Connecting with Generation Z: Consumer Acceptance of the Use of Artificial Intelligence in Online Shopping

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Abstract – In the civilized era, artificial intelligence (AI) is the imitation of human intellectual functions by machines or computer systems. It is challenging for e-retailers to offer customised discounts despite the unlimited product selection in an online store and at the same time, to satisfy customers' expectations while providing a distinctive customer experience. To provide clients with real experiences, recommendations and products must be tailored to their preferences and needs. Therefore, the purpose of this study was to ascertain whether generation Z consumers embrace the use of artificial intelligence (AI) in online buying. This study also aimed to provide recommendations and insights for SMEs to learn more about adopting AI that will enhance their online businesses. For this study, an online survey with quantitative approach is used and gathered 135 respondents. The data were examined by using SPSS version 25. The results of the correlation study showed that each component significantly increases the adoption of AI in online purchasing. The regression approach showed that technology literacy has a negative impact on artificial intelligence (AI) adoption, while all other independent factors (perceived usefulness, perceived ease-of- use, and trust) have significant positive impacts on artificial intelligence (AI) adoption. The R^2 value of the study which is 0.364 indicated good model fit. Due to the AI assistant's constant availability, customers may ask simple questions and report minor difficulties at any time without having to wait for a response. The analysis of client data also helps the online retailer better understand its customers and emerging trends. Thus, advantages like enhanced usability and customisation that satisfy consumer needs and expectations strengthen customer loyalty and boost corporate revenues over the long run.
Keywords: Artificial intelligence (AI), perceived usefulness, perceived ease of use, trust, technology literacy

1. Introduction

According to a Tractica analysis found that the growth of AI in eCommerce is increasing rapidly and predict that $36.8 billion in revenue will be generated globally by 2025. AI is

conquering the e-commerce industry with such soaring numbers. No matter what time and days, sales are happening in beneficial e-commerce industry. In other words, the e-commerce platform is always accessible to customers. Thus, AI is a key component of online purchasing platforms. It is allowing the businesses to obtain relevant data and succeeds in achieving companies' objectives. However, AI is still in its infancy, and it is difficult to anticipate how it will evolve in the future (Haenlein et al., 2019). According to a recent survey, the top three challenges faced by business leaders who are implementing AI are a lack of thought leadership and leadership commitment, a lack of skills, resources, and programmes for continuous learning, and a lack of advanced analytics or adequate infrastructure and tools to develop useful learnings. Lack of understanding in artificial intelligence creates difficulties for future development and the expansion of the online retail industry.

Previous research has analysed the adoption of AI using quantitative methods. However, there is a lack of studies on the use of artificial intelligence in Malaysia (Lee & Tajuddin, 2020; Ikumoro & Jawad, 2019). Hence, SMEs who take advantage of the opportunities presented by AIs stand to gain significantly (SME Corp. Malaysia 2017). Ikumoro & Jawad (2019) listed several benefits connected to businesses implementing IR 4.0, including more flexibility, increased productivity, increased efficiency, enhanced quality, shortened time to market, and the potential for developing new skills and talent internationally. To succeed and remain relevant in today's fiercely competitive global market, SMEs should reject the traditional brick and mortar business model and embrace digital transformation and its benefits.

As a result, the current study's objective is to investigate the factors that influence customer adoption of artificial intelligence-based applications used by e-commerce businesses in the context of Malaysian SMEs' adoption of technology. Intelligent Conversational Agents and Chatbots-AI, Virtual Assistants, Smart Logistics, and Recommendation Engines are currently the most widely used applications of artificial intelligence in organisations (Sennaar, 2019). The application and technological acceptance of Intelligence Conversational Agents and Chatbots-AI in Malaysian SMEs was the focus of this study, as the latter's software has the potential to change how SMEs interact and communicate with their clients online (Eeuwen, 2017). Therefore, the purpose of this study was to investigate the factors influencing generation Z's adoption of AI in online purchasing.

