Adapting the Technology Acceptance Model for Food Odering Apps in Malaysia: An Exploration of Consumer Behavior and External Influences

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Abstract. This study examines the adoption of mobile applications by Malaysian consumers, particularly in the catering industry. The rapid growth in the use of mobile applications in Malaysia was driven by government policies restricting movement during the COVID-19 pandemic as well as the proliferation of Internet services. Davis introduced the Technology Acceptance Model (TAM) to explain the factors influencing technology adoption. This study assesses the applicability of the TAM to the specific context of Malaysia and its consumers. Through in-depth interviews, we investigated the mobile application usage behaviour of 12 Malaysian consumers. The focus was on understanding the factors that influence the acceptance of these apps. Three salient questions and the corresponding responses from the participants were analysed in this study.The transcribed interviews data will be analysed using thematic analysis. The results show that there are differences in the determinants of technology acceptance compared to traditional TAM. Further investigation also showed that the two key elements of perceived ease of use and perceived usefulness were only appropriate for consumer intention. On the other hand, this study focuses on the actual consumption behaviour of Malaysian consumers. Therefore, this study proposes to discuss the convenience and difficulty factors which have not been discussed in the TAM.

Keywords: Mobile Applications Adoption, Technology Acceptance Model (TAM), Malaysian Consumers, Consumption Behavior

1 Introduction

This exploratory study delves into the evolving landscape of technology adoption among Malaysian restaurant consumers, with a particular focus on their decision-making processes related to online ordering applications.While e-commerce is still in its infancy in Malaysia, the emergence of the COVID-19 pandemic and the subsequent implementation of the Mobile Control Order (MCO) between 2020 and 2022 has contributed to technological advancement and digital adoption in the country. As food is a basic necessity, consumers are forced to use online channels to fulfil their dietary needs. The surge in demand naturally led to the prominence of general food delivery apps versus merchant-specific takeaway platforms. As such, this period witnessed a shift in Malaysian consumers' acceptance of technology, a phenomenon shaped by external factors that influence their purchasing decisions.

Urban and suburban restaurants in Malaysia, ranging from upscale eateries to traditional

hawker stalls, have adopted delivery apps as the primary channel for serving customers, especially since dine-in was banned during the pandemic. These apps have proved to be powerful e-commerce tools, streamlining the user experience from app download and registration to placing orders. While some issues remain, such as inaccurate information provided by customers, the overall consensus indicates the effectiveness of these platforms in providing timely service to customers.

As originally hypothesised by[1], trends in app usage are often dependent on their perceived usefulness and ease of use. The current market situation in Malaysia echoes this, with a growing preference for contactless menu and delivery services. Apps have not only become a trend, but have become an integral part of the Malaysian consumer's lifestyle. While they alleviate traditional ordering hassles, such as long waiting times, they also present new challenges. Some users have difficulty using the user interface, navigating menu options or encountering barriers during the registration and ordering process[2].

2   Literature review

2.1 Technology acceptance Factor

The development of TAM is to measure technology acceptance of staff in an organisation by using perceived usefulness and perceived ease of use[1][3][4]. It is believed that the measurement of technology acceptance level can also be extended to food service consumers instead of staff in the organisation. This research attempts to discuss the two key components of perceived ease of use and perceived usefulness in food delivery and restaurant apps.

2.2 Perceived ease of Use

This is the main factor in determining the degree of technology acceptance. The complexity of the technology depends very much on the types of technology. Complicated software can be difficult to use compared to mobile apps. The time required to learn may be derived from the simplicity and user friendliness of the technology. It also includes the degree of accessibility and technical skills required for the technology[5].

For food delivery and restaurant apps, customers who interact with the digital menu interface may assess the level of difficulty while navigating menu items[6]. This includes understanding menu image and description, customise ingredients, and placing the food order digitally. If they have experience using other mobile apps before and frequently use the same food service apps, they may spend less time to learn since they are very familiar with the features and searching the right buttons quickly. Therefore, the apps which are straightforward and easily understood will increase the level of technology acceptance. Ultimately, perceived ease of use is the key element of mobile apps acceptance[7].

