

Research Paper

Customer Acceptance of QR Menu Ordering System in Luxury Restaurants. A study of Xi'an, China

Ru Xinyu
Taylor's University, Malaysia

Anshul Garg
Taylor's University, Malaysia
Graphic Era (Deemed to be University), India

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Abstract: This study examines the notion that the overall value judgment concerning QR menus would affect customers' behavioural intention and use behaviour to patronise restaurants using this new technology. Thus, explaining how consumers regard the QR menu ordering system in luxury restaurants in Xi'an, China. The current research employed the extended version of the Unified Theory of Acceptance and Use of Technology (UTAUT) model. A simple random sampling method was applied to collect data from customers (n = 307) visiting luxury restaurants using a survey instrument in Xi'an, China. Data were analysed using two different statistical software tools. The Statistical Package for the Social Sciences (SPSS) software was used to study the preliminary data. Smart-PLS was used to test the measurement and structural models in assessing the proposed hypotheses. Results confirm that behavioural intention is influenced by the various constructs used in the study. The findings can help restaurant managers better understand customers' thoughts and attitudes towards the QR menu, thus making timely upgrading and adjustments. Besides, the limitations of the study and future directions are also addressed.

Keywords: QR menu, restaurant technology, UTAUT model, luxury restaurants, menu ordering

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Correspondence: Anshul Garg, Taylor's University, Malaysia. Email: anshul.garg@taylors.edu.my

Introduction

QR codes, or Quick Response codes, are two-dimensional bar codes devised by Toyota for efficiently storing vehicle data. Since its inception, other industries have recognised QR benefits and nowadays, more and more industries have embraced the QR technology to perform their services and make products better. The hospitality and catering industry is no exception. For example, a QR code can help young people who do not have enough related knowledge about the dishes offered in a restaurant. QR codes can also present customers with a restaurant's history in a time-efficient manner, thus increasing customer attraction. Nowadays, more and more young people pay attention to a healthy diet. QR codes can help hotels and restaurants display nutrition facts and food content on menus for patrons to make well-informed decisions when ordering. Further, a restaurant's branch locations and contact information can also be communicated to patrons more efficiently and accurately. Young people nowadays are also really into themed parties and festival celebrations. By scanning QR codes, they can quickly get specific details about such events, such as time, location, price, dishes, etc. Making reservations through QR codes is also very convenient and less prone to errors (Borovyk & Kokhan, 2015).

In recent times, China has been fast progressing towards a cashless society. It is far more convenient for people to pay bills through a QR code than a cash transaction, especially for young customers. The QR code has gradually become popular in restaurants in China for several reasons. First, QR-code food orders are time-saving and accurate because they simplify manual recording and transmitting. It can also reduce errors as machines have better recordability than humans. Second, QR orders can be considered cost-saving because of the low transaction fee — all we need to do is add a small QR sticker on the table. It can also help restaurants and hotels easily collect data. Third, customers can also evaluate other patrons' reviews about specific dishes through the QR code. The chef can also create promotions by referring to customers' reviews. This will increase the service level, customer satisfaction, profit, and reputation, thus forming a virtuous circle (Intal et al., 2020). Finally, China is an internet giant, and the QR technology here is very mature and has been long embraced in various industries.

The QR menu is always characterised as a flexible and new method to achieve higher service quality and customer satisfaction (Bian & Xian, 2019). Recent literature mainly focuses on the QR application in most Western countries, lacking China's analysis, especially the non-first-tier cities. However, the QR code has been widely popular in most cities in China, including some second or third-tier cities such as Xi'an, Zheng Zhou, Hang Zhou, etc. Detailed quantitative research is required to understand why the QR menu has become popular in China and how such a new service process has influenced Chinese customer intention and

behaviour. Meanwhile, by understanding the relationship between QR codes and customer intention, restaurant managers can have a deep and detailed recognition of the current QR trend, thus accurately putting forward future business strategies and objectives. Therefore, this quantitative data analysis aims to gain in-depth insights into customer acceptance of the QR menu in luxury restaurants in Xi'an, China. The analysis will be contextualised with a review of recent literature on the application of QR menus, especially in luxury restaurants in China.