2. Literature Review

2.1. Artificial Intelligence Adoption

AI is a program that performs tasks that would be considered intelligent in humans (Overton, 2018). AI-based systems often replace humans as they can operate independently or with minimal instructions (Flavian et al., 2020; De Keyser et al., 2019). According to Huang and Rust (2018), automated technology will gradually replace humans in jobs that require mechanical, analytical, intuitive, and even empathic intelligence. Based on economies of size and scope, AI data and expertise are becoming increasingly valuable as key sources of

competitive advantage for businesses, leading to the creation of "winners-take-all" marketplaces (Nhat Lu et al., 2018). To achieve their goals, intelligence effectively combines a variety of processes, including problem-solving, reasoning, learning, memory, and environmental perception (Paschen, Kietzmann & Kietzmann, 2019).

Utility theory states that this AI technology helps consumers locate and select the best product alternatives while reducing the cost and time of their search (Pricewaterhouse Coopers, 2018). AI filters the data for each target client and offers individualised service (Paschen, Wilson and Ferreira, 2020). AI sorts the data for each target consumer and offers the precise information required (Paschen, Wilson & Ferreira, 2020). As a result, consumers can receive information more quickly and precisely. AI assists in automating business procedures that can be learned from data analysis, and interacts with clients and staff (Davenport and Ronanki, 2018). A more individualised shopping experience for customers can be provided by using AI to better understand consumer online information search and product selection patterns. It is an excellent technique for online stores to examine the demographics of current and potential customers. AI also makes interactions with customers and staff ongoing and interactive (Nagy & Hajd, 2021). A chatbot can automatically answer frequently asked questions (FAQs) about the items, how to utilise them, and the purchase procedure (Nagy & Hajd, 2021). AI systems do, however, have significant drawbacks. Big data is necessary for them to function at their best, therefore implementing and maintaining AI systems needs significant financial outlays.

2.2. Perceived Usefulness

According to Fred Davis, perceived usefulness refers to "how much a person thinks that utilising a certain system will improve his or her job performance." In other words, the extent to which a consumer thinks that the application of AI in online purchasing would improve the effectiveness of his or her purchases. Additionally, it describes how this usage can improve the user's quality of life. The perceived value of technology is to improve a person's life and his or her digital presence and existence in a virtual environment, which is a result of the fourth industrial revolution and the jump in digital transformation that is affecting all parts of our lives (Bou-Ghanem, 2020).

According to Nagy & Hajd (2021), perceived usefulness is the extent to which a customer thinks that the application of AI in online purchasing will increase the effectiveness of his or her purchases. Perceived usefulness is typically considered to be a more direct and powerful influence on the intention to adopt technology than perceived ease of use (Yong, 2019). Numerous studies have found beneficial benefits on attitudes and behaviour related to the adoption of technology, as well as perceived usefulness and perceived usefulness.

2.3. Perceived Ease-of-Use

According to Davis, perceived ease of use refers to "how much a person thinks using a certain system would be free of effort." Nagy and Hajd (2021) defined perceived ease of use is the degree to which a customer thinks utilising AI in online stores would be effortless. It is a concept that links to how someone evaluates how much work it takes to understand and

use a new technology (Bou-Ghanem, 2020). Consequently, it relates to a person's abilities, as well as to their background, age and gender (Bou-Ghanem, 2020).

The workload of both staff and customers has decreased because of the use of AI. The perceived usefulness and simplicity of use have an impact on external factors that may feed into these, such as the customer experience factor. According to the TAM framework, perceived usefulness mediates the relationship between perceived ease of use and behavior-related intention to use (Yong, 2019). According to Yong (2019), various research has shown that perceived ease of use is the main element that influences users' attitudes and behaviour intentions toward using technologies, in addition to perceived usefulness.

