Moderating Effects of Generation Y's Online-to-Offline E-Commerce (O2O E-Commerce) Shopping Experience

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Abstract

This research aimed to study the moderating effects of Generation Y's online-to-offline e-commerce (O2O e-commerce) shopping experience. The data were collected utilizing an online questionnaire. The sample included 349 customers aged between 18 – 38 years. Descriptive statistics were used to present the percentage, mean, and standard deviation. Inferential statistics were applied by structural equation modeling (SEM) to test the moderating effects of the O2O e-commerce shopping experience as a categorical variable. Also, to compare the chi-square differences, multi-group analysis was applied. The research results revealed that online and offline data integration variables positively influenced perceived usefulness and easy-to-use. Perceived usefulness and perceived easy-to-use positively influenced customers' attitudes towards the use of O2O e-commerce. Moreover, Generation Y's O2O e-commerce shopping experience influenced the relationship between online and offline data integration and perceived usefulness. Furthermore, perceived easy-to-use influenced the relationship between perceived usefulness, perceived easy-to-use, and attitudes towards the use of O2O e-commerce. The results of this research can be used as a guideline for various educational institutions in helping local communities generate sustainable income, which is a very important foundation for country development. The educational institutions can act as intermediaries in purchasing products produced by local communities and distributing them through the O2O e-commerce platform created to reach the right customers, such as Generation Y.

Keywords : **moderating effects, generation Y, e-commerce, online-to-offline, O2O e-commerce, shopping experience, business administration, business economics, marketing and advertising**

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The world has fully turned to the digital age with new technologies and innovations created to increasingly facilitate people in everyday life. This has resulted in behavior changes in daily life, including the behaviors in business operations that tend to be more online, causing the growth of e-commerce businesses (Jayaraman et al., 2016). The world's largest e-commerce market is India, followed by China, Indonesia, Malaysia, and South Korea, respectively (Saributr et al., 2021). On the consumer side, the purchase of goods and services using online channels is due to product variety, convenient shopping, enjoyment, ease of delivery, several discounts, cash-based payment options, and the increasing penetration of debit and credit cards (Joshi & Achuthan, 2016). The Thai e-commerce market is also growing continuously. A survey by the Electronic Transactions Development Agency (ETDA) estimated that the value of Thailand's e-commerce in 2018 was 3.15 trillion baht.

Moreover, as most of the world's poor population comprises more than a billion people living in developing countries, United Nations Conference on Trade and Development – UNCTAD has thus focused on strengthening rural development through e-commerce (Prakash & Pathak, 2014) by enhancing the capacity of rural

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manufacturers with the use of e-commerce for marketing, buying, and selling products, and also enhancing the capacity of the rural people to become consumers through online channels. This is in line with China's concept of using e-commerce to help distribute agricultural products, which is another way to generate additional income for local farmers. Also, it is a combination of online and offline (O2O) stores, which can increase the profits from sales to rural residents. It is also considered a rural area development and brings more famous products from each rural area to the markets (Global Entrepreneurship Research Association, 2020).

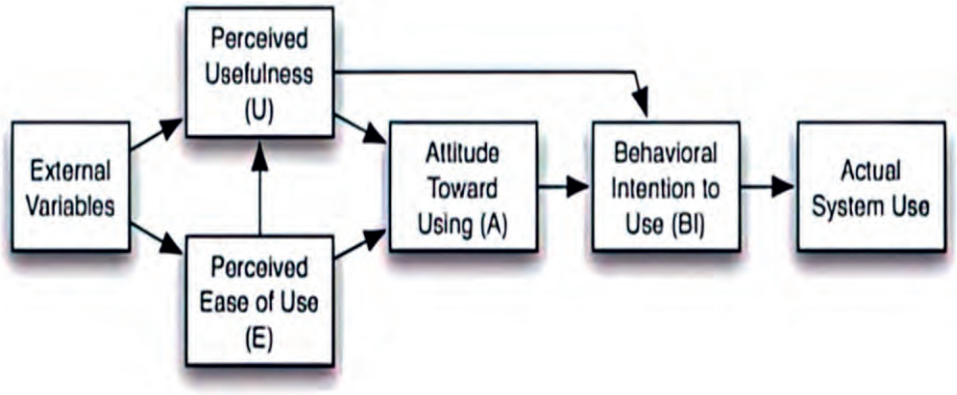
In Thailand, the Ministry of Agriculture and Cooperatives has applied the O2O Model in the "Modern Agriculture E-commerce" action plan for the trade of agricultural products with cooperation among the Ministry of Commerce, e-commerce companies, and Thailand Post Company (Saributr et al., 2021). In addition, the Government Savings Bank (GSB) developed an e-commerce system for O2O-Village Grocery sponsored by GSB to be able to operate online businesses on the O2O e-commerce platform. Thus, buyers can make an order conveniently. Similarly, with an in-store product management system, product management system, and delivery system, community stores can run their businesses more conveniently ("Government Savings Bank encourages," 2018).

