



香港教育大學

The Education University  
of Hong Kong

A Project entitled

**Factors affecting Hong Kong young adults' acceptance of self-service  
restaurant ordering systems (SROS)**

**Submitted by**

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submitted to

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*In April 2022*

### **Declaration**

I, Yi Ting , declare that this research report represents my own work under the supervision of Dr. Tan Weiqiang, and that it has not been submitted previously for examination to any tertiary institution.

Signed

Yi Ting

Date: 20 April 2022

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## Table of Content

<b>Declaration.....</b>	<b>2</b>
<b>Acknowledgements.....</b>	<b>3</b>
<b>List of Figures.....</b>	<b>5</b>
<b>List of Tables.....</b>	<b>5</b>
<b>List of Appendices.....</b>	<b>5</b>
<b>Abstract.....</b>	<b>6</b>
<b>Problem Statement.....</b>	<b>7-8</b>
<b>Literature Review.....</b>	<b>8-15</b>
1. Self-service restaurant ordering systems (SROS).....	8-9
2. The Unified Theory of Acceptance and Use of Technology (UTAUT).....	9-15
2.1.Performance expectancy.....	10-11
2.2.Effort expectancy.....	11
2.3.Social influence.....	11-13
2.4.Facilitating conditions.....	13
2.5.Four key moderating variables.....	13-15
<b>Research methodology.....</b>	<b>15-17</b>
1. Sampling and collection.....	16
2. Research instrument.....	16-17
3. Analytical methods.....	17
<b>Data analysis and results.....</b>	<b>18-24</b>
1. Confirmatory Factor Analysis (CFA).....	18-19
2. Analysis of SROS adopted and acceptance situation in Hong Kong.....	19-21
3. Correlation analysis.....	21-22
4. Regression analysis for testing moderating effects.....	22-24

<b>Discussion and conclusion.....</b>	<b>24-25</b>
<b>Limitations and future research.....</b>	<b>25-26</b>
<b>References.....</b>	<b>26-28</b>
<b>Appendices.....</b>	<b>29-39</b>

### List of Figures

<b>Figure 1:</b> Workflow of SROS.....	8
<b>Figure 2:</b> Workflow of SROS with payment.....	8
<b>Figure 3:</b> Three types of SROS.....	9
<b>Figure 4:</b> The UTAUT Model.....	10
<b>Figure 5:</b> The extension of UTAUT.....	15
<b>Figure 6:</b> Gender structure.....	16
<b>Figure 7:</b> Age structure.....	16

### List of Tables

<b>Table 1:</b> Results of CFA.....	19
<b>Table 2:</b> Results of correlation matrix between determinants and intention to use.....	22
<b>Table 3:</b> Regression analysis for moderating effect of gender (nominal scale).....	23
<b>Table 4:</b> Regression analysis for moderating effect of experience.....	24

### List of Appendices

<b>Appendix A:</b> Information sheet.....	29-30
<b>Appendix B:</b> Consent form.....	30
<b>Appendix C:</b> Questionnaire questions.....	31-38
<b>Appendix D:</b> Interview questions.....	38-39

## Abstract

- **Background:** As the pace of people's lives accelerates, more and more restaurants are pursuing high efficiency by using self-service restaurant ordering systems (SROS) allowing consumers to complete their order without going through a waiter/waitress.
- **Objectives:** This research is going to measure the young adults' acceptance of SROS in Hong Kong and trying to find out the influencing factors behind with the expanded unified theory of acceptance and use of technology (UTAUT) model.
- **Methodology:** The research objectives were achieved through the mixed method with a designed questionnaire referring to the UTAUT model and Likert five-point scale, and semi-structured interviews. During the data collection, convenience sampling and snowball purposive sampling were used to find 251 respondents; and 20 interviewees were selected among these respondents according to their wishes. Finally, the data collected was analyzed through both descriptive statistics and inferential statistics with CFA, correlation, and regression analysis by using SPSS Statistics 27 and Amos 27.
- **Originality:** There is no such research about consumers' acceptance of SROS done in Hong Kong, and most previous studies in other countries or regions were done with only TAM or its extensions. This research combined UTAUT with "Jan<sup>4</sup> Cing<sup>4</sup>" culture to complete the research.
- **Practical implications:** This research can supported that Hong Kong young adults have a high acceptance of using SROS in restaurants, and provide advice to restaurant owners that QR codes are more popular with young adults, so they can consider adopting it when their target consumers are young people. Moreover, the findings provide information to SROS designers to refine the system for improving consumers' using experience.

## **Problem statement**

With the development of technology, more and more self-service restaurant ordering systems (SROS) have been developed and applied, and the 3 main types of SROS in the current market are self-service kiosk (SSK), own device ordering through QR codes, and table ordering through tablets (Everyware, 2021). These SROS have broadly applied in mainland China, especially the application of own device ordering through QR codes during the COVID-19 to achieve the “no-touch ordering” purpose (Yi, 2020). But looking at Hong Kong, you may easily find SSK in some fast-food restaurants such as McDonald’s, KFC, and Maxim, and most restaurants use both SSK and traditional manual ordering systems which require consumers to order and pay through a waiter/waitress (Noor, Rahman, Saaïd, Ali & Zolkapli, 2012), but the other two types of SROS are still rarely applied in Hong Kong.

From a research perspective, because SSK has been applied for a relatively long time in the market, generally there is some previous research on consumers’ acceptance of it, especially at fast-food restaurants from different variables such as consumers’ previous experience (Kim, Christodoulidou & Choo, 2013), menu and nutrition information quality (Han, Moon, Oh, Chang & Ham, 2020), and individual differences (gender, age, etc.) (Jeon, Sung & Kim, 2020; Rastegar, 2018). But a few studies on consumers’ acceptance of the other two types, and no such research about SROS has been done in Hong Kong. Therefore, this study will investigate Hong Kong young adults’ acceptance of self-service restaurant ordering systems compared with the traditional manual ordering systems. Moreover, most of the previous studies were conducted with the well-organized Technology Acceptance Model (TAM) or its extended models. For instance, Rastegar (2018) applied the TAM and satisfaction model to examine customers’ intention and decision to use SSK, and Jeon, Sung, and Kim (2020) used one of the extensions of TAM called the unified theory of acceptance and use of technology (UTAUT) to

do such investigation. As the discussed factors in this study will include not only the perceived usefulness and perceived ease of use from TAM, but also social influence, the UTAUT model will be applied in this study.

