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Modelling Chatbots Adoption for Online Shopping Amidst the Covid-19 Pandemic

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ABSTRACT
The Covid-19 pandemic has triggered the companies to move from brick-and-mortar retail to m-commerce and e-commerce globally. Currently chatbots is the technology that has revolutionized mobile commerce. Its rapid popularity is because it allows clients to make transaction at their own time. This change in customers' purchase behavior triggers the need to study their intention to use chatbots for online shopping during covid-19 pandemic. This study delved into the factors that influence customer's intention to use chatbots for online shopping during covid-19 pandemic. Data was collected using a structured questionnaire from 220 students from three universities in Putrajaya, Cyberjaya, and Petaling Jaya. The results indicate that Attitude, Perceived Ease of Use, Perceived Usefulness and Perceived Enjoyment were the key drivers of adoption of chatbots use. To enhance adoption the developers and marketers need to educate and communicate with the users pertaining to the usefulness, ease of use and enjoyment facets of chatbots for more exciting and interesting online shopping experience.

Keywords: adoption intention, chatbots, Technology Acceptance Model, online shopping

1. 1. INTRODUCTION

The rise of mobile devices and wireless networks, as well as the evolution of m-commerce, has aided e-commerce (electronic commerce) (Rese, Ganster, & Baier, 2020). M-commerce allows customers to do e-commerce transactions using a mobile device, allowing them to complete transactions faster (Rese et al., 2020; Eeuwen, 2017). Many sectors are serving their customers using these apps (Duan, Edwards, & Dwivedi, 2019; Baier, Rese, & Röglinger, 2018), which allows clients to conduct transactions at their leisure. Mobile commerce has updated e-commerce and replaced shopping with mobile apps (Chung & Park, 2019).

Chatbots are the technology that has changed mobile commerce and represent the future of marketing (Sarkar, Chauhan, & Khare, 2020). Task-oriented and non-task-oriented are the two types of chatbots (Hussain et al., 2019), with two typology dimensions: short-term vs. long-term and user-driven vs. chatbot-driven (Folstad et al., 2019). For online purchasing, chatbots could also replace other chatting programmes like Skype, WhatsApp, and Facebook. Chatbots are software programmes

that employ consumers' local languages to improve customer support for organisations and individuals (Shawar & Atwell, 2007a; Cath et al., 2018).

Currently, chatbots are used for marketing, customer service, and sales (Wirtz et al., 2018; Ashfaq, Yun, Yu, & Loureiro, 2020). Consumers can use chatbots to talk and communicate with one another (Przegalinska, Ciechanowski, Stroz, Gloor, & Mazurek, 2019), either for product information, food ordering, or to place a virtual order (Przegalinska et al., 2019; Pizzi, Scarpi, & Pantano, 2021). Chatbots can aid businesses with technical support, guided selling, website navigation, help desk support, and customer service. Other chatbot applications include weather forecasting (Facebook's Poncho chatbot), news updates, booking flights, ordering pizzas, or delivering flowers, food recipes, health care, and mortgage. Around 80% of firms expect to use or offer chatbots to keep in touch with their customers around the clock. Customer communication with brands is aided by messaging applications and new technology (such as machine learning and AI). Companies recognised the need of these applications for more effective consumer communication. As a result, many businesses have begun to use messaging programmes since they can reply to and act on customers' requests and inquiries.

Chatbots can help and speed up the purchasing process (Shumanov & Johnson, 2020), and they don't require any downloads or registration (Letheren, Russell-Bennett, & Whittaker, 2020). They're also the most cost-effective option. Chatbots have been integrated into platforms such as eBay, WeChat, Amazon, Skype, and Facebook (Brandtzaeg & Flstad, 2017). Domino's (Folstad & Brandtzaeg, 2017), Louis Vuitton, Burberry, and Gucci (Heo & Lee, 2018), Coca-Cola (Rahman & Suguna, 2017), the retail industry (Van den Broeck, Zarouali, & Poels, 2019), Subway, Marriott hotel chains, and KLM are just a few of the big brands that use chatbots.

Researchers are focusing their attention on chatbots' applicability in website contexts (De Graaf & Allouch, 2013), however research into chatbots' potential and customers' reasons for using chatbots is still limited (Rietz, Benke, & Maedche, 2019). As a result, further research should be conducted to determine the aspects that influence client acceptance of chatbots. The pandemic of Covid-19 has increased the use of online commerce and chatbots. As a result, this study fills in the gaps in marketing research by determining the important determinants of chatbots adoption among the students during the Covid-19 pandemic.

