

CONSUMER PERCEPTION TOWARDS CLOUD KITCHEN

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Abstract: *Throughout the year, the innovations keep on changing according to the technologies. Malaysia had started the cloud kitchen system during the Covid-19 outbreak. However, not everybody knows the existence of cloud kitchen. The purpose of this study is to determine the relationship between the performance expectancy, effort expectancy, social influence and facilitating conditions on cloud kitchen. A quantitative research methodology via online survey was carried out. A convenience sampling technique of 403 potential customers had answered the survey. Data obtained were analysed using statistical software, Statistical Package for the Social Science (SPSS) version 21.*

Keywords: *cloud kitchen, consumer perception, innovation*

Introduction

Cloud kitchens, also known as ghost kitchens, virtual kitchens, dark kitchens, or invisible kitchens (Moyeenudin et al., 2020), are restaurants that do not offer dine-in service and instead rely on online ordering via online food aggregators and the restaurant's website or mobile application (Chavan, 2020; Choudhary, 2019). Artificial intelligence (AI) took the top spot in the top ten latest technology trends in 2021, followed by 5G and enhanced connectivity, edge computing, and the Internet of behaviours (IoB) (Smith, 2021). Cloud kitchen is also an example of an artificial intelligence innovation that occurs in this world. Covid-19, on the other hand, induced novel social behaviours such as social distancing, which is one of the reasons cloud kitchens are growing in market segments such as smartphone use, internet penetration, and cashless economy (Ehteshamfar & Koralage, 2020).

According to Sharda (2019), the new revolution was sparked by India's Rebel Food, which founded the first cloud kitchen in 2003. Not only is cloud kitchen a food delivery service, but it is also a platform where one kitchen serves multiple brands (Rebel Foods, 2019). Simply put,

Grabkitchen began operations in January 2021 and was Malaysia's first cloud kitchen, featuring 11 additional brands in one central location, including Kenny Rogers Roasters, MyBurgerlab, Salad Atelier, and more (Wong, 2021).

In early 2020, the government ordered the closure of all non-essential services in response to the increase in cases and to level the playing field (Malaysian International Food & Beverage Trade Fair, 2020; The Star, 2020). As a result, restaurateurs discovered that cloud kitchens were a more sustainable and profitable method of conducting business, particularly during MCO (Sonali, 2019). As a result, the restaurateur decided to implement a cloud kitchen, which allows them to reduce operational costs, maintain control over food quality, and increase personal disposable income (Choudary, 2019). The cost and time required to open a cloud kitchen are approximately one-third that of a traditional dine-in restaurant in terms of labour, furniture, and building area (Chavan, 2020; Sitorus et al., 2021).

After all, customers placing orders had no way of knowing whether they were ordering from restaurants, a cloud kitchen, or a delivery-only kitchen (Athar, 2020). The consumer or operator cloud kitchen plays a critical role in the cloud kitchen industry's success. Throughout the year, innovation and technology take over to alleviate human suffering. Likewise, for cloud kitchen. It can be simple for the cloud kitchen operator if he or she memorises the order and menu (Bornett, 2021). According to Garg (2021), incorporating technology into the restaurant may assist the manager in recognising the critical nature of guest awareness of the novel technology. In a cloud kitchen, operators may be aware of consumer preferences for menu items. Apart from that, the cloud kitchen has a lower operational cost because it delivers prepared food directly to customers and does not offer dining services (Sarandhar et al., 2021)

According to The NST (2020), the majority of restaurants operate at 50% to 60% of capacity during MCO to minimise the risk of contamination. As a result, the majority of Malaysians are unaware of the existence of cloud kitchens (Athar, 2020). According to Chern and Sh. Ahmad (2020), cloud kitchens are still in their infancy in Malaysia, and thus require extensive research to gain public acceptance. To address the study's gap regarding cloud kitchens in Malaysia, this research will delve deeper into customer perceptions of cloud kitchens. To fully grasp the new ways for the food and beverage industry, it is critical to understand the customer perception of the cloud kitchen in order to enhance the customer experience and shape a long-term relationship with the customer (Zach, 2019).

Literature Review

Unified Theory of acceptance and use of Technology (UTAUT)

Unified theory of acceptance and use of technology (UTAUT) is the model to explain uses intentions to use the information system subsequent usage behaviour. There are five main constructs which are performance expectancy, effort expectancy, social influence, facilitating condition and behavioural intention.