## Literature review

### 1. Self-service restaurant ordering system (SROS)

SROS requires consumers to order by themselves via touch screen devices instead of ordering through a waiter or waitress in restaurants (Noor, Rahman, Saaïd, Ali & Zolkapli, 2012). Restaurants provide information about menu and prices on the homepage of the devices, then consumers read them and make an order directly through the device, after the order is confirmed, the information will be sent to the restaurant's database and is available to be viewed by chefs on the screen set in the kitchen to prepare the food, and Figure 1 shows the workflow of SROS (Noor, Rahman, Saaïd, Ali & Zolkapli, 2012). Besides, with the development of e-payment, SROS devices can be connected to some payment methods for allowing customers to pay directly through the devices, and Figure 2 shows the workflow of SROS with payment.

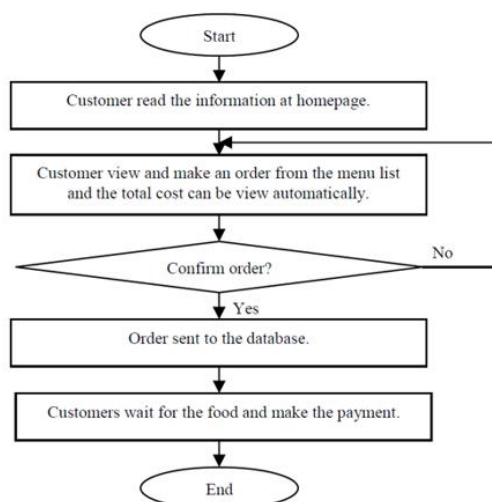


Figure 1. Workflow of SROS

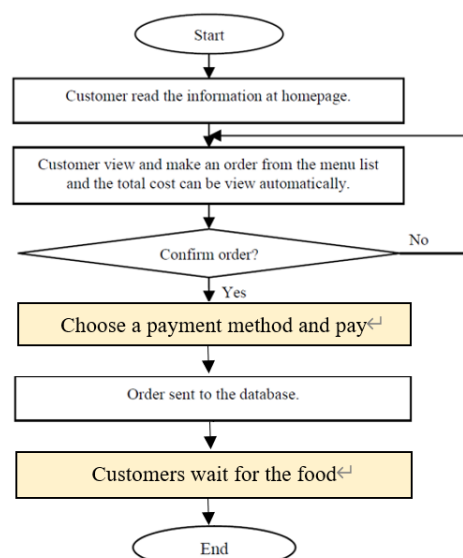


Figure 2. Workflow of SROS with payment<sup>€</sup>



Nowadays, the devices can be consumers' phones or provided by restaurants. And depending on the different devices used, SROS can be divided into 3 main types: self-service kiosk (SSK), table ordering through tablets, and own device ordering through QR codes (Everyware, 2021). SSK is an independent machine located on the floor that can be used to complete the whole process from ordering to payment, and it is usually adopted in fast-food restaurants to order quickly and be more convenient for consumers (Kim, Christodoulidou & Choo, 2013). Tablets of the second type are also provided by restaurants, which are placed on each table so that consumers can navigate menu selections and make orders as soon as they sit down (Wang & Wu, 2013), and they can also add dishes anytime while having meals. Moreover, the third type replaces the tablets with QR codes on tables, consumers need to use their phones to scan the QR codes and get access to the menu for making orders. When combined with mobile payment, consumers can also pay directly with their phones.

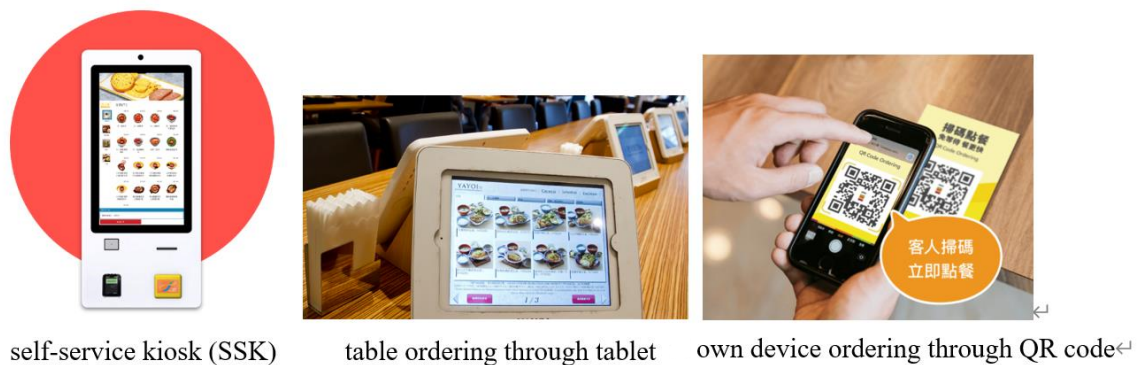


Figure 3. Three types of SROS

## 2. The Unified Theory of Acceptance and Use of Technology (UTAUT)

Before the UTAUT was introduced, there were several user acceptance models explaining users' acceptance of new technology including but not limited to the mentioned TAM, and researchers needed to choose among them to find out the most suitable or favorite one for their research, but in this way, they might ignore the advantages and contributions from other models.

Therefore, to solve this issue, Venkatesh, Morris, Davis, D. & Davis, G. (2003) empirically compared and summarized the eight existing prominent user acceptance models and formulated the UTAUT model, which identified 4 main determinants from those models, containing performance expectancy, effort expectancy, social influence, and facilitating conditions, and also 4 key moderating variables including gender, age, experience, and voluntariness. Figure 4 gives a diagram of the UTAUT model.