2.4. Trust

E-commerce greatly benefits from the presence of trust. Trust is the perception of competence (i.e., credibility), and kindness is the degree of psychological comfort and safety one feels when relying on the trustee (Nhat Lu et al., 2018). When it comes to robotic AI, trust tends to start off low and rise with time, however when it comes to virtual and embedded AI, the opposite frequently happens. AI plays a significant role in the development of trust and has diverse effects on trust over time. There are two types of trust: general and specific trust, according to Nagy and Hajd (2021). The e-commerce environment, consumer attitudes and views about it, and general trust are all related. Consumers' online purchasing experiences at online stores are correlated with specific trust.

Interactive contact between the retailer and the customer can raise confidence levels. In order to lower perceived risk, AI will be the tool that bridges the gap between retailers and customers. This can be achieved by leveraging accurate product descriptions and photographs. According to Aranyossy and Magisztrák (2016), more frequent online shopping was linked to a greater level of e-commerce trust. However, Daley (2018) asserts that online shoppers may not even be aware when a website employs artificial intelligence (AI) capabilities. Consumer's intention to make an online purchase is positively impacted by consumer’s confidence and trust. The likelihood that a customer will complete the purchasing process increases with the level of consumer trust in an online store (Nagy and Hajd, 2021).

2.5. Technology Literacy

The world and how people live their lives today have been tremendously impacted and modified by technological advancement. People are growing more dependent on advanced technology, which is developing quickly. About the other side, there are differences in people's perspectives on technology (P. Ravindran Pathmanathan and Khairi Aseh, 2020). Age is one of a few factors, among others, that contribute to this mismatch.

Although baby boomers are less at ease with technology than younger generations, they are trying to keep up. The generation Z, on the other hand, is young, a social media expert, and so on. Since they were born with technology, members of generation Z are more likely to be top performers and modern. Compared to earlier generations, this generation may perceive themselves to be more technologically aware.

The term "literacy" refers to a broad range of capacities, abilities, and information. Information is referred to as knowledge, abilities is referred to as skill, and behaviour is referred to as actions. Technology literacy is the capacity to use relevant technology safely and successfully for communication, problem-solving, accessing, managing, integrating, producing, and communicating information to enhance the learning process through critical thinking (Alfred Thomas Bauer and Ebrahim Mohseni Ahooei, 2018).

Technology literacy also includes the capacity to assess the veracity of information acquired and incorporate it into the incorporation of new knowledge. The relevance of data and text analytics using artificial intelligence is rising along with the capability to dig out bigger volumes of data, information, and expertise to achieve a competitive advantage. AI staples to comprehend what may be created using artificial intelligence, how it can impact people's lives, and the moral dilemmas associated with its technology.

However, because AI is inherently complex, it frequently lacks transparency, which discourages individuals from utilising such technology. Additionally, those who lack knowledge have higher expectations for AI based on their own presumptions, which are frequently unfounded. As a result, the person is dissatisfied with the integrated technology of AI (Brill et al. 2019).

3. Methodology of Study

This study used a quantitative approach of research design, and generation Z was the primary source of data collection across Malaysia. 33 statements from a set of questionnaires were modified for use in gauging the adoption of artificial intelligence. The measurement for AI adoption includes self-developed items.

The measurement of perceived usefulness, perceived ease-of-use, trust, and technology literacy were adapted and adopted from the work of Hasani et al. (2015), Ali & Freimann (2021), Brill et al., (2019), and William R. Swinyard & Scott M. Smith, (2003). 150 questionnaires in total were randomly delivered to Malaysia's generation Z. 135 datasets with a 90% response rate were collected. Before analysis, the data were cleansed of any errors and outliers using SPSS Version 22.

4. Findings and Discussion

4.1. Descriptive Analysis

This section mostly describes the distribution samples based on the respondent's profile's demographic data. Gender, age, race, locality, occupation, and income range make up the responder profiles.