Performance expectancy is whether the individuals are believing that using the system can help them gains job performance (Venkatesh et al., 2003). Effort expectancy is where the ease and the difficulty of the use of the system during the early phases (Venkatesh et al., 2003). With the new system especially, the online system might have difficulty for the new user. Next, social influence. The individuals who are affected by the others leading in deciding on open access usage are called social influence. This factor can affect the adoption of technology in voluntary

and involuntary contexts (Venkatesh et al., 2003). Usually, the others who influence their family, friends, or relatives are giving a positive impact on the use behavior on cloud kitchen (Yaacob et al., 2021). Facilitating condition is the degree to which an individual believes that organizational and technical infrastructure exists to support the use of the system (Venkatesh, 2003). Facilitating conditions show the availability and awareness of the system. Ambarwati et al. (2020) stated in their study that social networking sites had to change the way people communicate from face-to-face to online methods such as chatting in social media. According to LaMorte (2019), behavioural intention referred to the motivation factors on the individual whether they approve or disapprove of the influence of the system. Behavioral intention is the dependent variable on this study where it carried out the customer perception of the cloud kitchen in the aspects of effort expectancy, staffs' performance expectancy and social influence.

Industrial Revolution 4.0 (IR 4.0)

Luenendonk (2019) stated that industrial revolution 4.0 was the current trend that made a new evolution based on the cyber-physical production systems (CPPS) and merging for the real and virtual worlds. The difference between the fourth revolution and the third revolution is when the machine starts to operate independently and can collect data, analyze and advise upon it. In 2016, Malaysia just started the fourth revolution. Industrial Revolution 4.0 also gave an impact on the food and beverage industry. Cloud kitchen was the evolution from IR 4.0. The usage of technology and smartphones is much easier in collecting data of the customer. Industry Today (2018) stated that IR 4.0 improves in tracking the customers' preferences in online shopping. Most websites or shopping applications keep the information of the customers so that they can predict the customer wants and easier for the customer to repeat orders (Industry Today, 2018). According to the study from Google's eConomy SEA 2020, the marketers should take the initiative and develop a new strategy to use the digital and technology to market their business since Malaysian consumers used the new digital services in the post-pandemic era over 92%. Therefore, the number of consumers who used digital in the food delivery industry increased by over 38% in 2020 (Davis et al., 2020).

Performance expectancy

From the staff point of view, the normal restaurant might give them the best opportunity in doing their work. Performance expectancy including restaurant-related activities such as self-ordering kiosks and the tablet menu (Yaacob et al., 2021; Garg, 2021). Due to the high technology penetration, the food industry is going through innovations to promote their brands either in supportive logistics or delivery systems that are helpful to the customers (Sarandhar et al., 2021). Cloud kitchen is the food production team with the space for food preparation and delivery to the customer and this process is done online since the customers are unaware of the location of the kitchen (Moyeenudin et al., 2020; Sarandhar et al., 2021). The research from Sarandhar et al. (2021) stated that the quality of the food is depending on the chef who prepares food for the kitchen. They need to hire skilled kitchen staff to handle the cloud kitchen from the order received to the packaging and billing work of the food orders (Sarandhar et al., 2021). Cloud kitchen is not provided dine-in so that the performance from the kitchen staff give the good impact to make sure the process goes smoothly and avoid any problems to occur.

Effort expectancy

A dine-in restaurant or traditional restaurant is a restaurant that is full of effort. To order the food, they need to call the waiter and read the menu book before deciding on what to order. Aftermath, there is a new technology which is the use of tablet menu (Garg, 2021). Tablet menu or in other words is eMenu is the other way to order by the customer browsing the menu and

place the orders by assigning them to the table (eMenu website, 2021; Garg, 2021). The study to Garg (2021), the young generation or the generation Y is the most tended using the tablet menu compared to the generation X. With the increasing generation Z population, the generation where most of the time are using the smartphone and technology, the internet services had to promote the online food ordering such as FoodPanda and Grab Food (Sarangdhar et al., 2021). In India, there is the study of the food delivery apps for the cloud kitchen where the process from the food ordering, to the staffing of the kitchen and delivery back to the customer, are all through online that set up by the third parties. The study by Sarangdhar et al. (2021), the challenges that might happen in cloud kitchen system is when people who are not familiar with the technologies and internet, they might think that the system is difficult to access but due to some location, the internet access helps them to learn the cloud kitchen system.

Social influence

When it comes to the new business, people nowadays tend to use influencer or the celebrity to review their brand or restaurant. Celebrity endorsement is a modern channel to market products and this is one of the most powerful promotional tools by marketers (Yang, 2017). Having celebrities influence people to buy or use the new system might give a positive impact on the business. The study from Rozazman (2021) stated that celebrity is familiar and likeability to the consumer and the more popular the celebrity, the more effective the advertisement message towards the consumer (Tayyebtaher, 2019). In cloud kitchen, social influence is important to market the use of the system. Not only the online influencer or celebrity endorsement could be the social influencer of the acknowledged people on cloud kitchen but the family and friends could be the one. In India, the demand for the cloud kitchen increase with the food delivery application such as Uber Eats, and Swiggy (Moyeenudin et al., 2020). According to Moyeenudin et al. (2020), the area of cloud kitchen is focusing on the food and menu along with the marketing strategy so that the development of the applications and website is the way to promote the business. The influence from the family and friends or even the online influencer could help people to recognize the cloud kitchen.