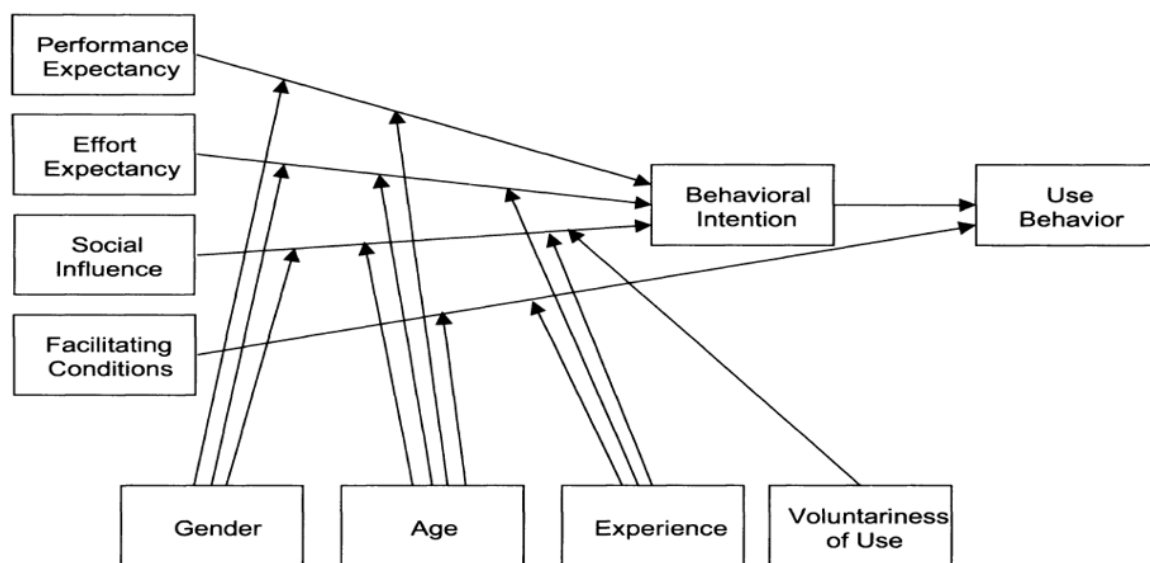


Figure 4. the UTAUT model

## 2.1 Performance expectancy

Performance expectancy is included in all eight models, equal to the “perceived usefulness” named in the TAM-related models and some other names in other models, meaning that people use a particular system because they believe that this system can improve their performance in a context (Venkatesh, Morris, Davis, D. & Davis, G., 2003). Although it has different expressions in different models, the scales used to measure it are similar, containing the following items: using the new technology makes it easier to complete tasks, is able to save time; can increase the quantity and quality of outputs; and enables to improve effectiveness (Venkatesh, Morris, Davis, D. & Davis, G., 2003). In addition, performance expectancy was

found as the most powerful predictor of intention in various measurements and settings (Venkatesh, Morris, Davis, D. & Davis, G., 2003). Then, based on the previous information, this study made the following hypothesis:

H1: Hong Kong young adults' performance expectancy on using SROS has a positive correlation with their intention to use.

## 2.2 Effort expectancy

Effort expectancy is also a significant predictor of intention, included in most models as “perceived ease of use”, “ease of use”, or “complexity”, which refers to the efforts needed to use the system (Venkatesh, Morris, Davis, D. & Davis, G., 2003). People wish the system is easy to use so that they can allocate relatively fewer efforts to use it (Davis, 1989). Furthermore, the scales to measure it include flexible, understandable, and easy to learn (Venkatesh, Morris, Davis, D. & Davis, G., 2003). When consumers believe that the system is more flexible and easier to learn, they will have more intention to use it, so this study developed the following hypothesis:

H2: Hong Kong young adults' effort expectancy on using SROS has a positive correlation with their intention to use.

## 2.3 Social influence

Social influence is another direct determinant of intention in UTAUT, while it also has some other labels like “subjective norm”, their definitions contain the same thing that individuals will be influenced by others especially those important people for them such as parents, friends, and colleagues, and they will have the intention to use the technology when holding a belief

that others think them should use, or using the technology enables them to enhance their status or images (Venkatesh, Morris, Davis, D. & Davis, G., 2003).

However, Venkatesh et al. (2003) found that social influence is only significant in mandatory contexts instead of voluntary situations. In other words, when users have the autonomy to choose, the social factors will play an extremely small role. But considering the difference between Western and Chinese culture, this study still contains the determinant to investigate whether the result will be different under the Chinese cultural contexts, especially influenced by the prominent “Jan<sup>4</sup> Cing<sup>4</sup>” culture.

One of the features of Chinese culture is emphasizing the social harmony and appropriate arrangement of human relations (Wong, 1988). And affected by Chinese culture, Hong Kong people may also pay attention to harmonious social relationships, which are named in Cantonese as “Jan<sup>4</sup> Cing<sup>4</sup>”. Wong (1988) pointed out that “Jan<sup>4</sup> Cing<sup>4</sup>” has different meanings, one of them is the social norms that guide people on how to get along well with each other in the society, and these norms include greeting when meeting, showing your caring about others, and when others are in trouble, expressing your concern, understanding or providing some help. Under the influence of the “Jan<sup>4</sup> Cing<sup>4</sup>” culture, Hong Kong people may prefer to have some communication with the waiters/waitresses in restaurants to build some social relationships. Therefore, this study considers the “Jan<sup>4</sup> Cing<sup>4</sup>” culture as a sub-factor under the social influence and is going to find out whether it can be an influencing factor in Hong Kong young adults’ acceptance of SROS. And the related hypotheses were developed as follows:

H3: Hong Kong young adults’ consideration of social influence on using SROS has a positive correlation with their intention to use.

H4: Hong Kong young adults' consideration of social relationships (“Jan<sup>4</sup> Cing<sup>4</sup>”) has a negative correlation with their intention to use.

## 2.4 Facilitating conditions

The definition of facilitating conditions is that people think there is some basic infrastructure in both technical and organizational aspects to help them use the new technology without barriers, for instance, organizing training sessions to teach them the necessary knowledge, providing resources, guidance, or instructions (Venkatesh, Morris, Davis, D. & Davis, G., 2003). Conceptually, when consumers think they can receive help and assistance easier, they will have more intention to use the system, but Venkatesh et al. (2003) indicated that facilitating conditions are more related to usage instead of intention, and its effects on intention are not so notable. Then, to examine whether the facilitating conditions affect the intention or not, this study still developed the following hypothesis:

H5: Hong Kong young adults' consideration of facilitating conditions on using SROS has a positive correlation with their intention to use.