Table 1: Demographic Profile of Respondents

Item	Frequency	Percentage%
Respondent's Gender		
Male	57	42.22%
Female	78	57.78%
Respondent's Age		
10-13 years old	4	2.96%
14-17 years old	5	3.70%
18-21 years old	53	39.26%
22-25 years old	73	54.07%
Place of Living		
Urban	135	100.0%
Rural	0	0.00%
Income		
RM0-RM1000	69	51.11%
RM1001-RM2000	36	26.67%
RM2001-RM3000	27	20.00%
RM3001 and above	3	2.22%
Do you shop online?		
Yes	135	100.00%
No	0	0%
Do you know about AI in online shopping?		
Yes	123	91.11%
No	12	8.89%
Do you have used AI in online shopping?		

Yes	99	73.33%
No	36	26.67%

Due to generation Z consumers' preference for online shopping, the gender gap did not demonstrate any significant variation. In comparison, male respondents are total 57 and at 42.22 percent, while there are 78 respondents who are women prefer online shopping. For the demographic profile of the respondents, the age of the respondents emerged as a key indicator that most respondents between the ages of 22 and 25 prefer to purchase online.

According to the results, 54.07 percent of respondents between the ages of 22 and 25 are most likely to shop online. The age group with the fewest respondents is 10 to 13 years old (2.96%), followed by 14 to 17 years old (3.70%). 39.26% of respondents were between the ages of 18 and 21. 100% of the respondents reported living in an urban area. The respondents' monthly income was also a part of the survey. The monthly income range for 51.11% of respondents is RM0 to RM1000. Only three respondents (2.22 percent) out of 135 respondents are receiving monthly salary greater than RM3001.

On the other side, 20 percent of respondents have a monthly salary of RM2000 or more, and 26.67 percent have a monthly income at RM1001 – RM2000. Additionally, the results demonstrate that the respondent answered, "Do you shop online?" with a resounding "yes." For the question of “Do you know about AI in online shopping”, 91.11% of the respondents answered “yes” and 8.89% of the respondents answered “no”. The question later related to “Do you have used AI in online shopping?”, 73.33% of respondents answered “yes”. The respondents that had answered “no” for question “Do you know about AI in online shopping” consistently answered “no” for the question “Do you have used AI in online shopping?”. This shows that there is any contradictory of relationship between the knowing AI and using AI in online shopping.

4.2. Correlation Analysis

The connections between the variables were examined using Pearson correlation tests. The effect of correlation is to scale back the range of uncertainty. Forecasts based on correlation analysis tend to be more volatile and closer to reality. Finding any connections between the dependent variable (Artificial Intelligence Adoption) and the independent variables (Perceived usefulness, Perceived Ease-of-Use, Trust, and Technology Literacy) is the goal of this study.

Table 2: Correlations Analysis on Variables

	AI adoption	Perceived usefulness	Perceived ease of use	Trust	Technology literacy
AI adoption (AIA)	1				
Perceived usefulness	.570**	1			
Perceived ease of use	.409**	.458**	1		
Trust	.239**	.252**	.228**	1	
Technology literacy	.023	.056	.084	.584**	1

Even though all of the independent variables (AI Adoption) were favourably significant, the Pearson correlation results show that the association were weak. Only perceived usefulness and perceived ease of use found to have a moderate strength at $r = 0.570$, $p < 0.01$** and $r = 0.409$, $p < 0.01$**. Trust is at significant at $p < 0.01$, where $r = 0.239$ which indicates the strength of small but definite relationship. However, the technology literacy significant relationship at $r = 0.023$ which is slight, almost negligible.

4.3. Multiple Regression Analysis

Multiple linear regression is the most significant sort of linear regression analysis (MLR). A predictive study called multiple linear regression describes the relationship between one continuous dependent variable and two or more independent variables. To ascertain the causal relationship between the dependent variable (Artificial Intelligence Adoption) and the independent variable, multiple regression analysis was performed in this study (Perceived usefulness, Perceived Ease of Use, Trust, and Technology Literacy). The usage of multiple regression analysis also stems from its capacity to conduct thorough and concurrent evaluation of independent variables. Using Pearson's Correlation Coefficients, correlation analysis was done to determine the relationship between the variable and the strength of the relationship between the variables. The r2 value in multiple regression analysis tends to exaggerate the variance of the dependant variable by using the value from r. Hence, it will be focused on the use of adjusted r2- value (Argyrous, 2011).