Accordingly, the researchers investigated the following questions:

1. What factors influence customers' ordering experience using QR menus in luxury restaurants in Xi'an, China?
2. How do customers perceive QR menus in luxury restaurants in Xi'an, China?
3. Does any relationship exist between customer technology acceptance and behavioural intentions to use a QR menu ordering system in luxury restaurants in Xi'an, China?

This research addresses the information gap regarding QR menu usage since it applies to the ease of use and consumer service in food ordering by pursuing the following objectives.

1. To identify the factors influencing customers' ordering experience using QR menus in luxury restaurants in Xi'an, China.
2. To analyse customer perception of using QR menus in luxury restaurants in Xi'an, China.
3. To evaluate the relationship between customer technology acceptance and behavioural intentions to use a QR menu ordering system.

Literature Review

QR menus are menus that customers can access from their phones by scanning a QR code. People can use QR menus in various establishments like restaurants, cafes, pubs and bars, hotels and B&Bs, and theatres (StoreKit, 2021). As one of the top 10 QR code users globally, China also adopted the QR menu as a new way of serving their customers better. In recent years in Xi'an, China, almost all restaurants have adopted QR menus. Famous markets and restaurants like Xiao Zhai, Wanda, and Shangri-La have widely used QR menus and have attained specific positive results, such as increased table turnover and service accuracy. Further, the QR code has significantly reduced language barriers and queuing time for some traditional tourist attractions like North Guangji Street.

The QR menu in China has several unique characteristics. WeChat, a popular social media application in China, has provided the QR menu with vitality and unique development. Apart from scanning the QR code in the restaurant, people can scan it on their WeChat to get the latest information and discounts. Owing to

the COVID-19 outbreak and the subsequent regional blockade, people have shifted substantially to social distancing, contactless service, and touchless delivery more than before. Thus, the influence of in-store QRs has vastly decreased. To retain customers' interest and update them on the pandemic prevention and safety measures adopted by their restaurants, proprietors started to publish their most recent unique dishes and anti-pandemic measures through the QR menu in WeChat Moments. For example, in Xi'an, China, luxury restaurants in hotels such as Westin, Shangri-La, and Hilton accelerated their official accounts' posting frequency and the trinity of marketing, service, and payment. The benefit of mature online payment technology such as WeChat Pay is that customers in China can easily use QR codes from initial marketing to final payment, which reduces the time and hassle for both customers and employees (Cheng, 2017).

The current study employed the UTAUT 2 model to examine the QR menu impact factors. The UTAUT 2 model, or the Unified Theory of Acceptance and Use of Technology model, is an extended development model of the UTAUT model. The UTAUT model is a synthesis of 8 different theories and models, namely, the Theory of Planned Behaviour (TPB), Theory of Reasoned Action (TRA), Technology Acceptance Model (TPB), Decomposed Theory of Planned Behaviour (DTPB), Innovation Diffusion Theory (IDT), Model of PU Utilization (MPCU), Social Cognitive Theory (SCT) and Motivational Model (MM) (Sari & Danish, 2018). Among these, TAM has the most influence on the formation of the UTAUT model. However, TAM merely focuses on explaining customer psychological and social aspects while lacking other analysis of other elements. Consequently, Venkatesh et al. (2003) developed the UTAUT model to address these limitations (Chang et al., 2019).

The UTAUT model contains four independent variables, which are performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). It emphasises the importance of utilitarian value and was developed for employee acceptance and use setting (Chang et al., 2019). Subsequently, Venkatesh et al. (2012) further developed the UTAUT model and added four new independent variables — hedonic motivation (HM), price value (PV), experience, and habit — into the UTAUT model and established the UTAUT 2 model, which focuses more on the individual use of technology. The UTAUT 2 model has overcome the main limitations of the TAM and UTAUT model and is now widely applied in many disciplines such as communication technology, e-learning services, and government services.

The present study tested nine variables: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, trust, behaviour intention, and use behaviour. Performance expectancy (PE) is the degree to which technology will benefit consumers performing certain activities. Effort

expectancy (EE) is the degree of ease associated with consumers' use of technology. Venkatesh et al. (2012) viewed effort expectancy as the degree of comfort associated with using an information system. This factor was derived from the perceived ease of use factor (PEOU) as proposed in Technology Acceptance Model (TAM) (Chang, 2012). Social influence (SI) is the degree to which an individual perceives others, such as bosses, peers, subordinates, etc., believe that he or she should use e-commerce. Facilitating conditions (FC) refer to consumer perception of the resources and support available to perform a behaviour or the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system. Hedonic motivation (HM) is one of the new variables added in the UTAUT 2 model compared with the UTAUT model. It is defined as the fun or pleasure derived from using technology. HM has been shown to play a substantial role in determining technology acceptance and use (Venkatesh et al., 2012).