2.3 Perceived usefulness

In the study done by [1], he believed that Management Information System (MIS) would improve staff performance. In this case, five criteria were used to gauge perceived useful of the technology, namely obtaining needed information, obtaining additional information, increasing effectiveness, making job easier, and usage advantages[8]. If the degree of

perceived usefulness is greater, the technology acceptance is also greater[9].

In the case of food delivery and restaurant apps, the disadvantages of manual order taking can be addressed by the apps. Since the food service apps can arrange various menu items according to the degree of popularity, types, sales, and price, it becomes so advanced in selecting the right menu items with less hassle[10]. Some apps even feature 3D images, videos, animations, and entertainment[11]. Additional features can be available such as meal nutrition information, GPS location, WhatsApp number, vouchers, and promotional items[12]. In such way, individuals do not have physical contact with a waiter in placing their order and making payment[13]. Clearly, the features in the mobile apps increase the perception of usefulness by improving the food ordering's speed. Subsequently, it improves the efficiency of staff due to error free of staff. Eventually service is perceived as better, and customers are more satisfied[13]. Moreover, the food delivery and restaurant operators can save their cost with the reducing in number of employees needed for the service[14].

2.4. The limitations of TAM

Although TAM is widely used in understanding the acceptance level of consumers in technology usage, the model has many limitations that require further study to address them. Firstly, its key components of perceived ease of use and perceived usefulness are too simple and do not consider the complexity of the technology[15]. Other external factors such as social and cultural factors, economic and political factors have been overlooked[16]. These factors may significantly affect the decision to accept or even to reject the technology[17].

Secondly, the model is predicting the purchasing intention especially in business field[18]. However, the actual purchasing behaviour is really the utmost important in determine the success of the business entity. In addition, technology is in variety of forms which is not a static entity. It can evolve over time which may change the perception of the users[19]. The businesses may also adapt to the latest development of the technology which is not considered in TAM.

Furthermore, TAM does not investigate continuity of the technology usage. In this case, the reasons for discontinuity of the technology usage have been ignored. The difficulties of the technology usage are not discussed explicitly. Although new updated models are introduced later such as TAM2 [20][21][22] and TAM3 [23][24], but limitations mentioned above are still largely unanswered. By considering these gaps, the exploratory study has been employed to investigate in depth the issues.

3 Research methodology

The study was exploratory in nature and used an interpretive approach to obtain qualitative data. A total of 12 individuals participated in in-depth interviews. Three questions were posed to them to address the limitations of TAM. A total of 36 responses were available for analysis and discussion. In-depth interviews were an appropriate methodology as the aim of this study was to obtain richer responses. They were more likely to express their behaviour more freely. In contrast, the questionnaire was less effective in gathering information on 'why' and 'how' questions as it was less descriptive.

Qualitative data collected through in-depth interviews are enriched by the spontaneous responses of respondents. The interviewer can continue to look for further explanations on important and interesting topics through flexible discussions. The selected interviewees were between the ages of 18 and 50 and consisted of six males and six females. They are users of catering mobile apps and consist of the three largest ethnic groups in Malaysia. In this study, five respondents were Malays, five respondents were Chinese and the other two were Indians.

The challenge of in-depth interviews is to question the respondents carefully from a neutral position in order to eliminate the bias of the interviewer. Another challenge is the English language proficiency of the interviewees. Some of the interviewees used Malay and Chinese terms. Nevertheless, the interviewer was able to translate easily and accurately.

4 Findings and analysis

There was a total of six questions asked to the twenty interviewees. Only three most relevant questions with twelve interviewees are analysed. The twelve interviewers were selected because they provided more relevant responses to food delivery and restaurant apps. The questions are about the perception of the usefulness of the apps and the ease of use. A question on "difficulty of use" has been added to understand the difficulties that they are encountering.

Q1 – Why do you use mobile apps?