## 2.5 Four key moderating variables

Theoretically, the 4 key moderating variables consist of gender, age, experience, and voluntariness of use (Venkatesh, Morris, Davis, D. & Davis, G., 2003), but this study only investigates Hong Kong young adults' acceptance level of new technology in a voluntary situation, so both age and voluntariness will not be taken into consideration.

Firstly, it is believed that gender has moderation effects on the relationships between the first 3 determinants and intention, and there are more effects on males for the performance

expectancy, while more on females for the remaining two (Venkatesh, Morris, Davis, D. & Davis, G., 2003). Besides, Cai, Fan & Du (2017) also summarized 50 empirical studies on gender differences in technology use from 1997 to 2014 and found that the gender attitudinal gap towards technology remains stable with a little reduction. The results from Cai, Fan & Du (2017) show that males are more favorable to technology than females, particularly in the belief and self-efficacy, which indicates that males have more confidence in both the usefulness of technology and their ability to learn the technology. Therefore, males pay more attention to their tasks and have higher performance expectancy, then turn to have higher intention to use the technology, but females have less confidence in using the technology, which causes their lower effort expectancy and lower intention. However, when related to gender's moderation effects on the relationship between social influence and intention, Venkatesh et al (2003) suggested that women are more sensitive to others' attitudes and opinions, so their intention will be more affected by social influence than men.

For experience, it is considered as a moderator of the relationships between the last 3 determinants and intention, and the influence will be more for people with little experience (Venkatesh, Morris, Davis, D. & Davis, G., 2003). Then, based on the theory, this study tried to find out whether gender and experience differences will affect the mentioned relationships, and the following hypotheses were developed:

H6: Hong Kong young adults' gender significantly moderates the relationship between performance expectancy and their intention to use.

H7: Hong Kong young adults' gender significantly moderates the relationship between effort expectancy and their intention to use.

H8: Hong Kong young adults' gender significantly moderates the relationship between social

influence and their intention to use.

H9: Hong Kong young adults' experience significantly moderates the relationship between effort expectancy and their intention to use.

H10: Hong Kong young adults' experience significantly moderates the relationship between social influence and their intention to use.

H11: Hong Kong young adults' experience significantly moderates the relationship between facilitating conditions and their intention to use.

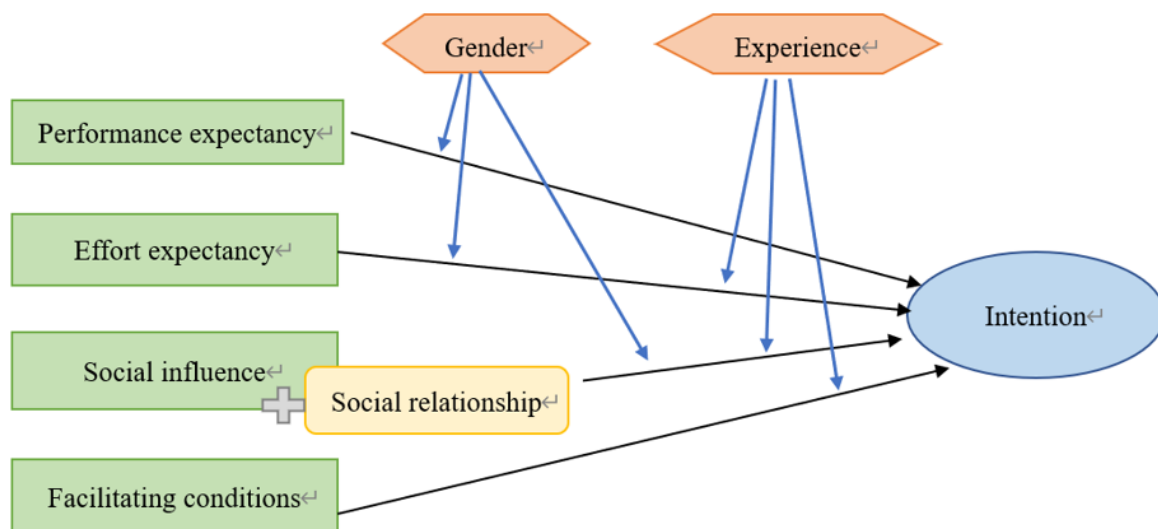


Figure 5. The Extension of UTAUT

## Research methodology

The quantitative method will use tools such as some equipment or questionnaires to collect numerical data instead of contextual details to measure something, while the qualitative method usually generates words as data to deeply understand research objects' experiences, attitudes, or other individual thoughts (McCusker & Gunaydin, 2014). And this study used both to achieve a mixed method with a questionnaire to find evidence of the hypotheses on a relatively

general level, and also interviews to find out some deep reasons.

## 1. Sampling and collection

By applying convenience and snowball sampling, the questionnaire was sent to young adults aged 18 to 30 years old via online social media such as WeChat, WhatsApp, Signal, Goop, and Instagram, and all respondents were required to live in Hong Kong more than 1 year. At the beginning of the questionnaire, the screening questions related to gender and age were asked to ensure respondents met the requirements. Finally, 251 questionnaires were received, 211 of them were valid without missing data, so the questionnaire efficiency is around 84.06%. Among the 211 respondents, there were 75 males and 136 females, so the ratio of men to women is about 1:1.81, as shown in Figure 6. Besides, all valid respondents are between 18 and 28 years old, and most of them are 22 years old, accounting for 23.2%, as shown in Figure 7. Moreover, all respondents needed to answer a question at the end of the questionnaire to show whether they are willing to participate in the interview, and the first 20 respondents who accepted the invitation to the interview were selected as the interviewees.