2.0 LITERATURE REVIEW AND UNDERPINNING THEORIES

Using Davis' (1989) Technology Acceptance Model (TAM) and Rogers' (2004) Diffusion of Innovation Theory, this study investigated students' intentions to use chatbots for e-shopping during the Covid-19 pandemic (DOI). Customers' views, attitudes, and intentions are examined using the Technology Acceptance Model (TAM). Davis (1989) proposed that two elements influence users' behavioural intention to accept or use technology: perceived ease of use (PEU) and perceived usefulness (PU). Perceived Usefulness (PU) is described by TAM as a person's belief that using a particular system will improve his or her job performance. While Perceived Ease of Use (PEU) refers to a person's assumption that using a specific technology will be simple (Davis, 1989). Users accept an application because of the functions it performs and how easy it is to get the system to execute those functions, according to Shaw et al., (2022).

A number of research have found a substantial link between PU and behavioural intention (BI). (Venkatesh and Bala, 2008; Shaw et al., 2022). Davis (1989) claimed that PEU and PU had a direct influence on intention. Intention is a criterion for assessing the likelihood of future behaviour execution (Blackwell et al., 2001). Intentions, according to Ajzen (1991), capture the motivational variables that impact conduct. It denotes the readiness of users to try and put forth effort in order to do the activity.

Meanwhile, the Diffusion of Innovation Theory (DOI) can be used as a theoretical foundation for studies on online payment adoption (Harris et al., 2019; Venkatesh et al., 2008). According to DOI, communication has a significant impact on community social change (Rogers, 1962). Diffusion

is the communication of invention, and it consists of four elements: innovation, communication channels, time, and the social structure (Muna et al., 2022; Rogers, 1962).

Rogers et al. (2009) advised that diffusion researchers look into other factors that can influence users' adoption of innovations, such as Johnson et al., (2018) extended DOI by including security and privacy. Another distinguishing feature of mobile wallets is their reliance on network of providers that ensure that payments are executed appropriately (Mallat and Tuunainen, 2008). DOI has conducted research on Uber app usage (Min et al., 2019), Internet banking adoption (Al-Jabri and Sohail, 2012; Teo et al., 2015), and e-commerce engagement (Eastin, 2002).

Compatibility is another element within the Innovation Diffusion Theory (IDT) is. It denotes a higher probability for the adoption and acceptance that is consistent with the individual's tasks. This could lead to a possibility for that individual adopt the system (Shaikh & Karjaluoto, 2015). Thus, inventions must always be compatible to the targeted users' beliefs and preferences because it could affect cognitively (Kurnia, Choudrie, Mahbubur, & Alzougool, 2015). Chatbots are more promising and friendly to customers with positive behaviors for internet literacy or technologies. Compatibility of any technology (chatbots included) has a substantial impact on users' adoption (Montazemi & Qahri-Saremi, 2015).

The definition of observability of an innovation is the range of effects visibility of an action. Meaning that observability varies from one to the next. However, it is easier to connect outcomes to other people, whereas it is more difficult to identify similar people for the sake of invention observation (Zolkepli & Kamarulzaman, 2015). Furthermore, it allows for the testing of an idea prior to its acceptance. Furthermore, it often meant that customers test whether or not chatbots are easier to use than traditional methods while removing complexities insights. Restricted clients may be able to get service assurance as a result of this (Safari, Safari, & Hasanzadeh, 2015).

The term "perceived enjoyment" refers to users' feelings of pleasure and satisfaction when using the internet to do tasks such as connecting virtual communities (Holdack, Lurie-Stoyanov, & Fromme, 2020). People utilise mobile internet marketing for more than just communication; they use it to have fun (Teo & Noyes, 2011). It is a platform of enjoyment rather than a tool of productivity because it is a personalised communication tool (Alalwan et al., 2018b). Furthermore, customer perceptions of enjoyment play a significant role in their adoption (Shiau & Luo, 2013). The user's happiness is also influenced by their perception of enjoyment (Lewis, Williams, Frayeh, & Marcus, 2016). This would lead users to expect to have fun when using the technology (Moghavvemi et al., 2017).

Based from the highlighted literature, the research framework was drawn and Figure 1 depicts the research framework for the study.