The first question determines the purpose of the usage of online apps. They described in detail the reason for installing those online apps. Basically, the food delivery and restaurant apps which are popular among the users for the transaction are Grab Food, Food Panda, Domino's Pizza, Pizza Hut, and McDonald's. However, there are many restaurants offer online apps with scanning of QR code.

It was found also that the main reason that trigger the user to use the online apps is because of the MCO (Movement Control Order) and COVID-19. They were forced to use them since government did not allowed dining in between the year of 2020 and 2022 in order to stop the spreading of the pandemic. Behavioural factor is another reason for Malaysian users to use these apps because they do not like to queue. Therefore, they may avoid this hassle with mobile apps which can be time wasting. This is obvious among the young adults who are more concern with their shorter lunch time during their work. In contrast, the senior citizens who may have retired and most of them are less tech-savvy people, they prefer to queue.

Subsequently, they mentioned about the convenience of using the apps. The ease of use of the apps is the priority set by the apps developers. It shows that the interviewees were unfamiliar with the apps but these apps are also very user friendly and need shorter learning time. They do not have to bring more money instead they just use apps to pay. Consistent with the nature of convenience of mobile apps, the next question asks about the ease of use of the apps.

Q2 – To what extent the mobile apps are convenient?

Even though it was found that majority of people prefer to use mobile phone installing the apps, some people still consider using laptop. This can be understood when they are working with laptop at the time of using the apps. The apps are very convenient so much so they just need to stay at home or office and receive whatever they order without moving out from their

seat. The ease of use also means that the simple understanding of the apps functions. If they already use other apps before, food service app can be easier to be used because they have similar functions For example, Grab Car and Grab Food are using the same apps which can be more convenient for the users. Certain apps require security measure in which it is trustworthy. This feature allows users to identify themselves especially with the usage of password.

The ease of use of other apps have extended to food delivery and restaurants apps. On one hand, some interviewees mentioned that they have used Shopee, Lazada, e-wallet, and Grab before. Now, they extended them to Grab Food, Food Panda and other restaurants' apps. On the other hand, some interviewees use food delivery apps to earn money. In this case, they have extended to other apps to earn addition money. Moreover, food delivery and restaurants apps are used because they can use e-pay. It can be translated into less anxiety of carrying so much money. Instead, they feel safe by just staying at home and receiving the food that they order

To certain extent, the interviewees also mentioned certain difficulties that they were facing in the apps which can be very interesting. Hence, the next question is about the difficulties of the use of apps.

Q3: Can you tell me to what extent the apps are very difficult to be used?

Based on the difficulty encountered by the interviewees, the old generation will have more inceonvenient to use the apps if they are not dealing with IT-related job. Some people reluctant to use the apps because they the old manual practice have been a norm for them. Therefore, it will be difficult to change. In addition, they feel unsafe because of the activities of scammers and hackers. It can be more severe with the cases of stolen personal information and money from their bank account. Basically, they do not trust online resources. This is especially true if the consumers who have experience of being a victim for any scam or been cheated using online platform. Even though it is protected by their password, the frequent changes of password will be very troublesome for them.

The parents are also playing an important role in discouraging their children to use the apps. They have less confident with the children in using the apps. This is because they think that their children may involve in gambling and losing their private information to scammers. The parents are protective, they will intervene especially in registering the new apps. More interesting, some interviewees compared their experience of using the apps with other unrelated apps for instance, health apps. It shows that not only scamming but also a bad previous experience can lead to the hesitation to use the apps.

4.1 Discussion

Based on the three interview questions related to mobile apps used in food delivery and restaurant, it was found that there are three categories of factors that can challenge the existing model. From the analysed themes show in Table 1, it can challenge the existing theory of Technology Acceptance Model (TAM).

Table 1. Thematic analysis.