Table 3: Multiple Regression Analysis: Coefficients

Variable	Standardized coefficient (Beta)	t	sig
Constant		2.467	.015
Perceived usefulness	.460	5.731	.000
Perceived ease of use	.174	2.195	.030
Trust	.141	1.568	.119
Technology literacy	-.100	-1.149	.253
R	.604		

R^2	.364
Adj R^2	.345
F value	18.635
F value sig	.000
N	135

The significance of the association between the dependent and independent variables is shown in the above table. The criteria (perceived usefulness, perceived ease-of-use, trust, and technology literacy) and their direct relationship to the adoption of artificial intelligence (AI) produced the value that R = 0.604, R^2 = 0.364, Adj. R^2 = 0.345, F value = 18.635. The coefficient of determination R^2 value indicates model fit. The coefficient determination R^2 value of 0.364 indicated good model fit. Significant F of 0.000 indicates that the model is significant at $p< 0.05$.

Findings from the table above showed that relationship between variables and dependent variables was found to be negatively influenced. Perceived usefulness (B = .460, t= 5.731, and p= 0.000) and perceived ease of use (B= 0.174, t= 2.195, and p= 0.030). are significantly influenced by Artificial Intelligence adoption. While trust (B= 0.141, t= 1.568, and p= .119) and technology literacy (B= -0.100, t= -1.149, and p= 0.253) are negatively influenced online shopping behaviour by AI adoption.

5. Recommendations

To improve research findings in future, mixed-method surveys that combine quantitative and qualitative methods are encouraged to use. Both methods can be used to present a comprehensive picture of the research. The research results will strengthen comprehension, confirm the concept, and expand the target population for exact statical data.

Secondly, future researchers should consider including a sizable sample size in their study. The sample size is a crucial factor for conducting research. Larger sample sizes contribute to more accurate mean values and help prevent errors. Moreover, larger sample sizes produce more trustworthy and reliable results.

Thirdly, the prospective researchers are advised to use longitudinal study to gather information from each person over a certain time. If the participants are continually examined across time, longitudinal studies do not have a predetermined length of time. Future researchers will be able to comprehend the adoption of AI by customers in real time.

Finally, in future research, the researcher may concentrate on polling and examining the acceptance of AI in various sectors. More accurate and comprehensive results will be obtained by looking into the use of AI in different industries. Due to the ongoing changes in technology, numerous sectors are adopting AI systems to give customers better systems.

Studying different sectors is important to gain a better knowledge and to conduct additional relevant and effective measures. Besides that, it would be intriguing to identify the respondents from rural areas adopt AI by using same independent variables.

6. Conclusion

This study investigated the effects of user-side characteristics (perceived usefulness, perceived ease of use, trust, and technology literacy) on consumer adoption of AI systems, both directly and indirectly. Online purchasing is in demand because of consumer anxiety over pandemic risk and personal cleanliness.

Artificial intelligence (AI) will increase usability, responsiveness, and customer experience in e-commerce. The AI system provides pertinent data, such as product expertise, process operations, and customer journey maps, which enables it to automatically respond to queries. It will also provide guidance to the users by teaching how to utilize AI functions such as chatbot.

The development of humanlike qualities for AI systems by e-retailers will improve future social interactions with customers. To improve customer relationships with AI assistants and e-commerce, digital marketers should take into account hedonic motivation and performance expectancy when offering individualised services and solutions.

The positive impact of AI functions in ecommerce facilitates organizational productivity and competitiveness. Moreover, the positive impact on AI assistants is expected to increase customer demand. E-retailers need to focus on understanding consumers to address privacy concerns, build trust, and enhance satisfaction by providing a better experience.

The beneficial effects of artificial intelligence on e-commerce support organisational productivity and competitiveness. The benefit of AI helpers is also anticipated to drive consumer demand. To solve privacy issues, e-retailers should provide a better experience, increase trust and satisfaction for customers.

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