c3. Purchasing promotional services has increased your click through rate.	0.856				
	d1. The discount promotion and purchase promotion business you have done on the delivery platform have improved your competitiveness.	0.836		0.667		
d. Merchant	d2. Delivery platforms and value-added services 0.809 give you more confidence when facing competitors.				0.000	
performance	d3. Using the delivery platform and participating in its discounts and promotions has increased your sales.	0.842	0.034 0.089			
	d4. Using the delivery platform and participating in its discounts and promotions has increased your store's revenue.	0.778	_			

Table 4. Discriminant validity (intercorrelations) of variable constructs

	basic services	Discount promotion	Click through Promotion service	Restaurant performance
basic services	0.845			
Discount promotion	0.504	0.867		
Click through Promotion service	0.193	0.075	0.969	
Restaurant performance	0.607	0.573	0.077	0.817

coefficients were modified due to the impact of the moderator constructs as shown in Figure 3. The beta coefficient for the relationship between basic services and RP exhibited a notable rise, rising from 0.434 to 0.514. On the other hand, there was a decline in the beta coefficient for the relationship between click-through business service and RP, with the value dropping from 0.355 to 0.309. Furthermore, the beta coefficient representing the relationship between discount and RP experienced a shift from -0.029 to 0.021. However, it is important to note that this change was rather small and did not reach statistical significance.

The model that incorporated these moderator factors produced unforeseen results. More specifically, age did not exhibit any significant moderating effect. All the moderator constructs exclusively exhibited interaction effects with click-through business service upon RP. It is worth mentioning that there was a significant positive relationship between the size of the restaurant and the click-through business service, as evidenced by a beta value of 0.237 (p < 0.05). In contrast, the prices of main dishes negatively interacted with click-through business service upon RP, evidenced by a beta value of -0.272 (p < 0.05).



Figure 3. Structural model results without interacting variables (path coefficients and P-values)



Figure 2. Structural model results without interacting variables (path coefficients and P-values)

It is important to assess the magnitude and direction of the main path coefficients, taking into consideration the effects of interaction factors (Al-Gahtani et al., 2007). The direct-only model explains 45.8% of the variability in RP, while the moderating model demonstrates a larger share, with an R2 value of 0.552.

V. Conclusions and Recommendations

A. Conclusion

The findings are all summarized in Table 5. As shown in this table, the basic services had a favorable impact on the RP, however, no moderating variable exhibited an interaction with the RP. Additionally, our research findings indicate that the impact of discount service on RP was weakly negative, but not statistically significant, regardless of any potential interaction with the moderator variables. This finding

Table	5.	Hypotheses	conc	lusions
-------	----	------------	------	---------

aligned with the consensus among scholars on the complexity of discounted service impact on business performance, which means that the impact of discount promotions on business performance varies in different market contexts and discount designs (Lattin & Bucklin, 1989; Mela et al., 1998). The takeout market is characterized by intense pricing rivalry and deep platform intervention. One possible explanation for this phenomenon is that OFD platforms intentionally mitigate the influence of discounts on the growth of RP by changing the background algorithm of the OFD platform, with the aim of incentivizing more restaurants to purchase click-through promotion service. Alternatively, this situation may arise due to restaurants implementing ineffective discount strategy.

Within the highly competitive realm of the restaurant industry, the OFD platform presents a distinctive promotional and advertising medium for dining companies. The hypothesis put forward in this study suggests that the utilization of click-through promotion service as a means of advertising plays a crucial