Supporting quote/code	Theme	Category
MCO (Movement Control Order)	Contactless force	Technology Acceptance Factor
COVID-19		
Avoid body contact		
Cannot go out to buy		
Forced to do		
Don't have to talk		
Queue to pay	Outdating Avoidance	
Withdraw money from bank		
Don't like to queue		
Go post office to pay		
The only youngster		
Majority are old man in the bank		
Take time to learn	Continuity behaviour	
Studied online		
Buy books and clothes online		
Using Google Meet		
Using available apps		
Buy furniture online		
Use the apps for all possible transaction.		
Deal with the same app almost every day		
Learn a lot from other apps		
Use online banking		
Scan QR code	Digitalisation	Convenience Factor
Phone convenient than laptop		
Same platform for different services		
e-wallet		
Online transaction		
Pay using apps		
Location information		
Stay at home	Effortless ways	
Fingertips		
Apps function familiarity		
Do in office		
Buy online easily		
Same registration of apps		
Trustworthy	Emotion attributes	

Get rewards		
Can earn money		
Understand the fake apps		
Not worry		
Like (love) apps functions		
Scammer	Technophobia	Difficulty Factor
Being cheated		
Stolen of personal information		
Privacy		
Safety measure		
Steal information		
Need many passwords		
Phobia		
Hackers		
Need to learn	Learning experience	
It can be difficult		
Took time to download		
I manage to open it		
Manage password		
Apps can be updated		
Confirming transaction		
Information accuracy		
Parents are quite pessimistic	Parental influence	
Parents give me money		
My father advises me		
My parent will help		
He'll fill up		
They always ask me		

[1]conducted his research in US among the staff in the organisation to obtain their acceptance level of new information technology and system. However, the result in US appears to be very different from this study. This is because the focus is on Malaysians who are the consumers of mobile apps instead of the staff dealing with Management Information System (MIS) in US. Based on the first question in the data collect, the first category reveals the factors of technology acceptance.

Category 1: Technology Acceptance Factor

Description: The factors that influence the willingness of individuals to adopt a particular technology, system, or innovation.

For technology acceptance factor, TAM recommends perceived ease of use and perceived

usefulness[1]. However, these two proposed variables look too simply, and it was criticised because the complexity of the factors has been overlooked[15]. It does not consider social factors and external factors[16]. As opposed to TAM, this study adopts the thematic analysis that results in one external factor which is contactless force; and two social factors which are outdating avoidance and continuity behaviour as show in Table 1. The discussion of the technology acceptance factor will start with the first theme, contactless force.

Theme 1: Contactless force

Description: A strategy implemented in order to prevent direct physical contact among the people. It requires distance without direct touch or physical connection or interaction.

Supporting quotes/codes:

- Movement Control Order (MCO)
- COVID-19
- Avoid body contact.
- Cannot go out to buy.
- Forced to do.
- Don't have to talk.

Because of the pandemic outbreak, it leaves the consumers with no choice but to use mobile apps. Consumers were not allowed to go out during the outbreak except with emergency reasons. However, food delivery services were encouraged by government at that time in order to control the widespread of the disease if they are dining in. On the other hand, the development of TAM occurred when there was no pandemic outbreak.

When COVID-19 struck in year 2020, the outbreak of this pandemic became the compelled factor that contributes to technology acceptance. The contactless nature of interaction is enforced by government in which it introduced MCO. With MCO, Malaysians were not allowed to have physical contact for the past two years. The factor is named as 'contactless force' since government prohibited free movement among the people to stop the spreading of the pandemic. Therefore, contactless force is the factor for technology acceptance.

Theme 2: Outdating avoidance

Description: An effort made by individuals to ensure they remain up to date in terms of technology usage.

Supporting quotes/codes:

- Queue to pay (instead of paying online)
- Withdraw money from bank (instead of online banking)
- Don't like to queue.
- Go to post office to pay (instead of online payment)
- The only youngster (joining elderlies who are outdated)
- Majority is the old man in the bank (while young man dealing with e-pay).