Venkatesh integrated hedonic motivation into the UTAUT 2 model to supplement the UTAUT model with only extrinsic motivation or utilitarian value. The price value (PV) concept in UTAUT 2 has to be defined as consumers' cognitive trade-off between the perceived benefits of the applications and the monetary cost of using them (Yuan et al., 2015). One of the novelties of this research is the addition of the item "trust" to understand better the relationship between customer acceptance of the QR menu in Xi'an, China. Trust was developed as a new item in the extended UTAUT 2 model and has been widely applied to illustrate people's perception of internet-related innovations such as mobile payment and online shopping.

The concept of behaviour intention (BI) can be defined as the subjective approach of consumers toward the adaptability of new technology (such as QR codes). It is a well-established predictor to assess the behaviour of consumers towards technology or actual use of novel technology (Sari & Danish, 2018). BI is an essential variable for both TAM and UTAUT models, especially in modern science and technology innovation, and is frequently viewed as the precursor of user behaviour (Garg, 2019; Garg, 2021). Previous studies referred to BI as perceived attitude and use behaviour (UB) as an actual action, and users' BI would affect the frequency of UB (Chang et al., 2019).

Based on the above discussion, this study proposes the following conceptual framework and hypothesis.

- H1: Customers' performance expectancy towards using the QR menu significantly influences their behavioural intention.
- H2: Customers' effort expectancy towards using the QR menu significantly influences their behavioural intention.
- H3: Social influence significantly impacts customers' behavioural intention using the QR menu.

- H4: Facilitating conditions for using the QR menu significantly influences customers' behavioural intention.
- H5: Hedonic motivation for using the QR menu significantly influences customers' behavioural intention.
- H6: Price and value associated with using the QR menu significantly influence customers' behavioural intention.
- H7: Customers' trust in the QR menu significantly influences customers' behavioural intention.
- H8: Customers' behavioural intention significantly influences customer use behaviour.

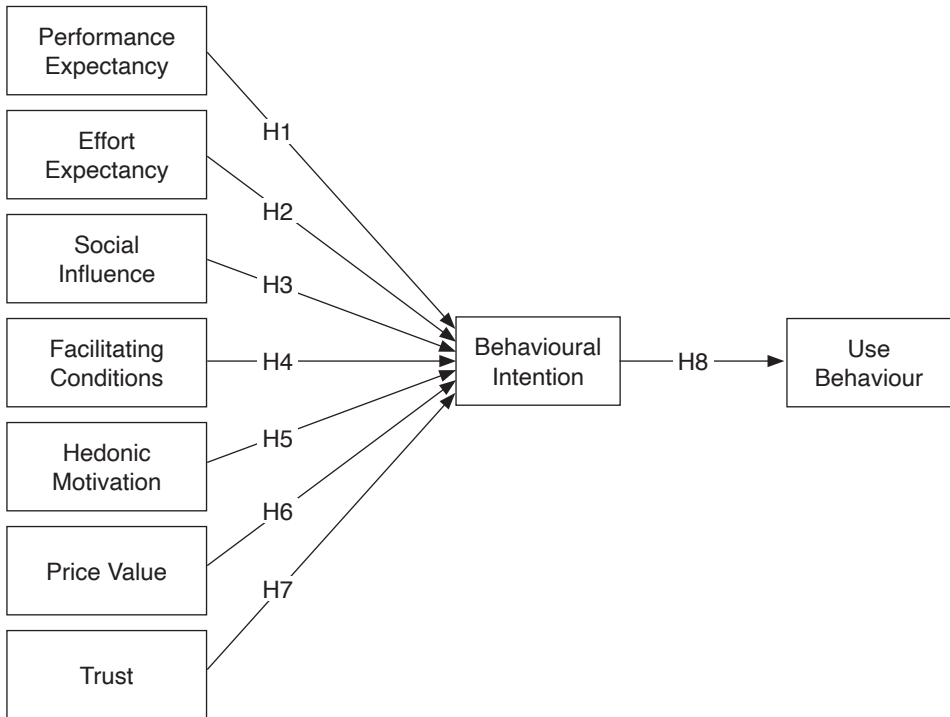


Figure 1. Conceptual framework of study

Methodology

Research Design

This research used an adapted questionnaire to determine the study variables' interrelationships accurately. The questionnaire included an introduction to the purpose of the study. Each single measurement item of this study was adopted from

previous studies to ensure the validity and reliability of the research. The results of the questionnaire were used to test the proposed hypotheses. Each variable was tested based on items adapted from previous studies and then used to form a comprehensive questionnaire.