Hypotheses	Finding	Result
H1: The basic services of OFD platform has a significant positive influence on RP.	Yes: (beta = 0.415, p < 0.001)	Supported
H2: The discount service of the OFD platform has a significant positive influence on RP.	No: not significant	Not supported
H3: Purchasing the click-through promotion service has a significant positive influence on RP.	Yes: (beta = 0.366, p < 0.001)	Supported
H4a: The size will positively moderate the influence of basic services on RP.	No: not significant	Not supported
H4b: The size will positively moderate the influence of discount service on RP.	No: not significant	Not supported
H4c: The size will positively moderate the influence of click-through promotion service on RP.	Yes: (beta = 0.237, p < 0.05)	Supported
H4d: Age will positively moderate the influence of basic services on RP.	No: not significant	Not supported
H4e: Age will positively moderate the influence of discount service on RP.	No: not significant	Not supported
H4f: The age will positively moderate the influence of click-through promotion service on RP.	No: not significant	Not supported
H4g: The prices of main dishes will positively moderate the influence of basic services on RP.	No: not significant	Not supported
H4h: The prices of main dishes will positively moderate the influence of discount service on RP.	No: not significant	Not supported
H4i: The prices of main dishes will positively moderate the influence of click-through promotion service on RP.	Yes: (beta = -0.272, $p < 0.05$)	Refused

role in improving overall performance. Nevertheless, the comparatively elevated cost of service may make it economically impractical for many restaurants. Consequently, we hypothesized that the implementation of click-through marketing strategies would have a favorable impact on the overall performance of restaurants. There was a positive interaction between size and click-through business service on RP. This implies that the impact of click-through business service on enhancing performance is particularly significant for restaurants of considerable size. The operational issues faced by small restaurants are exacerbated by this phenomenon, although the extent of its impact differs across different types of eateries. It is imperative to acknowledge that small-scale restaurants may not necessarily be at a disadvantage due to the implementation of this particular service. The prices of main dishes negatively interacted with click-through business service upon RP. This finding indicates that as the level of the main dishes increases, the restaurant's reliance on click-through business service decreases. This phenomenon is caused by the spending habits of consumers. Consumers are more willing to order high-end food from restaurants rather than ordering takeout.

B. Implication

1. Theoretical Implication

This study develops a novel model based on business performance theory. The focus is on exploring the impact of OFDS services on RP. Additionally, this study examines the moderating effect of merchant attributes on the relationship between OFDS services and RP. Understanding these correlations is essential, as it can provide a solid theoretical foundation for relevant research. This approach not only addresses the direct impacts of OFDS services but also delves into the nuanced ways merchant characteristics influence these relationships.

2. Practical Implication

First, discount service does not significantly improve merchant performance. While discounts may enhance the online customer traffic and transaction volume of merchants, they cannot substantially augment their profits. Therefore, catering enterprises should not regard price wars as the main method to improve competitiveness.

Furthermore, click-through promotion service enhances RP substantially. Utilizing click-through promotion service can significantly enhance merchants' order volume and visibility. Therefore, merchants should purchase click-through promotion service at their discretion.

C. Limitations

This research faces two primary limitations. Firstly, its geographical scope is confined to Baise Guangxi, a middle-sized city in China. This constraint may limit the representativeness of our findings for the broader Chinese population. To enhance generalizability, we recommend employing extensive parametric sampling. This approach aligns with Saunders et al. (2009), who suggest that a larger sample size can lead to a more uniform distribution, thereby yielding more reliable results. Secondly, the study gathered data in a relatively short period just after the pandemic. This might not permit the data to represent the long-term takeout business operations of the restaurants in the takeout industry.

References

- Ahuja, K., Chandra, V., Lord, V., & Peens, C. (2021). Ordering in: The rapid evolution of food delivery. McKinsey & Company. p. 22.
- Al-Gahtani, S. S., Hubona, G. S., & Wang, J. (2007). Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information & Management*, 44(8), 681-691.