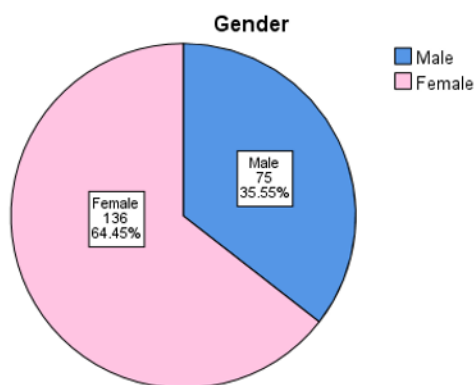


Figure 6. Gender structure

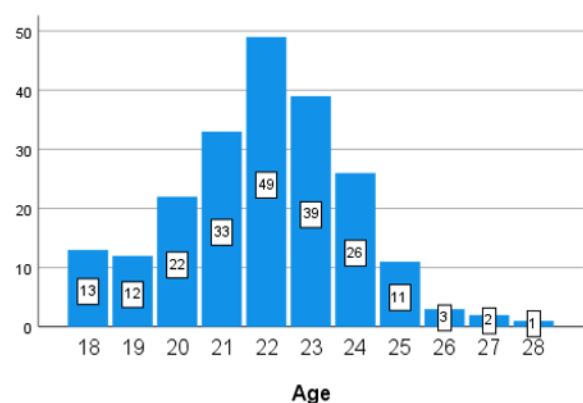


Figure 7. Age structure

## 2. Research instrument

To achieve the research objectives, the questionnaire consisted of four parts with a total of 30



questions. Part A was related to basic personal information about gender and age, as screening questions and for getting the information on gender so that gender differences' influence can be investigated. Part B was designed to find the usage and popularity of different SROS in Hong Kong and their degree of acceptance. Then, the questions in part C were derived from the UTAUT model with Likert five-point scales to find out participants' degree of agreement or disagreement in each of the four constructs in the UTAUT model. Finally, an open question was designed at the end of the questionnaire asking about other reasons why they prefer to use SROS or traditional manual ordering systems for getting more about other factors which may affect Hong Kong young adults' choices. Additionally, the questionnaire was designed in both Chinese and English, respondents could select one to finish, and for the details of the questionnaire, please see Appendix C. Meanwhile, semi-structured interviews were designed with prepared 6 questions in Appendix D, and there would be additional questions asked based on the interviewees' answers during the interviews for getting detailed and accurate answers.

### 3. Analytical methods

Firstly, Confirmatory Factor Analysis (CFA) and Cronbach's  $\alpha$  were applied to test the fit of the model and to analyze the reliability and validity of the collected data. Then, all collected data were analyzed with both descriptive and inferential statistics. For inferential statistics, the correlation analysis was used to test H1, H2, H3, H4, and H5 as both their independent variables and dependent variables are continuous, and correlation analysis is used to indicate the relationship between two quantitative variables (Gogtay & Thatte, 2017). While H6 to H11 are required to test the moderation effects of gender and experience on different relationships, so regression analysis was applied to achieve the purpose. And all the analyses were completed with SPSS Statistics 27 and Amos 27.

## Data analysis and results

### 1. Confirmatory Factor Analysis (CFA)

CFA was used to evaluate composite reliability (CR) and convergent validity, and to test the fit of the measurement model (Jeon, Sung & Kim, 2020). Hair, Hult, Ringle, and Sarstedt (2016) indicated that there are some fit indices needed to be considered when assessing the fit of the model, including  $CMIN/DF < 3$ , root mean square residual (RMR)  $< 0.08$ , goodness of fit index (GFI)  $> 0.9$ , root mean square error of approximation (RMSEA)  $< 0.08$ , incremental fit index (IFI)  $> 0.9$ , Tucker-Lewis index (TLI)  $> 0.9$ , and comparative fit index (CFI)  $> 0.9$ . Then, after completing the CFA, the output were  $CMIN=130.567$ ,  $DF=71$ ,  $CMIN/DF=1.839(<3)$ ;  $RMR=0.035(<0.08)$ ,  $GFI=0.921(>0.9)$ ,  $RMSEA=0.063(<0.08)$ ,  $IFI=0.942(>0.9)$ ,  $TLI=0.924(>0.9)$ ,  $CFI=0.941(>0.9)$ . These seven indices were all meet the criteria, so the model fit with the data collected well.

Moreover, the Cronbach's  $\alpha$  of the 17 items in part C of the questionnaire is 0.789 ( $\alpha > 0.7$ ), so there is a satisfactory internal consistency for the questionnaire data (Bland & Altman, 1997). Besides, According to the results of CFA, all factor loadings are more than 0.5, among them, the factor loading for "few ordering errors" (0.62) was the highest in performance expectancy, "easy to use" with 0.83 was the highest in effort expectancy; "friends recommend" (0.72) was the highest factor loading in social influence; and "mistake support" with 0.93 was the highest in facilitating conditions. In addition, although the average variance extracted (AVE) is slightly less than 0.5, the composite reliability (CR) is 0.925, which is far more than 0.6, so the questions in the questionnaire achieved a satisfactory degree of convergent validity and structural consistency (Fornell & Larcker, 1981).

Table 1. Results of CFA

Variables and items	Mean	standard deviation	Factor loadings	Cronbach’s α	CR	AVE
Performance expectancy				0.789	0.925	0.476
C2	3.95	0.764	0.54			
C3	3.86	0.844	0.62			
C4	3.76	1.015	0.58			
Effort expectancy						
C6	4.15	0.835	0.50			
C7	4.00	0.717	0.73			
C8	4.02	0.805	0.83			
C9	4.07	0.825	0.73			
C10	4.45	0.626	0.64			
Social influence						
C17	3.98	0.636	0.70			
C18	3.47	0.812	0.72			
C20	3.65	0.703	0.66			
Facilitating conditions						
C13	3.20	0.975	0.50			
C14	3.29	0.910	0.93			
C15	3.28	0.881	0.82			

## 2. Analysis of SROS adopted and acceptance situation in Hong Kong

For the use of three SROS in Hong Kong's restaurants, 97.63% of valid respondents denoted that they had used SSK, 84.36% of them had used own device ordering through QR codes, and

69.19% of them had used table ordering through tablets. Furthermore, 66.82% of them selected SSK as the most frequent use SROS, 49.76% selected own device ordering through QR codes as the moderate use SROS, and 63.51% chose table ordering through tablets as the least frequent use SROS. Therefore, it can be concluded that SSK is the most common SROS in Hong Kong's restaurants, followed by own device ordering through QR codes and table ordering through tablets. Moreover, most interviewees represented that SSK is always used in fast-food restaurants, but buffet and Japanese cuisine restaurants such as sushi and barbecue, are more likely to provide tablets or QR codes to customers. The possible reasons behind this are: adopting SSK in fast food restaurants can reduce labor costs (Beatson, Lee & Coote, 2007), improve service efficiency (Kincaid & Baloglu, 2006) by connecting with some payment methods, and increase sales by selling food sets and upselling (Rastegar, 2018); while tablets or QR codes (own device, e.g. phones) are movable and portable devices, which allow customers to order without queuing, and is convenient for customers to add dishes at any time during the meal, by adopting tablets or QR code in buffet and Japanese cuisine restaurants can improve ordering efficiency and provide better services.