Instrument Development

A questionnaire was designed with items adapted from past literature. The questionnaire for the current study comprised two sections. The first section included six questions on the respondents' demographic characteristics: age, gender, education, marital status, profession, and income. The second section contained 43 items on the nine significant constructs found in the proposed model. The items for the various constructs were adapted from Palau-Saumell et al. (2019), Lee et al. (2019), Alalwan et al. (2017) as well as Tak and Panwar (2017). The responses in the second section were measured using a 5-point Likert scale with values ranging from "Strongly disagree" (1) to "Strongly agree" (5).

Data Collection

Data were collected from patrons at several luxury restaurants in Xi'an, China, implementing QR menus such as Angsana, Hilton, Shangri-La, and Westin. The survey instrument consisted of 43 questions in total. A simple random sampling method was applied to select respondents so that every customer who used the QR menu had the same probability of answering the online questionnaire. The questionnaire was created in the Chinese language and also translated into English. Translating the questionnaire into English helped the researcher collect data from non-Chinese-speaking respondents. Most importantly, the authors requested permission from the restaurant management to contact guests to seek their participation in the research. The data collection process started in June and lasted for about two months until the authors achieved the required sample.

Data Analysis

After two months, the authors collected 307 responses of the online questionnaires. The authors first used Statistical Package for Social Science (SPSS) to analyse the nine demographic items and describe the demographic profile of the respondents. Then, smart-PLS was applied to conduct data analysis. The authors used confirmative factor analysis (CFA) to test the reliability of each item. Next, the UTAUT 2 model and the proposed conceptual framework were assessed using smart-PLS. Finally, the mediating variable was analysed using structural equation modelling (Lee et al., 2019).

Multicollinearity Test

Multicollinearity is established when predictor variables are highly correlated with each other. It means that the regression model will not accurately associate variance in the outcome variable with the correct predictor variable, leading to unclear results and incorrect inferences. And such problems only occur in multiple linear regression models (Solutions, 2021). In general, multicollinearity can be tested using variance inflation factor (VIF). If the VIF value is below 10 or 5, we can assume that the measurement model barely has multicollinearity problems. In the present study, the author tested the multicollinearity for each variable, and the results are shown in Tables 1 and 2. The results indicate that the VIF for outer values is relatively low, indicating no multicollinearity issues. However, the VIF for inner values was a bit high, especially for variable HM. The VIF value for HM was 10.321, slightly higher than 10.00, which suggest probable multicollinearity issues for these two variables. Overall, the model used for this research almost met the multicollinearity standard.

Table 1. Multicollinearity test for inner VIF values

	BI	EE	FC	HM	PE	PV	SI	TRUST	UB
BI									1.000
PE	9.030								
EE	8.648								
SI	8.178								
FC	7.290								
HM	10.321								
PV	7.956								
TRUST	8.966								
UB									

Table 2. Multicollinearity test for outer VIF values

	VIF		VIF		VIF
FC1	2.484	PE5	2.677	TR2	2.821
FC2	2.425	PV1	3.133	TR3	2.551
FC3	2.445	PV2	2.852	TR4	2.692
FC4	2.507	PV3	2.613	TR5	2.588
HM1	2.751	PV4	2.802	UB2	1.720
HM2	2.494	PV5	2.763	UB3	2.442
HM3	2.372	SI1	2.464	UB4	2.335

Table 2. (cont)