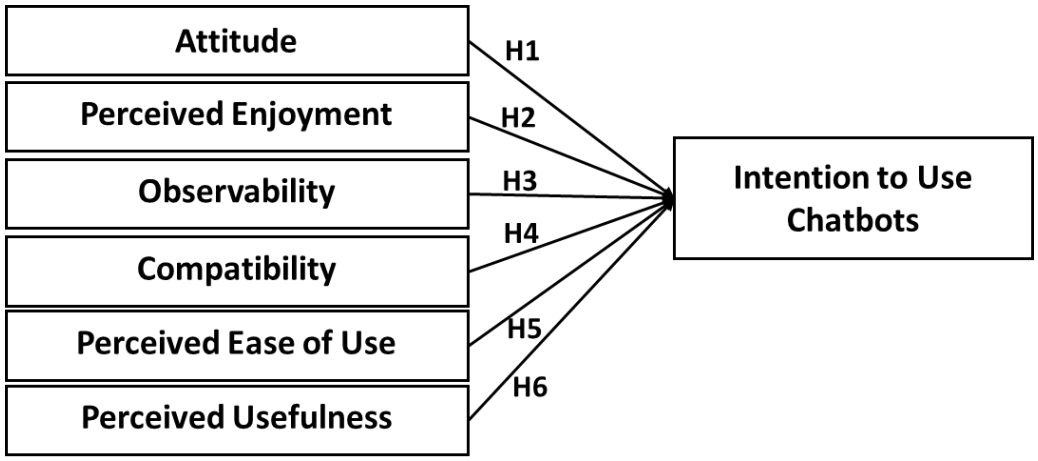

Figure 1: Proposed Research Framework
(Adapted from Technology Acceptance Model (Davies, 1989) and Diffusion of Innovation (Rogers, 2009)

3.0 MATERIALS AND METHODS

The respondents for this study were convenience sampled students from three private universities in Putrajaya, Cyberjaya, and Petaling Jaya. The respondents are among those who are familiar with and have used chatbots services for online purchasing were selected. The selected respondents were provided with a self-administered questionnaire by email, Facebook, Instagram, Telegram, and WhatsApp. 220 survey forms were returned completed and analysed. PLS-SEM was applied to analysed the data by determining the demographic profile of the respondents as well as validating model's measurement and structure.

4.0 FINDINGS

Majority of the participants were between 18- and 29-year-old (51%), 45% were in the 30 to 41 years old group. About 41.8% were single and 51.4% were married. About 58% were male and 41.8% were female. More than 51% were Diploma holder, 25.9% were with Bachelor degree, 16.4% with Master degree and 6.4% had a Doctorate degree. Table 1 depicts the details of the demographic profile of this study.

The internal consistency analyses, convergent and discriminant validity analyses determined this study's validity and reliability of the measurement model. The indicator reliability or outer loading of the study shows that all the constructs employed in this study was at a satisfactory level. Composite Reliability (CR) values for every construct in this study are between 0.93 and 0.95, which exceed the suggested value of 0.7 threshold.

Whilst the Cronbach's Alpha, which ranged from 0.90 to 0.94, shows that, the constructs employed had internal consistency reliability at a satisfactory level. The convergent validity value for each item ranged between 0.73 and 0.80, thus indicating sufficient convergent validity as the values had exceeded 0.5. The discriminant validity using Fornell and Larcker's (1981) criterion shows that all the AVE square roots exceeded the threshold value. This signifies that the convergent validity of multi-item scales is adequate.

Table 1: Details of Demographic Profile

Age	Frequency	Percent
18-23	61	27.7%
24-29	51	23.2%
30-35	60	27.3%
36-41	33	15.0%
42 and more	15	6.8%
Gender		
Male	128	58.2%
Female	92	41.8%
Marital Status		
Single	92	41.8%
Married	113	51.4%
Divorced	15	6.8%
Education		
Diploma	113	51.4%
Bachelor	57	25.9%
Master	36	16.4%
Doctorate	14	6.4%

Table 2: Summary of Findings

Hypothesis	Constructs	Std. Beta	Std. Dev.	t-value	p-value
H1	Attitude → Intention	0.505	0.098	5.177	*p*< .001
H2	Perceived Enjoyment → Intention	0.368	0.094	3.927	*p*< .001
H3	Observability → Intention	0.081	0.080	1.014	0.155
H4	Compatibility → Intention	0.011	0.099	0.115	0.454
H5	Perceived Ease of use → Intention	0.600	0.085	7.046	*p*< .001
H6	Perceived Usefulness → Intention	0.308	0.089	3.46	*p*< .001