Cash payments have always been related to the practice of the old generation. The reason is that many businesses nowadays have offered mobile apps with cashless transaction. Being the people who are still queueing in the bank to withdraw money and paying bills in the post office have been perceived as outdated. The old folks are still using the manual ways of

purchasing products, ordering food, and making payment. There is a very wide digital gap between young and old generation in Malaysia. Nowadays, fewer and fewer people especially youngsters are found in banks or post offices. This is because the young adults have gone through online learning and expose to online resources. Furthermore, they possess smart phone and notebook to keep themselves up to date. Apparently, outdating avoidance among the youngsters may contribute to the high technology acceptance level.

Theme 3: Continuity behaviour

Description: The action taken to continue adopting new technology over time.

Supporting quotes/codes:

- Take time to learn.
- Studied online.
- Buy books and clothes online.
- Using Google Meet.
- Using available apps.
- Buy furniture online.
- Use the apps for all possible transaction.
- Deal with the same app almost every day.
- Learn a lot from other apps.
- Use online banking.

In year 2020, it was found that internet has been widely available in Malaysia. Many young adults prefer to use smart phone. There are technology savvy people. It was found that the interviewees have the prior experience in technology especially mobile apps such as online banking, online shopping, online meeting, and online learning. The youngsters prefer to fully utilise online platform to perform any transaction. They are familiar with the existing online apps. This helps them to understand the function of mobile apps better. Subsequently, they continue to adopt new apps. Therefore, dealing with mobile apps such as food delivery and restaurant apps will be less problematic. Clearly, continuity behaviour is the factor that contributes to technology acceptance among Malaysians.

From the generated themes in this study, the perceived ease of use and perceived usefulness are not the factors for technology acceptance. The limitation in TAM is that it assumes users make rational decisions based on these two factors. In this finding however, emotion, habit and subjective experiences also play a role in shaping user behaviour. Variability in user behaviour might require additional factors to be considered[15]. TAM does not also be equally applicable to all types of technologies, for example software in computer is different from the mobile apps in the smart phone [16]. Some may require extensive learning and adaptation.

TAM emphasises on consumers' intention to use a technology[18]; while this study primarily focuses on actual behaviour. In other words, it has closed the gap between intention and actual usage. Another limitation is that TAM does not fully explain why some users feel convenient adopting the technology while others do not[17]. In addressing these limitations, this research has posted two questions to the interviewees in regard to convenience factor as fouond in category 2 and difficulty factor as in category 3.

Category 2: Convenience Factor

Description: The factor that measures how easy the technology is for an individual in terms of its user-friendliness, efficiency, and hassle-free conditions.

The thematic analysis found three factors i.e. digitalisation, effortless ways, and emotion attributes which contribute to convenience factor.

Theme 1: Digitalisation

Description: A process of converting the analog resources into a digital format.

Supporting quotes/codes:

- Scan QR code.
- Phone is convenient than laptop.
- Same platform for different services.
- E-wallet.
- Online transactions.
- Payment using apps.
- Location information (the usage of GPS – Global Positioning System)

There were old systems in where the consumers had to manually perform them such as ordering food manually and making cash payment. Nowadays, both ordering food and payment can be done by scanning QR code, using e-wallet, and performing online banking. The location of customers who order food by delivery service can be also detected by GPS instead of referring the signboard and map. This can be very convenient to the users if they install these valuable apps in the smart phone which can be carried everywhere. Therefore, digitalisation can be the factor for technology convenience.

Theme 2: Effortless ways

Description: Approaches that characterised by the simplicity, ease, and lack of significant physical and mental exertion. The goals can be achieved with minimal difficulty.

Supporting quotes/codes:

- Stay at home.
- Fingertips.
- Apps function familiarity.
- Do in office.
- Buy online easily.
- Same registration of apps.

Mobile apps seem to be simple and easy to use. It does not require complicated process which is vert time consuming. The consumers just need to stay at home or do it in their office. They do not have to travel very far to do it. Basically, they just place the order, pay online, then wait for the products or food to be delivered. In this case, effortless ways of the mobile apps contribute to the factor of convenience for the users.

Theme 3: Emotion attributes

Description: Specific characteristics that are related to human emotional experiences and states.