Facilitating condition

In this study, facilitating conditions is to give the awareness and availability of the cloud kitchen industry. According to The Star (2020), cloud kitchen can be outlasted after the pandemic ends in Malaysia. This shows that food delivery services are increasing day by day and the cloud kitchen concept is no dine-in and only delivery to the customers. Therefore, the system or the applications should be accessible to people. Cloud kitchen can facilitate the growth of the food and beverage industry since it can track and monitor all the orders dynamically into the production workflows even though the orders come from the different brands in the cloud kitchen (Seymour, 2019). Revolving Kitchen websites stated that cloud kitchen restaurants are using the food delivery platforms to deliver and facilitate delivery logistics.

Consumer perception

In other countries, cloud kitchens had been operated a long time ago. In Indonesia, they start the business since 2018 in Jakarta, in India the first cloud kitchen is Swiggy since 2017 and others (IE Online, 2021; Sitorus, 2021). Because of the pandemic, Covid-19 happened all around the world, cloud kitchens or ghost kitchens start to become the survival of the food and beverage industry. Even in the USA, Jollibee was the first cloud kitchen after the outbreak (Dumlao-Abadilla, 2020). In Malaysia itself, Dahmakan is the first food delivery that does not consist of dine-in and they did not use the third party as their food aggregator (Ellis, 2017).

Since cloud kitchen is the new ways to the industry in Malaysia, people are still not aware of this new revolution. The customers are tending to predict and guessing how this concept is all about. A study from Chorneukar (2014) shows that the consumers are aware of electronic food ordering and they find out that the electronic channels are easy and convenient to use.

Methodology

This study was conducted by quantitative research and it was the process of collecting and measuring numerical data (Bhandari, 2020). The respondents that gathered from this study were the potential consumers with the age of 18 years old and above and lived in Klang Valley. Hence, convenience sampling techniques were used in this study where the survey was distributed to the respondents through social media and based on the availability and willingness of the respondents to take part in answering the questionnaire (Etikan, 2016). According to the sample size calculator by Raosoft, the respondents needed was 377 based on the adult's population in Klang Valley. The reason why the researcher chose Klang Valley is that most of the cloud kitchens in Malaysia started in Kuala Lumpur such as GrabKitchen- Sri Hartamas, Dahmakan- Mont Kiara and Faasos- Damansara. This shows that most people in Klang Valley know the brands of cloud kitchens even though they never tried before.

The questionnaire for this study was constructed using the Google Form to the potential customer. Questionnaire items were gathered and adapted from the previous researchers such as Madigan et al. (2017), Lescevia et al. (2013) and Karulkar et al. (2019). This study used 5-point Likert from 1 (Strongly agree) to 5 (Strongly disagree). Most of the research used the Likert scale since it is easily measured personality traits or perceptions. The questions would be in close-ended questions since it might be easier for the respondent and reduce the time consuming to answer the questionnaire. All the questionnaire were distributed through social media such as WhatsApp, Instagram, Twitter and Facebook.

Findings

Response rate

The study conducted is to determine the relationship between the customer perception and performance expectancy, effort expectancy, social influence and facilitating condition. Therefore, a total of 403 were distributed to the potential customers around Kuala Lumpur and Selangor through the social media such as Instagram, Twitter and WhatsApp. The responses rate is 100% because all respondents willingly answered the questions given.

Descriptive analysis

Table 1 shows that 52.9% of the respondents were female. The most respondents are at the age of 18 to 25 years old with the percentage of 49.1%. 63.5% of the total respondents are single. Majority of the respondents were degree holder and work in the private sector with the percentage 51.9% and 40.9% respectively. Common monthly income of the respondents is below RM1000 with the highest percentage of 38.7%.