In addition, When compared to the traditional manual ordering system, 81.04% of respondents prefer to use SROS. Thus, Hong Kong young adults have a high acceptance of SROS. For different SROS types, 45.02% most like to use QR codes, 47.87% moderate like to use tablets, and 40.28% least like to use SSK, so when comparing the 3 types, they like to use QR codes most, followed by tablets and SSK. According to the interviewees' responses, the advantages and disadvantages of tablets and QR codes are similar, including advantages: 1) customers do not have to queue and have a longer time to watch the online menu; 2) there are fewer mistakes happened; 3) customers can add dishes conveniently; and disadvantages: 1) customers cannot easily know the details of dishes such as is the food enough or whether the dishes are spicy or

not; 2) most restaurants adopting tablets or QR codes in Hong Kong still need to pay over the counter. But the main reasons why they prefer QR codes are that: 1) using QR codes is more flexible as they can order on the way to the restaurant; 2) they can order with the people who go with them at the same time; 3) they can use their own devices, which is more hygienic, especially during the COVID-19. Then, for the reasons why they relatively hate to use SSK, most interviewees mentioned that using SSK needs to queue, there will be an invisible pressure caused by the people behind them, urging them to place an order faster. Besides, some interviewees expressed that the menu in SSK is too varied, which results in difficulty to choose, and sometimes it is even difficult to find what you want.

### 3. Correlation analysis

As shown in Table 2, performance expectancy, effort expectancy, social influence, and facilitating conditions positively affect the intention to use with 0.366, 0.388, 0.276, and 0.173. Besides, the p-values of them are all smaller than 0.05 with three p-values smaller than 0.001,  $p=0.012$ , and  $p=0.022$ , so they also significantly affect the intention to use. Thus, H1, H2, H3, and H5 were all supported. However, the social relationship (Jan<sup>4</sup> Cing<sup>4</sup>) shows a negative correlation to the intention with -0.085, but its p-value is 0.221 ( $p>0.05$ ), so its negative correlation is not significant, which rejected H4. When considering Jan<sup>4</sup> Cing<sup>4</sup>, many interviewees expressed that they paid more attention to the taste and quality of food than to Jan<sup>4</sup> Cing<sup>4</sup>, especially in large chain restaurants and fast-food restaurants because they are commercialization and highly focus on efficiency, employees are not willing to spend time establishing human relations with consumers. But in some traditional and small restaurants, when the employees were warm and willing to communicate, they would have a conversation, but they would not take the initiative to establish human relations with the employees. And even if the employees were too enthusiastic, it would make them feel stressed and

uncomfortable. Besides, most interviewees stated that some restaurants in Hong Kong were too busy to provide good service, and they did not choose to communicate too much with waiters during the COVID-19.

Table 2. Results of correlation matrix between determinants and Intention to use

Variables	PE	EE	SI	FC	SR	Intention
PE	1					
EE	0.591**	1				
SI	0.505**	0.457**	1			
FC	0.292**	0.240**	0.288**	1		
SR	-0.124	-0.161*	-0.041	0.157*	1	
Intention	<b>0.366**</b>	<b>0.388**</b>	<b>0.276**</b>	<b>0.173*</b>	<b>-0.085</b>	1

\*\* p<0.01; \* p<0.05 SR: social relationship (Jan<sup>4</sup> Cing<sup>4</sup>)

#### 4. Regression analysis for testing moderating effects

The definition of moderation effects is that the moderator can change the relationship between two variables, and there involves a linear interaction (Helm & Mark, 2012). Based on the UTAUT model, gender as a moderator will affect the relationships between the first 3 determinants and the intention to use. According to Holmbeck (2002), the nominal scales' moderation effects will be significant when the p-value is smaller than 0.05, and the absolute value of z is bigger than 1.96. Then, As the results in Table 3, it could be found that all the regression coefficients were different for males and females, and the p-values were all smaller than 0.05, but the absolute values of z were all smaller than 1.96, so the gender's moderation effects were not statistically significant. Therefore, H6, H7, and H8 were all rejected.

Recent research completed in 2021 applied TAM to investigate students' acceptance of Zoom application also found that gender had no significant moderating influence, both genders use the technology well (Alfadda & Mahdi, 2021). In addition, During the interviews, most interviewees said that SROS does not require much learning, because they have used mobile phones, computers, and iPads more or less in their daily lives, and they were familiar with touch-screen electronic products. Hence, in this era of rapid technological development, young people, both men and women, have a lot of exposure to electronic products, which may be the main reason why there is no statistically significant difference between men and women.

Table 3. Regression analysis for moderating effect of gender (nominal scale)

	Gender	Regression coefficients	Standard errors	p-value	z-value
PE→Intention	Male	0.451	0.105	<0.001	0.6765217
	Female	0.357	0.091	<0.001	
EE→Intention	Male	0.533	0.103	<0.001	0.7689219
	Female	0.416	0.112	<0.001	
SI→ Intention	Male	0.266	0.128	0.042	-0.636656
	Female	0.371	0.104	<0.001	

For the moderation effects of experience, the UTAUT model shows that experience will moderate the relationships between the last 3 determinants and the intention to use. Then, as the results in Table 4, H9 was supported because experience moderates the relationship between effort expectancy and the intention to use with  $p=0.004$  ( $<0.05$ ), but H10 and H11 were rejected because the moderation effects were not significant with  $p\text{-values} > 0.05$ . For the reason why only H9 was supported may be that when young adults have more experience in

using SROS, they will be more familiar with the use of the system and then increase both their effort expectancy and intention to use, but social influence and facilitating conditions cannot change easily.