- Ansari, A., & Carl, M. (2003). E-Customization. Journal of Marketing Research, 40, 131-45.
- Atuahene-Gima, K., & Li, H. (2002). When does trust matter? Antecedents and contingent effects of supervisee trust on performance in selling new products in China and the United States. *Journal of Marketing*, 66(3), 61-81.
- Brislin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner & J. W. Berry (Eds.), *Field methods in cross-cultural research* (pp. 137-164). Sage Publications, Inc.
- Chan, T.Y., Wu, C., & Xie, Y. (2011). Measuring the lifetime value of customers acquired from Google search advertising. *Marketing Science*, 30(5), 835-850.
- Chen, H.-S., Liang, C.-H., Liao, S.-Y., & Kuo, H.-Y. (2020). Consumer attitudes and purchase intentions toward food delivery platform services. *Sustainability*, 12(23), 10177.
- Chen, B. S. Y. (2018). What makes restaurants successful? *Hospitality Insights*, 2(1), 10-12.
- Chen, G. (2009). Organizational learning and learning organization: Concept, capability model, measurement and impact on organizational performance. *Management Review*, 21(1), 107-116.
- Chen, M., Hu, M., & Wang, J. (2022). Food delivery service and restaurant: Friend or foe? *Management Science*, 68(9), 6539-6551.
- Cheng, M., Anderson, C. K., Zhu, Z., & Choi, S. C. (2018). Service online search ads: from a consumer journey view. *Journal of Services Marketing*, 32(2), 126-141.
- Cho, M., Bonn, M. A., & Han, S. J. (2020). Innovation ambidexterity: Balancing exploitation and exploration for startup and established restaurants and impacts upon performance. *Industry and Innovation*, 27(4), 340-362.
- de Sousa, D. D. A., de Sousa, J. I., & Vieira, L. F. (2020). SEGMETRIK: Protocol and metrics for advertisement performance tracking in VANETs. *Vehicular Communications*, 22, 100212.
- DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60-95.
- Derrien, F., Garel, A., Romec, A., & Weisskopf, J. P. (2020). Online reputation and debt capacity. *Journal of Financial* and Quantitative Analysis, 1-41. doi:10.1017/S002210902 3000248
- DiPietro, R. B., Parsa, H. G., & Gregory, A. (2011). Restaurant QSC inspections and financial performance: An empirical investigation. *International Journal of Contemporary Hospitality Management*, 23(7), 982-999.
- Eisenmann, T., Parker, G. and Alstyne, M. (2006). Strategies for two-sided markets. *Harvard Business Review*, 84(10), 92-101.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149-1160.
- Feng, H., & Chen, Y. (2016). Research on innovation of

platform business models - Analysis of temporal and spatial alignment based on the internet environment. *Industrial Economy of China*, (3), 99-113.

- Feng, J., Bhargava, H. K., & Pennock, D. M. (2007). Implementing sponsored search in web search engines: Computational evaluation of alternative mechanisms. *INFORMS Journal on Computing*, 19(1), 137-48.
- Fernandes, E., Moro, S., Cortez, P., Batista, F., & Ribeiro, R. (2021). A data-driven approach to measure restaurant performance by combining online reviews with historical sales data. *International Journal of Hospitality Management*, 94, 102830.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Furunes, T., & Mkono, M. (2019). Service-delivery success and failure under the sharing economy. *International Journal of Contemporary Hospitality Management*, 31(8), 3352-3370.
- Gefen, D., Rigdon, E. E., & Straub, D. (2011). Editor's comments: An update and extension to SEM guidelines for administrative and social science research. *MIS Quarterly*, 35(2) 3-14.
- Gold, M. S., Sehayek, D., Gabrielli, S., Zhang, X., McCusker, C., & Ben-Shoshan, M. (2020). COVID-19 and comorbidities: A systematic review and meta-analysis. *Postgraduate Medicine*, 132(8), 749-755.
- Guadagni, P. M., & Little, J. D. 1983. A logit model of brand choice calibrated on scanner data. *Marketing Science*, 2(3), 203-238.
- Guillet, B. D., Seo, K., Kucukusta, D., & Lee, S. (2013). CEO duality and firm performance in the US restaurant industry: Moderating role of restaurant type. *International Journal of Hospitality Management*, 33, 339-346.
- Gupta, S., McLaughlin, E., & Gomez, M. (2007). Guest satisfaction and restaurant performance. *The Cornell Hotel* and Restaurant Administration Quarterly, 48(3), 284-298.
- Haber, S., & Reichel, A. (2005). Identifying performance measures of small ventures—the case of the tourism industry. *Journal of Small Business Management*, 43(3), 257-286.
- Hair, J. F. H., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.). Los Angeles: Sage.
- Hamann, P. M., Schiemann, F., Bellora, L., & Guenther, T. W. (2013). Exploring the dimensions of organizational performance: A construct validity study. *Organizational Research Methods*, 16(1), 67-87.
- Hao, Y., Qu, L., & Wu, B. (2008). The research about corporation management performance integration evaluation system(CMPIES). Beijing: Economic Management Press. pp. 5-8.
- Herington, C., & Weaven, S. (2009). E-retailing by banks: e-service quality and its importance to customer