	VIF		VIF		VIF
HM4	2.468	SI2	2.859	UB5	2.201
PE1	2.598	SI3	2.921		
PE3	2.956	SI4	2.624		
PE4	2.853	TR1	2.848		

Data Analysis

Reliability of Study

Cronbach’s alpha measures internal consistency to understand how closely a set of items are related as a group. It is considered a measure of scale reliability (UCLA, 2011). The data have excellent reliability if the value is more significant than 0.90. When Cronbach’s alpha is more significant than 0.80, we can assume that the data is of great reliability. Table 3 displays Cronbach’s alpha coefficients for all constructs used in the study. All the measures exhibited adequate reliability with Cronbach’s alpha values ranging between 0.870 and 0.937, which fall well within the recommended threshold of 0.70 (Pallant, 2005). This suggests that the “measures are free from random error and thus reliability coefficients estimate the amount of systematic variance” (Churchill, 1979). The overall Cronbach alpha value was also found to be 0.989, which is considered extremely good. The higher Cronbach Alpha values suggest that all the items were internally consistent, and the higher Cronbach Alpha for the overall scale specifies that convergent validity was met.

Table 3. Cronbach Alpha coefficients for all constructs

Construct	Cronbach Alpha (α)	Number of Items
Performance Expectancy	0.921	5
Effort Expectancy	0.923	4
Social Influence	0.907	4
Facilitating Conditions	0.894	4
Hedonic Motivation	0.899	4
Price Value	0.924	5
Trust	0.919	5
Behavioural Intention	0.937	6
Use Behaviour	0.870	5
Overall	0.989	42

Demographic Analysis

From the total collected sample size of 307 respondents, 52.4% were male, and 47.6% were female. Most respondents were 36–50 years old, comprising 34.2% of respondents, followed by the 21–35 age group with 31.3%, while 23.1% were aged between 51 and 65, and 7.5% were above 65 years old. This illustrates that most users of the QR menu in luxury restaurants in Xi'an are young adults, and this technology is also popular among older people. Results also depict that most (77.5%) respondents were married, while 11.7% were single. The remaining respondents were divorced (7.5%) or widowed (3.3%). Regarding educational background, 65.1% of respondents held a bachelor's degree, 17.3% held a master's degree, 12% were with secondary school certificates, and 2.6% were PhD holders. Regarding the profession of the respondents, 28% worked as professionals, 25.1% were executives or managers, 20.8% were self-employed, 17.6% were government employees, and 1.3% were retired people. It was also found that 7.2% of the respondents were students. Table 4 also shows that 30.9% of respondents had an income level between RMB 5,001 to RMB 7,000, followed by 30.6% of respondents who had an income level between RMB 7,001 to RMB 9,000. 24.1% of respondents reported their income as above RMB 9000, and 8.8% earned between RMB 3,001 and RMB 5,000. Lastly, 5.5% of respondents reported their income as below RMB 3,000.

Table 4. Demographics of the study (n = 307)

Variable	Category	Frequency (F)	Percentage (%)
Gender	Male	161	52.4
	Female	146	47.6
Age	Below 21	12	3.9
	21 – 35	96	31.3
	36 – 50	105	34.2
	51 – 65	71	23.1
	Above 65	23	7.5
Marital Status	Single	36	11.7
	Married	238	77.5
	Divorced	23	7.5
	Widowed	10	3.3
Education	Primary	6	2
	Secondary/Vocational	40	12
	Bachelor's degree	200	65.1
	Master's degree	53	17.3
	PhD	8	2.6

Table 4. (cont')

Variable	Category	Frequency (F)	Percentage (%)
Profession	Student	22	7.2
	Professional	86	28
	Executive/Manager	77	25.1
	Self-employed	64	20.8
	Government employee	54	17.6
	Retired	4	1.3
Monthly Income (RMB)	Below 3,000	17	5.5
	3,001–5,000	27	8.8
	5,001–7,000	95	30.9
	7,001–9,000	94	30.6
	Above 9,000	74	24.1
			307

KMO and Bartlett’s Test of Sphericity

The Kaiser-Meyer-Olkin (KMO) index is an indicator of predictive relevance, for which a KMO index (= 1) demonstrates that indicators of the items should be added. In contrast, a KMO index (= 0) suggests that the method of arranging the items into factors is insignificant. Furthermore, a KMO index greater than 0.6 is considered reasonable by Pett et al. (2003). The KMO and Bartlett’s Test of Sphericity results are shown in Table 5, which illustrates that the Kaiser-Meyer-Olkin (KMO) measurement of sampling adequacy was .989, well above the recommended value of 0.7. The Bartlett Sphericity Test was $p < .001$, indicating the adequacy of the data collected for executing factor analysis. The KMO statistic varies between 0 and 1. A value close to 1 suggests that the correlation patterns are comparatively compact and that the exploratory factor analysis is required to generate distinct and consistent factors (Field, 2013).