Table 4. Regression analysis for moderating effect of experience

	Beta	t-value	p-value
EE*Ex → Intention	0.183	2.940	0.004
SI*Ex → Intention	0.057	0.865	0.388
FC*Ex → Intention	0.038	0.561	0.575

## Discussion and conclusion

This study considered the Chinese traditional culture and extended the UTAUT model by adding the variable Jan<sup>4</sup> Cing<sup>4</sup> in social influence to investigate different factors that affect Hong Kong young adults' intention to use SROS in Hong Kong's restaurants. Referring to the above results of data analysis, it can be concluded that:

H1 was supported: Hong Kong young adults' performance expectancy on using SROS has a positive correlation with their intention to use.

H2 was supported: Hong Kong young adults' effort expectancy on using SROS has a positive correlation with their intention to use.

H3 was supported: Hong Kong young adults' consideration of social influence on using SROS has a positive correlation with their intention to use.

H4 was rejected: Hong Kong young adults' consideration of "Jan<sup>4</sup> Cing<sup>4</sup>" has no significant negative correlation with their intention to use.

H5 was supported: Hong Kong young adults' consideration of facilitating conditions on using



SROS has a positive correlation with their intention to use.

H6, H7, and H8 were rejected: Hong Kong young adults' gender does not significantly moderate the relationships between performance expectancy, effort expectancy, social influence, and their intention to use.

H9 was supported: Hong Kong young adults' experience significantly moderates the relationship between effort expectancy and their intention to use.

H10 and H11 were rejected: Hong Kong young adults' experience does not significantly moderate the relationships between social influence, facilitating conditions, and their intention to use.

The findings of this study can support that Hong Kong young adults have a high acceptance of using SROS in restaurants. And also provide advice to restaurant owners that own services ordering through QR code is more popular with young adults, so they can consider adopting it when their target consumers are young people. Moreover, some interviewees mentioned that there are too many categories on the menu to find the food they want, so it provides information to SROS designers to refine the system for improving consumers' using experience.

### **Limitations and future research**

As the data were collected with convenience sampling, most respondents and interviewees are university students, and some of them are non-local students, so the population of the study may be not broad enough and the generalization of the results may be limited. Besides, the ratio of males and females for data collection in this study was 1:1.81 with less balanced, which may affect the analysis of the gender differences in the acceptance of SROS, so future research can better control the ratio of males and females for analyzing the gender differences on this topic.

In addition, this study only considered two moderating variables: gender and experience, future

research can also consider the other two moderators to investigate their influence.

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億歐（2020 年 2 月 11 日）：美團收銀升級「手機點餐」功能讓顧客「無接觸點餐取餐」，贏商網，檢自 <http://news.winshang.com/html/066/9172.html> 瀏覽日期：20210416

## **Appendices**

### **Appendix A – Information sheet**

#### **INFORMATION SHEET**

##### **< Factors affecting Hong Kong young adults' acceptance of self-service restaurant ordering systems (SROS)>**

You are invited to participate in a project supervised by Dr. TAN Weiqiang and conducted by YI Ting, who are a staff and a student of the Department of Social Sciences in The Education University of Hong Kong.

#### **The purposes:**

This study are designed to measure the young adults' acceptance of self-service restaurant ordering systems (SROS) in Hong Kong and to investigate the influencing factors behind.

#### **The methodology:**

This study will invite around 200 participants, and young adults in Hong Kong aged from 18-25 years old, who live in Hong Kong more than 1 year meet the requirements to participant in this study. All participants need to complete an online questionnaire (5-minute short questionnaire), and are welcome to take part in a 10-minute follow-up interview, which can be arranged in flexible time and place.

#### **The potential risks:**

This research involves no potential risk, your participation in the project is voluntary. You have every right to withdraw from the study at any time without negative consequences. Permission will be obtained in advance from you to audio-record the interviews. All the entered data and audios will be stored on a password-protected file and a pass-word protected computer. All information related to you will remain confidential, and will be identifiable by codes known only to the researcher. The abstract of academic articles based on this research will be emailed to you to provide more information.

If you would like to obtain more information about this study, please contact YI Ting at telephone number                      or their supervisor Dr. TAN Weiqiang at telephone number

If you have any concerns about the conduct of this research study, please do not hesitate to contact the Human Research Ethics Committee by email at hrec@eduhk.hk or by mail to Research and Development Office, The Education University of Hong Kong.

Thank you for your interest in participating in this study.

YI Ting

Principal Investigator

## Appendix B – Consent form

### CONSENT TO PARTICIPATE IN RESEARCH

#### < Factors affecting Hong Kong young adults' acceptance of self-service restaurant ordering systems (SROS)>

I \_\_\_\_\_ hereby consent to participate in the captioned research supervised by Dr. TAN Weiqiang and conducted by YI Ting, who are a staff and a student of Department of Social Sciences in The Education University of Hong Kong.

I understand that information obtained from this research may be used in future research and may be published. However, my right to privacy will be retained, i.e., my personal details will not be revealed.

The procedure as set out in the attached information sheet has been fully explained. I understand the benefits and risks involved. My participation in the project is voluntary.

I acknowledge that I have the right to question any part of the procedure and can withdraw at any time without negative consequences.