satisfaction. European Journal of Marketing, 43(9/10), 1220-1231.

- Hoque, A. Y., & Gerald, L. L. (1999). An information search cost perspective for designing interfaces for electronic commerce. *Journal of Marketing Research*, 36(3), 387-94.
- Horta, P. M., Matos, J. D. P., & Mendes, L. L. (2022). Food promoted on an online food delivery platform in a Brazilian metropolis during the coronavirus disease (COVID-19) pandemic: a longitudinal analysis. *Public Health Nutrition*, 25(5), 1336-1345.
- Huifeng, P., & Ha, H. Y. (2021). Temporal effects of online customer reviews on restaurant visit intention: The role of perceived risk. *Journal of Hospitality Marketing & Management*, 30(7), 825-844.
- Nunnally, J.C. (1978). Psychometric theory. New York: McGraw Hill.
- Jang, Y. J. (2021). Building restaurant customers' trust amidst Covid-19 crisis through value-and performance-based information: Risk perception as a moderator. *Global Business & Finance Review (GBFR)*, 26(3), 111-123.
- Jang, Y. J. (2022). Understanding restaurant customers' environmental behavior in the social media context: An application of theory of planned behavior. *Global Business* & *Finance Review*, 27(2), 48-60.
- Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, 57(3), 53-70.
- Jerath, K., Ma, L., Park, Y., & Srinivasan, K. (2011). A 'position paradox' in sponsored search auctions. *Marketing Science*, 30(4), 612-627.
- Jue, C. H. E. N., & Yunhong, H. A. O. (2009). Service system decoupling for mass customization: A case study in catering services. *Journal of Service Science and Management*, 2(4), 255-264.
- Jedidi, K., Japal, S., & Manchanda, P. (2003). Measuring heterogeneous reservation prices for product bundles. *Marketing Science*, 22(1), 107-130.
- Kim, W. G., Li, J. J., & Brymer, R. A. (2016). The impact of social media reviews on restaurant performance: The moderating role of excellence certificate. *International Journal of Hospitality Management*, 55, 41-51.
- Kimes, S. E. (1999). Implementing restaurant revenue management: A five-step approach. Cornell Hotel and Restaurant Administration Quarterly, 40(3), 16-21.
- Kimes, S. E., & McGuire, K. A. (2001). Function-space revenue management: A case study from Singapore. *Cornell Hotel and Restaurant Administration Quarterly*, 42(6), 33-46.
- Kukanja, M., Planinc, T., & Žnidaršič, A. (2023). The interplay among restaurant SMEs' financial, quality, and managers' perceived business performance: A balanced scorecard approach. *Tourism: An International Interdisciplinary Journal*, 71(2), 270-284.
- Lattin, J. M., & Bucklin, R. E. 1989. Reference effects of price and promotion on brand choice behavior. *Journal*

of Marketing Research, 26(3), 299-310.