The R^2 was 0.858 (Q2 = 0.657) shows that the six-predictor variables explained about 85.8% of the variance or variation in the users' chatbots usage intention for online shopping. The rule of thumb for R^2 is where 0.75, 0.50 and 0.25 describe substantial, moderate and weak level of predictive accuracy (Hair et al, 2019; Ramayah et al., 2018). Thus, R^2 score of 85.8% indicates that the model of this study has a substantial level of predictive accuracy. The results in Table 2 show that Attitude ($\beta = 0.505$, $p< 0.01$), Enjoyment ($\beta = 0.368$, $p< 0.01$), Ease of Use ($\beta = 0.600$, $p< 0.01$) and Usefulness ($\beta = 0.308$, $p< 0.01$) were all positively related to Intention to use while Observability ($\beta = 0.081$, $p> 0.05$) and Compatibility ($\beta = 0.011$, $p> 0.05$) were not significant predictors. Thus, H1, H2, H5 and H6 were supported, whilst H3 and H4 were not supported.

5.0 DISCUSSION AND CONCLUSION

TAM's appropriateness as a theoretical tool for assessing users' acceptance and adoption of chatbots in online commerce is demonstrated by the findings of this study. During the Covid-19 pandemic in Malaysia, this study verified the direct effects of perceived usefulness, perceived ease of use, enjoyment, and attitude on students' inclination to use chatbots for online buying. These findings match those of Al Kurdi et al. (2020) and Huang and Chueh (2020). Compatibility and Observability, surprisingly, are not important predictors, hence they are left out of the research framework. According to the findings, chatbots' perceived usefulness has a considerable beneficial impact on intention, which supports the studies if Tucker and Lawson (2020) and Jegundo et al.

(2020). This means that customers welcome chatbots since they will have access to promotional information, personalised offers, and the ability to compare prices (Caffaro et al., 2020). Chatbot technology is also adaptable, time-saving, and convenient.

According to Nielsen (2020), the shift to online shopping will continue to be the most popular among consumers. Before the epidemic, the elder generations (with their "load up" mentality) and the Millennials and Centennials (who believe that vital supplies would always be easily available) hold opposing views. Surprisingly, they all resorted to pantry loading, storing medical supplies and provisions throughout the pandemic (Zwanka and Buff, 2021). Consumer purchases have shifted from food service to food retail as a result of the Covid-19 epidemic (Goddard 2020). This shift emphasises the critical importance for marketers to provide exceptional customer service. As a result, the employment of chatbots in their online buying trip should be made simple, entertaining, and important. With these considerations in mind, it will be easier to persuade these customers to utilise chatbots for their online shopping. They require a consistent and unified experience, as well as immediate access to company discounts, offers, and coupons via chatbots. Users desire a small amount of taps, easy-to-read information, and minimal input requirements to ensure positive sentiments of chatbots online shopping experiences.

Individuals would adopt innovation that is compatible with their lives, according to Rezvani et al. (2015). Compatibility, according to the author, could either restrict or accelerate the acceptance of innovation. The hypothesis that measures the association between compatibility and adoption intention was rejected and did not support the findings of this study. This may imply that compatibility in the context of chatbots adoption is regarded as insufficient to enable adoption.

According to a Malaysian study, observability has a significant impact on adoption (Yang et al., 2015). Easy-to-observe new technology and innovation would lead to acceptance, and increased observability during virtual shopping would enhance its adoption rate (Sabi, Uzoka, Langmia, & Njeh, 2016). Surprisingly, this study's findings contradicted this conclusion. This could indicate that the respondents (in this case the university students) found that chatbot usage is either difficult to observe or that the technology is of inferior observability (Kapoor et al., 2015). Thus, the service providers must look into this aspect of chatbots usage to get higher usage acceptability.

Conclusively, this study reveals the aspects that influence consumer intent in terms of chatbots adoption and acceptance. During Covid-19, students' adoption intention to use chatbots for online purchasing proven to be influenced by perceived usefulness, perceived ease of use, enjoyment, and attitude. As for observability and compatibility constructs, there is a need to conduct further study to confirm its importance on users' chatbots adoption and acceptance.

6.0 LIMITATIONS

A small number of sample used for this study due to time, monetary and travel limitations. Furthermore, the respondents were students of three private universities, thus the findings could not be generalized. Selected variables were chosen for its relevancy and these factors may change gradually over time. Future studies can examine the effect of other factors such as privacy concern and anthropomorphism of chatbots on intention to utilize chatbots for online shopping. Another perspective of future study could focus on investigating the different demographics and samples' chatbots adoption intention for online shopping. Extending this study with the use of the longitudinal method is another study that future researchers could delve into.

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