Table 5. KMO statistics and Bartlett’s test of sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.989
Bartlett’s Test of Sphericity	Approx. Chi-Square	14040.585
	Df	946
	Sig.	.000

Exploratory Factor Analysis

Exploratory factor analysis (EFA) has been widely used to develop scales and subscales (Hair Jr et al., 2010). Factor analysis aims to identify the fewest possible

constructs to reproduce the original data (Coulacoglou & Saklofske, 2017). Each variable’s relationship to another factor tells whether the item is related to only one factor (constructs) or more than one (Gorsuch, 2012). Therefore, applying EFA using principal components analysis with varimax rotation was imperative to test the current study’s hypothesis. Table 6 shows that nine factors influenced the sample and establishes that such factors were internally consistent. This confirmed that the item’s loading to latent variables less than 0.5 was suppressed from the output. Table 6 shows that all items under the various constructs used in this study met the minimum factor loading criterion ($> .5$); however, item UB1 of use behaviour was deleted due to its weak factor loadings ($< .5$) (Arifin & Yusoff, 2016; Maskey et al., 2018).

Table 6. Summary of CFA model estimates

Constructs / Items	Factor loadings
Performance Expectancy	
PE1: I find using the QR menu useful in my daily life when ordering.	0.863
PE2: Using the QR menu helps me quickly search for dishes and related information.	0.867
PE3: Using the QR menu increases my efficiency when searching for dishes and restaurants.	0.884
PE4: I can save time using the QR menu when searching for information.	0.877
PE5: I can make orders faster using the QR menu than other methods.	0.868
Effort Expectancy	
EE1: I believe learning how to use the QR menu is easy.	0.877
EE2: My interaction with the QR menu is clear and understandable.	0.859
EE3: I find the QR menu easy to use.	0.875
EE4: I believe it is easy to become skilful at using the QR menu.	0.869
Social Influence	
SI1: People important to me (such as friends or family) think I should use the QR menu to purchase food.	0.867
SI2: People who influence my behaviour think I should use the QR menu to purchase food.	0.892
SI3: People whose opinions I value prefer using a QR menu to purchase food.	0.898

Table 6. (cont)

Constructs / Items	Factor loadings
SI4: I make food ordering through QRs because many people are doing so.	0.880
Facilitating Conditions	
FC1: I have the necessary resources or equipment (such as smartphones) to use the QR menu.	0.868
FC2: I have the necessary knowledge to use the QR menu.	0.862
FC3: I feel comfortable using the QR menu.	0.872
FC4: I believe using the QR menu is compatible with other technologies.	0.880
Hedonic Motivation	
HM1: Using the QR menu is fun.	0.892
HM2: Using the QR menu is enjoyable.	0.875
HM3: Using a QR menu is entertaining.	0.867
HM4: Using the QR menu gives me an unforgettable and deep impression.	0.871
Price Value	
PV1: The QR menu is reasonably priced.	0.893
PV2: I can save money using the QR menu because of the special discounts.	0.878
PV3: I like to search for cheaper dishes using the QR menu.	0.864
PV4: The QR menu offers better value for my money.	0.875
PV5: The QR menu orders are lower priced than other methods.	0.872
Trust	
TR1: I believe the QR menu is trustworthy.	0.879
TR2: I don't doubt the honesty of the QR menu.	0.875
TR3: I feel assured that the legal and technological structures protect me from problems on the QR menu.	0.859
TR4: Even if not monitored, I trust the QR menu to do the job right.	0.870
TR5: The QR menu can fulfil its tasks.	0.864

Table 6. (con't)

Constructs / Items	Factor loadings
Behavioural Intention	
BI1: I intend to use the QR menu in the future.	0.883
BI2: I will always try to use the QR menu daily.	0.877
BI3: I plan to continue to use the QR menu frequently.	0.896
BI4: I have decided to use a QR menu for ordering food the next time.	0.848
BI5: I like ordering food using the QR menu, which I will use in the future.	0.853
BI6: Given that I have a smartphone capable of accessing the internet, I would use the QR menu for food ordering in restaurants.	0.877
Use Behaviour	
UB1**: I rarely use the QR menu to order restaurant food.	0.496
UB2: I sometimes use a QR menu to order restaurant food.	0.785
UB3: I often use the QR menu to order restaurant food.	0.876
UB4: I frequently use a QR menu to order restaurant food.	0.867
UB5: I'll use the QR menu to order restaurant food.	0.863