- Lee, C., & Hallak, R. (2018). Investigating the moderating role of education on a structural model of restaurant performance using multi-group PLS-SEM analysis. *Journal* of Business Research, 88, 298-305.
- Lee, S. M., Lim, K. J., Swanson, E., Park, D. H., & Lee, Y. K. (2016). Authentic leadership and its consequences in a hotel restaurant context. *Global Business & Finance Review (GBFR)*, 21(2), 1-19.
- Li, C., Mirosa, M., & Bremer, P. (2020). Review of online food delivery platforms and their impacts on sustainability. *Sustainability*, 12(14), 5528.
- Llach, J., Perramon, J., del Mar Alonso-Almeida, M., & Bagur-Femenías, L. (2013). Joint impact of quality and environmental practices on firm performance in small service businesses: An empirical study of restaurants. *Journal of Cleaner Production*, 44, 96-104.
- Mela, C. F., Jedidi, K., & Bowman, D. (1998). The long-term impact of promotions on consumer stockpiling behavior. *Journal of Marketing Research*, 35(2), 250-262.
- Montgomery, A. L., Kartik, H., Rammaya, K., & Karen, B. C. (2004). Designing a better shopbot. *Management Science*, 50(2), 189-206.
- Niu, F., Zhang, Y.L., & Yang, J. (2011). Entrepreneurial team heterogeneity and new firm Performance: The moderating effect of leaders' optimism. *Management Review*, 23(11), 110-119.
- Noorkhizan, M. H. I., Radzi, S. M., Abdullah, F. S. C., & Azdel, A. A. (2012). Revenue management practices and restaurant performance: A study on theme restaurants in Klang Valley, Malaysia. In *Current issues in hospitality* and tourism: Research and innovations (pp. 117-120). Routledge.
- Oh, Y. K., & Yi, J. (2023). Determinants of Online Food Delivery (OFD) Sales during COVID-19. *Global Business* & Finance Review, 28(2), 93.
- Park, A. (2016). Should franchise restaurant companies own so much real estate? *Global Business & Finance Review* (*GBFR*), 21(1), 13-23.
- Patel, M. X., Doku, V., & Tennakoon, L. (2003). Challenges in recruitment of research participants. *Advances in Psychiatric Treatment*, 9(3), 229-238.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal* of Management, 12(4), 531-544.
- Runyan, R., Droge, C., & Swinney, J. (2008). Entrepreneurial orientation versus small business orientation: what are their relationships to firm performance? *Journal of Small Business Management*, 46(4), 567-588.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). Research methods for business students. In *Business* (Vol. 5). Pearson.
- Sim, S. C., Kaliannan, M., & Avvari, M. (2021). Conceptualising HR outsourcing effectiveness and scale development of HROSERVPERF using PLS-SEM. *Benchmarking: An*

International Journal, 28(9), 2682-2710.

- Slater, S. F., & Narver, J. C. (1994). Does competitive environment moderate the market orientation-performance relationship? *Journal of Marketing*, 58(1), 46-55.
- Song, M., & Montoya-Weiss, M. M. (2001). The effect of perceived technological uncertainty on Japanese new product development. *Academy of Management journal*, 44(1), 61-80.
- The KPI Institute. (2016). Top 25 Restaurant KPIs of 2016 Extended Edition (A. Brudan (ed.)).
- Tian, Y. (2021). Research on the generation, business performance and growth factors of family farms (Doctor of philosophy thesis). Jilin Agricultural University.
- Van Veldhoven, Z., Aerts, P., Ausloos, S. L., Bernaerts, J., & Vanthienen, J. (2021, March). The impact of online delivery services on the financial performance of restaurants. In 2021 7th International Conference on Information Management (ICIM) (pp. 13-17). IEEE.
- Xie, H.M., Liu, C.Y., & Chen, C.H.(2006). The relationship between market orientation and organizational performance: The impact of organizational learning and innovation. *Management World*, 2, 80-94.
- Yeo, V. C. S., Goh, S. K., & Rezaei, S. (2017). Consumer experiences, attitude and behavioral intention toward online food delivery (OFD) services. *Journal of Retailing* and Consumer Services, 35, 150-162.