Table 1: Descriptive analysis

Profile	Categories	Frequencies	Percentage (%)
Gender	Male	190	47.1
	Female	213	52.9
Age	18- 25 years old	198	49.1
	26-35 years old	83	20.6
	36-45 years old	38	9.4
	46 years old and above	84	20.8
Marital status	Single	256	63.5
	Married	147	36.5
Education background	SPM	12	3.0
	Certificate	21	5.2
	Diploma	118	29.3
	Degree	209	51.9
	Master	35	8.7
	PHD	8	2.0
Occupation sector	Student	137	34.0
	Government sector	43	10.7
	Private sector	165	40.9
	Unemployed	58	14.4
Monthly income	Below RM1000	156	38.7
	RM1001- RM2500	77	19.1
	RM2501- RM4000	61	15.1
	RM4001- RM5500	30	7.4
	RM5501 and above	79	19.6

Reliability and Validity Test

Cronbach's alpha is one of the ways in analyse the data. It is used to obtain the internal consistency of reliability and figure out whether the questions in the questionnaire are valid or not (Bonett & Wright, 2014). According to Taber (2017), the acceptable reliability for cronbach's alpha is greater than 0.7 which shows that the items have an internal consistent reliability while the range between 0.5 to 0.7 is moderate reliability and below 0.5 is low reliability (Hinton et al., 2014).

Table 2: Reliability and Validity Test

Variables	Number of scale items	Cronbach's alpha coefficient, α
Performance expectancy	3	0.892
Effort expectancy	3	0.953
Social influence	3	0.910
Facilitating condition	4	0.932
Customer perception	3	0.964

Pearson Correlation

Pearson correlation are used to determine the degree of existing relationship between the variables. This study was using correlation to describe and determine the relationship between performance expectancy, effort expectancy, social influence, facilitating condition and customer perception. According to Cohen (1988), there are 3 strength of relationship, strong, moderate and weak. A weak linear correlation is between 0.1 to 0.3, moderate linear correlation between 0.3 to 0.5 and strong linear correlation are between 0.5 to 1.0.

		Correlations				
		Total Performance Expectancy	Total Effort Expectancy	Total Social Influence	Total Facilitating Condition	Total Customer Perception
Total Performance Expectancy	Pearson Correlation	1	.916**	.775**	.796**	.851**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	403	403	403	403	403
Total Effort Expectancy	Pearson Correlation	.916**	1	.788**	.852**	.878**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	403	403	403	403	403
Total Social Influence	Pearson Correlation	.775**	.788**	1	.773**	.795**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	403	403	403	403	403
Total Facilitating Condition	Pearson Correlation	.796**	.852**	.773**	1	.864**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	403	403	403	403	403
Total Customer Perception	Pearson Correlation	.851**	.878**	.795**	.864**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	403	403	403	403	403

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

Discussion

Based on the findings stated above, all four independent variables have a strong connection with the dependent variables. There are 403 valid responses gathered from social media. The first objective was to determine the relationship between performance expectancy and customer perception towards cloud kitchen. This shows how useful and helpful cloud kitchen is in the delivery services. As the result shown above, hypothesis supported where there is a relationship between performance expectancy and customer perception. As Lanlan et al. (2019) stated in their study, when the customer is impressed with the system, then the job performance has been improved and has a greater influence of usefulness.

The second objective was to determine the relationship between effort expectancy and customer perception towards cloud kitchen. This shows how easy the cloud kitchen system is. The

findings shows that effort expectancy and customer perception are correlated. According to the previous study from Garg (2021), the customers will find it is easy to function and get used to it quickly by the latest use of added mobile technologies. With the results achieved, we can see that the customers are willing and aim to use cloud kitchen more. The convenience and ease of use of the cloud kitchen system may lead to customer satisfaction (Panse et al., 2019).

Besides that, the third objective was to determine the relationship between social influence and customer perception towards cloud kitchen. The relationship between these two variables proves that influence from family, friends and influencers could convince the customer to use this cloud kitchen system. As proven in the past study, the influencer as an opinion leader uses their credibility to affect their followers' brand attitudes and purchase intention towards the products (Tayyebtaher, 2019).

To determine the relationship between facilitating condition and customer perception on cloud kitchen was the fourth objective that has been mentioned in this study. The hypothesis was supported after been tested by Pearson correlation. The finding stated that there is a relationship between facilitating condition and customer perception. Cloud kitchen is the kitchen facility that gathers the restaurants in one mobile application. This shows that the brands are getting closer to the customers by providing the delivery services and bringing down the delivery services (Panse et al., 2019).

Conclusion

In the nutshell, this study gathered all the information regarding the customer perception towards cloud kitchens. This shows that performance expectancy, effort expectancy, social influence, and facilitating conditions are related to the customer perception towards cloud kitchen. All the objectives and hypotheses are answered throughout this study and it is applicable for future studies to improve. Furthermore, customer perception is important for the new business to improve and to make sure their system or services are going along with what customers expect. Since this study is limited to Klang Valley only, the future study should widen their study to all over Malaysia. Even though cloud kitchens are not operated yet in the southern and northern regions, this is to make people aware of the existence of cloud kitchens. For the restaurateur, they need to figure out the initiative to grow the business within the endemic. Not only restaurateurs, but it also can be the opportunities for others to start their business in the food and beverage industry.

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