Note: ** item excluded from the analysis

Table 7 represents the constructs' composite reliability (CR), average variance extracted (AVE), and discriminant validity. All items with an AVE of more than 70% show high validity and legitimacy. For this study, the AVE for all constructs was more significant than 0.5. According to Fornell and Larcker (1981), the AVE creators, AVE is a much more restrictive metric than CR. Based on the CR value, it can be inferred that the convergent validity of the framework is acceptable. Besides, for all constructs, the results met the criterion of no possible discriminant validity evidence.

Table 7. Composite reliability, AVE, and discriminant validity of the scales

Construct	CR	AVE	1	2	3	4	5	6	7	8	9
(1) PE	0.941	0.760	1								
(2) EE	0.942	0.764	0.904^a	1							
(3) SI	0.953	0.782	0.884	0.899^a	1						
(4) FC	0.926	0.758	0.901	0.894	0.876^a	1					
(5) HM	0.930	0.767	0.904	0.907	0.901	0.865^a	1				
(6) PV	0.943	0.768	0.895	0.872	0.893	0.850	0.890^a	1			

Table 7. (cont)

Construct	CR	AVE	1	2	3	4	5	6	7	8	9
(7) TR	0.939	0.756	0.883	0.886	0.897	0.853	0.915	0.908^a	1		
(8) BI	0.950	0.761	0.904	0.896	0.910	0.883	0.921	0.911	0.909^a	1	
(9) UB	0.911	0.720	0.886	0.883	0.874	0.855	0.892	0.896	0.888	0.892^a	1

Note. ^a Square root of the average variance is along the diagonal

Structural Model Results

The structural model was evaluated to examine the seven hypothesised relationships. The test results are shown in Table 8. The results of the SEM analysis of the structural model indicate that PE ($\beta = 0.109$, $p = 0.043$), SI ($\beta = 0.177$, $p = 0.001$), HM ($\beta = 0.230$, $p = 0.000$), PV ($\beta = 0.221$, $p = 0.000$) and TR ($\beta = 0.129$, $p = 0.045$) appear to have positive impacts on behavioural intention. Thereby providing empirical support for H1, H3, H5, H6, and H7, respectively. In addition, BI ($\beta = 0.228$, $p = 0.000$) significantly and positively affected the use behaviour, thus supporting hypothesis H8. However, the results also displayed that EE ($\beta = 0.052$, $p = 0.322$) and FC ($\beta = 0.080$, $p = 0.089$) did not positively impact behavioural intention and therefore, hypotheses H2 and H4 are rejected.

Table 8. Path coefficient results of the structural model

Hypothesis	Paths	Standard Deviation	T Value	Path Coefficient (β)	P	Decisions
H1	Performance Expectancy → Behavioural Intention	0.053	2.028	0.109	0.043	Accepted
H2	Effort Expectancy → Behavioural Intention	0.051	0.991	0.052	0.322	Rejected
H3	Social influence → Behavioural Intention	0.053	3.316	0.177	0.001	Accepted
H4	Facilitating Conditions → Behavioural Intention	0.049	1.706	0.080	0.089	Rejected
H5	Hedonic motivation → Behavioural Intention	0.059	3.898	0.230	0.000	Accepted

Table 8. (con't)

Hypothesis	Paths	Standard Deviation	T Value	Path Coefficient (β)	P	Decisions
H6	Price Value → Behavioural Intention	0.049	4.502	0.221	0.000	Accepted
H7	Trust → Behavioural Intention	0.065	2.012	0.129	0.045	Accepted
H8	Behavioural intention → Use Behavior	0.013	67.036	0.228	0.000	Accepted

Note: $p < 0.05$

Discussion and Conclusion

The authors examined and analysed the statistical analysis outcomes, contrasted the findings with other prior studies in a similar area, and provided the data analysis results. The results showed that hedonic motivation, price value, social influence, performance expectancy, and trust positively affect customer intention to use QR menu ordering (p -value < 0.05). Contrary to this, the results demonstrated that effort expectancy and facilitating conditions negatively affect customer behavioural intention (p -value > 0.05). The study also discovered that behavioural intention could influence customer use behaviour. These findings are consistent with Garg (2021) and Venkatesh et al. (2012). Among these factors, hedonic motivation and price value are two factors that most influence customers' behaviour intention.