Name of participant

Signature of participant

Date

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## Appendix C - Questionnaire questions

### A. Basic information 基本資料

1. Gender Male Female

性別 男 女

2. Age: \_\_\_\_\_

年齡： \_\_\_\_\_

### B. Questions related to the use of self-service restaurants ordering system (SROS)

關於自助點餐系統的使用情況

1. Have you ever used any self-service restaurants ordering system in Hong Kong? (please select the system you have used, can be more than one)

你在香港用過任何自助點餐系統嗎？（請選出你使用過的系統，可多選）



self-service kiosk (SSK)

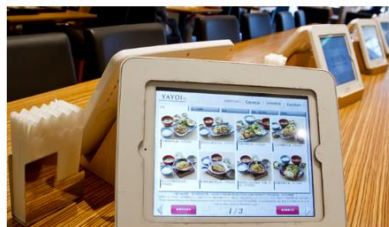


table ordering through tablet



own device ordering through QR code

2. How frequently do you use the self-service restaurants ordering systems in Hong Kong?

你在香港多頻繁地使用自助點餐系統？

Never Rarely Sometimes Frequently Always

從不 很少 有時 頻繁 總是

SSK 直立式

--	--	--	--	--

tablets 平板式

QR code 二維碼式


3. Please rank the three SROS depends on your usage frequency (Put 1/2/3 into the boxes, and 1 represents most frequently used)

請按照使用頻率為三種自助點餐系統排序（請填寫數字 1/2/3, 1 為最經常使用）



self-service kiosk (SSK)



table ordering through tablet



own device ordering through QR code

←  
←  
←




4. Do you like to use self-service restaurants ordering systems?

你喜歡使用自助點餐系統嗎？

Strongly Dislike Neutral Like Strongly

dislike 不喜歡 中立 喜歡 like

非常不喜歡

非常喜歡

SSK 直立式

tablets 平板式

QR code 二維碼式


5. Please rank the three SROS depends on your preference (Put 1/2/3 into the boxes, and 1 represents most like to use)



請根據你的喜好為三種自助點餐系統排序（請填寫數字 1/2/3, 1 為最喜歡）



self-service kiosk (SSK)



table ordering through tablet



own device ordering through QR code←

The diagram shows three boxes arranged horizontally. Each box contains a left arrow (←) and a top arrow (↑). To the left of each box, there are additional arrows: one pointing to the box from the left, and two pointing to the box from the left, one above the other.

6. When there are both SROS and traditional manual ordering system (ordering through a waiter/ waitress), which will you prefer to use?

當餐廳裡既有自助點餐系統又有傳統的通過服務員點餐的系統時，你會傾向於使用哪一種？

Self-service restaurants ordering system (SROS) / Traditional manual ordering system

自助點餐系統 / 傳統手動點餐系統

- C. Following are some descriptions of self-service restaurants ordering system (SROS), please select your degree of agreement of them.

以下是一些對自助點餐系統的描述，請選出你對這些描述的認同程度。

1. Short waiting time for placing and order (等待點餐時間短)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

2. Order fast (點餐速度快)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

3. Few ordering errors (點餐發生錯誤少)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

4. Flexible and adjustable ordering. E.g. change orders, change the content of set meals.

(點餐靈活，可調節。例如，變更訂單，更改套餐內容)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

5. More communications with restaurant employees, full of human touch.

(與餐廳員工多社交溝通，有人情味。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

6. Long time allowed for consideration, feel at ease and not embarrassed when ordering.

(可考慮時間長，點餐輕鬆自在、不尷尬。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

7. Easy to learn for the first time using. (第一次使用容易學習。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

8. Easy to use (操作簡單)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

9. I was willing to try the system when I first knew it.

(我第一次知道這系統時就願意嘗試。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

10. I believe I have the ability to use it. (我相信自己有能力使用自助點餐系統。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

11. I am familiar with the operation of the system. (我熟悉自助點餐系統的操作。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

12. There are clear using instructions in restaurants (Written instructions).

(店內有清晰的使用指引(文字指引)。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

13. There are staff in restaurants to assist in use. (店內有員工協助使用。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

14. When the system fails, it can be supported. (系統出現錯誤時，能得到支援。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

15. It is easy to get support when you encounter difficulties. (遇到困難時，易得到支援。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

16. I am not familiar with the operation of the system. (我不熟悉自助點餐系統的操作。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

17. Most people around me choose to use the system. (身邊很多人使用自助點餐系統。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

18. My friends recommend me to use the system. (我的朋友推薦我使用自助點餐系統。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

19. Not using the system seems to be outdated. (不使用自助點餐系統顯得我很落後。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

20. Many people around me have positive comments on the system.

(身邊很多人對自助點餐系統有正面的評價。)

Strongly disagree / Disagree / Neutral / Agree / Strongly agree

非常不同意 / 不同意 / 中立 / 同意 / 非常同意

D. Other reasons for you choose/ not choose self-service restaurants ordering systems

(SROS): (select one question to answer and fill in N/A for the other question)

你選擇使用/不使用自助點餐系統的其他原因：(選擇其中一題回答，另一題填

N/A)

21. Generally, I will choose to use SROS,

because\_\_\_\_\_

一般來說，我會選擇使用自助點餐系統，因為\_\_\_\_\_

22. Generally, I will not choose to use SROS,

because\_\_\_\_\_

一般來說，我不會選擇使用自助點餐系統，因為\_\_\_\_\_

Would you like to participate in a follow-up interview (around 10 minutes)?

你願意參加一個後續約 10 分鐘的訪問嗎？

Yes. Email Address: \_\_\_\_\_

No.

## Appendix D - Interview questions

1. Which SROS have you used in what type of restaurant (self-service kiosk, table ordering through tablet, and/or own device ordering through QR code)? What type of restaurant do you often go to/ not often go to? What are the reasons for frequenting or not patronizing a certain type of restaurant?

你在什麼類型的餐廳中使用過哪種自助點餐系統（SROS）（直立式、平板式、二維碼式）？你經常光顧或不光顧什麼類型的餐廳？經常光顧或不光顧某一類型餐廳的原因是什麼？

2. Compared with the traditional manual ordering system, what is the difference in the experience of using SROS? What are the advantages and disadvantages of using SROS?  
與傳統手動點餐系統相比，使用 SROS 的體驗有什麼不同？你認為使用 SROS 有什麼優點和缺點？

3. Which of the three SROS do you prefer? Why?

在三種 SROS 中你更喜歡哪一種？為什麼？

4. How did you learn to use SROS?

你是通過什麼方式學習使用 SROS 的？

5. In the experience of using SROS, have you encountered any difficulties? What kind of difficulties? How did you cope with them?

在使用 SROS 的經歷中，有無遇到過困難？遇到了什麼困難？最後是如何解決的？

6. Would you choose or not choose to use SROS because of the influence of others? How do they affect you?

你會因為受到其他人的影響而選擇或不選擇使用 SROS 嗎？他們如何影響你？