Supporting quotes/codes:

- Trustworthy.
- Get rewards.
- Can earn money.
- Understand the fake apps.
- Not worry.
- Like (love) apps functions.

Interviewees show the optimistic behaviour by using mobile apps. They fully utilize the functions available in the apps. As long as they trust the apps and understand how the scam apps are, they can manipulate the apps. They are not just spending money, but earning money, receiving rewards or redeeming their points. Therefore, emotion attributes can be the factor of convenience in using the mobile apps.This study also attempts to find out the possibility of the consumers to reject or even discontinue to use the mobile apps. Thus, the next category for discussion is difficulty factor.

Category 3: Difficulty factors

Description: The factors that are associated with the level of challenge or complexity in performing certain tasks in apps that will affect the level of technology acceptance.

The thematic analysis found three factors i.e. technophobia, learning experience, and parental influence which contribute to difficulty factor.

Theme 1: Technophobia

Description: An irrational fear to technology especially unfamiliar technological devices or apps.

Supporting quotes/codes:

- Scammer.
- Being cheated.
- Stolen of personal information.
- Privacy.
- Safety measure.
- Steal information.
- Need many passwords.
- Phobia.
- Hackers.

Technophobia is the reason for not accepting technology. Interviewees have anxiety in scammer, some of them have been cheated when using their online accounts. They are very concerned over the privacy of their personal information. If the important information such as their accounts and passwords are hacked, money and other important information may be stolen. This phobia contributes to the reluctance in accepting the technology especially mobile apps.

Theme 2: Learning experience.

Description: The situation or event in which an individual acquires new knowledge and skills.

Supporting quotes/codes:

- Need to learn.
- It can be difficult.
- Took time to download.
- I manage to open it.
- Manage password.
- Apps can be updated.
- Conforming transactions.
- Information accuracy.

Some interviewees concern over the learning process of technology usage. They need to learn how to install, how to register, and how to complete the transaction. If they took too long to open the apps, this can pose difficulty to the user. Besides that, they have to manage their password that require certain criteria. Once that use the mobile apps, they have to ensure that all the information filled in is accurate so that the right product can be received without wasting their money and time. Obviously, learning experience is one of the difficulty factors.

Theme 3: Parental influence

Description: The significant roles of parents in shaping the behaviour and overall well-being of their children from the stage of infancy through adolescence and into adulthood.

Supporting quotes/codes:

- Parents are quite pessimistic.
- Parents give me money.
- My father advises me.
- My parent will help.
- He'll fill up.
- They always ask me.

The new generation is welcoming the advent of new technology in their life. However, the parents are quite hesitated to adopt the technology. The digital gap between the parents and children can be very wide. The new technology can be very user-friendly to the children while it can be very troublesome to their parents. Some parents prefer to control the usage of the online applications. Therefore, parental influence apparently can be part of the difficulty factor.

4.2 Limitations and opportunities for further research

The nature of exploratory research has a limitation of a small sample size that cannot generalize the result or making business decision. In terms of further research however, the recent COVID-19 pandemic occurrence promises larger and more in-depth study in the usage of mobile app in Malaysia The upcoming study could also investigate the changes of users' perceptions and attitudes toward technology because technology is dynamic and constantly evolved. The other direction is to address post-acceptance behaviour by looking into how consumers continue or discontinue to interact with technology in long term. Moreover, the new research also can focus on specific technology for example multimedia apps which are popularised by Facebook and Youtube.

5 Conclusion

This study shows the importance of acceptance level among Malaysian in food delivery and restaurant apps. The businesses dealing with food service industry can focus on how to make their apps more convenience with less difficulty so that more consumers will use the apps. They may have competitive advantage over their rivals with the features that are more user friendly.

The impact of pandemic outbreak continues to provide advantage to consumers in terms of digitalisation. Besides, government has played an important role to ensure the internet services and telecommunication service is widespread in Malaysia. Therefore, it is safe to conclude that the level of technology acceptance continues to be higher despite a few experiences of scamming occur.

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