The findings revealed that consumers appear to be more satisfied with the QR menu ordering systems than traditional manual order systems because such a method can bring them more convenience, value, and enjoyment. Thus, implementing such technology in restaurants can improve table turnover and reduce labour and high menu costs (Garg, 2021; Technology, 2019). The QR menu provides convenience for paying bills or getting special discounts (Cheng, 2017). Meanwhile, customer attraction and satisfaction increase sharply because of the QR technology in restaurant menus (Torres, 2016). Thus, the results suggest that customers in luxury restaurants in Xi'an, China have a relatively high perception of using QR menus.

The results also indicate that customers are more convenient and flexible using the QR menus. Most customers are willing to use QR menu ordering in the future. Most of the respondents were aged between 20 and 50 and possess the knowledge and skill to use the QR menu. They can appreciate value and enjoyment. As a result,

almost 70% of the respondents confirmed that they would love to use the QR menu to make orders in the future.

This research also demonstrated that trust is an important variable affecting customers' behaviour intention to use the QR menu, especially when they are asked to provide confidential information such as the transaction code for their AliPay or bank card or other information such as their telephone number. Thus, to increase QR menu usage among customers, restaurants should improve the safety, security, and trust level in their QR systems (Gharaibeh & Arshad, 2018). In addition, restaurants should create a reliable communication system to augment trust in the QR menu. For example, restaurant owners can periodically gather customers' feedback about their QR menu security issues, thus making timely adjustments and improvements. Furthermore, restaurants must encourage customers to trust QR menu services by improving their confidence level through high-security systems to keep accounts and data safe.

Theoretical Implications

The current study has significant theoretical implications. Firstly, it extends the application of the UTAUT model to the restaurant industry. Previous studies utilising the UTAUT model have predominantly focused on mobile banking, online education, or medical fields (Alalwan et al., 2017; Eneizan et al., 2019), with limited attention given to the restaurant industry. Secondly, this research broadens the investigation of QR menu applications, particularly in the Chinese market. Earlier studies have not adequately explored the use of QR menu applications, with most literature concentrating on Western or Southeast Asian countries. Thus, this study can address the geographical research gap. Thirdly, the inclusion of a relatively new item, trust, in this study has been validated, thereby contributing to the advancement of the UTAUT 2 model.

Managerial Implications

Consumers are increasingly adopting a more tech-savvy approach when conducting business transactions, purchasing goods, or simply indulging in leisure activities. Rapid technological advancements, internet services, and the smartphone industry have presented consumers with numerous user-friendly, high-tech products in China. To attract and retain a more extensive customer base, restaurant owners must stay abreast of technological advancements by conducting research. This study provides valuable insights to restaurant owners in luxury hotels in Xi'an, China, concerning their customers' attitudes and acceptance of the QR menu. Thus, the study enables restaurant owners to make necessary adjustments promptly and appropriately.

Limitations and Future Research

This study, like any other study, has its limitations. First of all, this research only used a quantitative research paradigm and lacked the qualitative viewpoints of the respondents. Secondly, owing to the coronavirus pandemic, as well as time and location constraints, this research focused only on Xi'an city in China. It lacked analysis and comparison with other cities, especially with first and second-tier cities. Thirdly, this study only focused on luxury restaurants instead of all categories of restaurants. However, different levels of restaurants may have different situations regarding the usage of the QR menu, and these differences are worth more in-depth research. It would be better if the authors could compare different restaurant levels in the QR menu application.

Future researchers should focus on addressing the limitations pointed out. For example, researchers can use qualitative or multiple methods to conduct the survey, thus getting information about other aspects. Age, gender, and income can also be considered moderating variables, and researchers can use multiple analysis tools to analyse further, thus getting even more detailed results. A comparison between different restaurant levels, cities, and countries is also needed in future research to gain a comprehensive and reliable conclusion. Finally, the coronavirus still exists in most countries, and its impact on the restaurant and tourism industry still continues. Future studies can pay attention to the relationship between COVID-19 and the adoption of the QR menu to examine to what extent the QR menu can help restaurant owners during health crises such as a pandemic.

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