"Marketing Innovation for Sustainable Product Development to the Community," a project established by Rajamangala University of Technology Thanyaburi (RMUTT University) to assist the community by studying, analyzing business possibilities, and selecting potential products to be sold online and offline. The university, as a middleman, purchases the potential products from local communities and develops the products with packaging design to sell them at retail price, membership price, or wholesale price. There are five online and five offline distribution channels of the university, respectively. The project was designed to create a complete business mechanism and sustainable help for local communities. O2O e-commerce is one of the innovations in the field of e-business. In terms of acceptance of O2O, the technology acceptance model (TAM) was used to show the O2O e-commerce customers or user acceptance and usage of innovation. A framework for the study of purchasing behavior online was created based on the TAM concept through variables which are perceived usefulness and perceived ease-of-use. Experienced usefulness and perceived ease-of-use are three elements that are the main parameters of the TAM. Therefore, this study will concentrate on moderating the effect of Generation Y customers' shopping experience through O2O e-commerce based on the TAM. The study population is Generation Y consumers with experience in buying community products through O2O e-commerce. Generation Y, also known as millennials, is the first digital generation of the 21st century, making it a unique group of customers. Generation Y possesses a higher purchasing power and has thus become an important customer group for marketers (Bulsara & Veghela, 2022). Many businesses are starting to develop their marketing strategies to better suit the consumer trends of Generation Y.

Market segmentation is one of the most important activities of marketing strategy development. As a business cannot reach all markets, marketers, therefore, try to find a group of people with specific behaviors and then set the most interesting targets (Barbu, 2011). Therefore, marketers will identify the existing groups and decide which ones to target (Kotler & Keller, 2012). It was found that demographic and psychological factors are prominent factors affecting market segmentation (Goyat, 2011). Market research allows marketers to use variables relating to customer behavior or attitudes towards products to segmentize using a post-hoc segmentation approach. In this case, market research will be conducted, and various segments will be known after the data analysis (Lopes et al., 2009). For this research, I divided Generation Y consumers' shopping experiences through O2O e-commerce using a post-hoc segmentation approach. Several previous studies have also been found to be related (Ramírez-Correa et al., 2020; Saributr & Assarat, 2018). The researcher used this segmented Generation Y consumers as a moderator variable to test the research hypotheses.

Moreover, since customers nowadays tend to trust other customers who have purchased the products, it is essential to study the moderating effects of Generation Y's online-to-offline e-commerce (O2O e-commerce)

Figure 1. ***Technology Acceptance Model (TAM)***



Source : Davis et al. (1989).

shopping experience. The findings will be useful to help create a suitable marketing strategy for the target groups and conduct O2O e-commerce marketing activities more effectively and efficiently.

Literature Review and Hypotheses

Technology Acceptance Model (TAM)

The technology acceptance model or TAM (Davis, 1989) was developed from the theory of reasoned action: TRA. The theory consists of external variables, perceived usefulness, which refers to the belief that increases the efficiency of one's work, and perceived ease-of-use refers to the belief that technology is effortless to use. These affect the attitudes towards using as well as the behavior intention to use from actual system use, as illustrated in Figure 1.

Variables and Their Definitions in the TAM

(1) ***Perceived Ease of Use*****.** The degree to which a potential user anticipates that trusting a specific system will be free of physical and mental effort can be characterized as perceived ease of use (PEOU) (Davis, 1989).

(2) ***Perceived Usefulness.*** The degree to which an individual believes that utilizing a given system would improve his or her job or life performance is known as perceived usefulness (PU) (Davis, 1989). PEOU may have an impact on PU because all other things being equal, the easier a system is to use, the more valuable it can be.

(3) ***Attitudes Towards New Technology***. Attitude is a manifestation of an individual's positive and negative thoughts about executing a real behavior, whether consumers like it or not. According to the theory of reasoned action (Fishbein & Ajzen, 1975), consumer attitudes drive consumer purchasing behavior, and behavior is determined by intentions, which are also influenced by attitudes and subjective norms.

(4) ***The Integration of Online and Offline Information.*** Integration of online and offline information (IOOI) means the degree to which online information is combined with offline information on a real-time physical in-store presentation so that product or service orders can be quickly confirmed and consumers can seamlessly switch

between online and offline stores (Anderson, 1981; Oh et al., 2012). IOOI provides data infrastructure for consumers to benefit from online transactions and offline physical services.

TAM Research in O2O E-Commerce

Recent studies by Oh et al. (2012), Chi et al. (2016), and Yim and Han (2016) demonstrated that PEOU and PU had a large impact on ITU and that omnichannel marketing had a significant impact on brand-customer connections.

Jeong and Song (2016) and Ko et al. (2017) studied how O2O impacted consumers' attitudes and intentions. Jeon and Jeong (2017) showed that user happiness was positively influenced by the online quality system and the perceived price of offline quality, and that user satisfaction was positively influenced by the desire to reuse. Lee and Jeon (2017) classified O2O service features and investigated the mediating influence of safety on customer satisfaction. An et al. (2018) looked at the incentive element and the links between user loyalty to O2O services. Various researchers also examined how information quality and source credibility influenced customers' perceptions of food O2O commerce (Hu & Chen, 2018; Kang & Namkung, 2019; Zhang et al., 2019). Tomar et al. (2020) researched the moderating role of brand trust on offline vs. online shoppers.

O2O E-Commerce

Online to offline (O2O) combines online and offline businesses. Offline businesses focus on having an offline storefront to sell and reach as many customers as possible. Unlike offline marketing, running marketing activities on an online platform can reach a wider range of customers with little limitation and lower business costs. However, it cannot ensure customers are confident with the products since they are unable to see the actual products before making an order. Therefore, O2O is a proactive marketing strategy to combine online and offline marketing strengths, strengthen business management, and maximize customer satisfaction. In the Thai context, it is unable to reach all customers when focusing only on either the offline or online market, however, together with the strengths of online marketing to build credibility along with a network of interested communities, offline marketing acts as a channel to distribute products directly to customers. With an offline store, customers' worries become less ("Only O2O marketing," 2018).

Conceptual Framework and Hypotheses

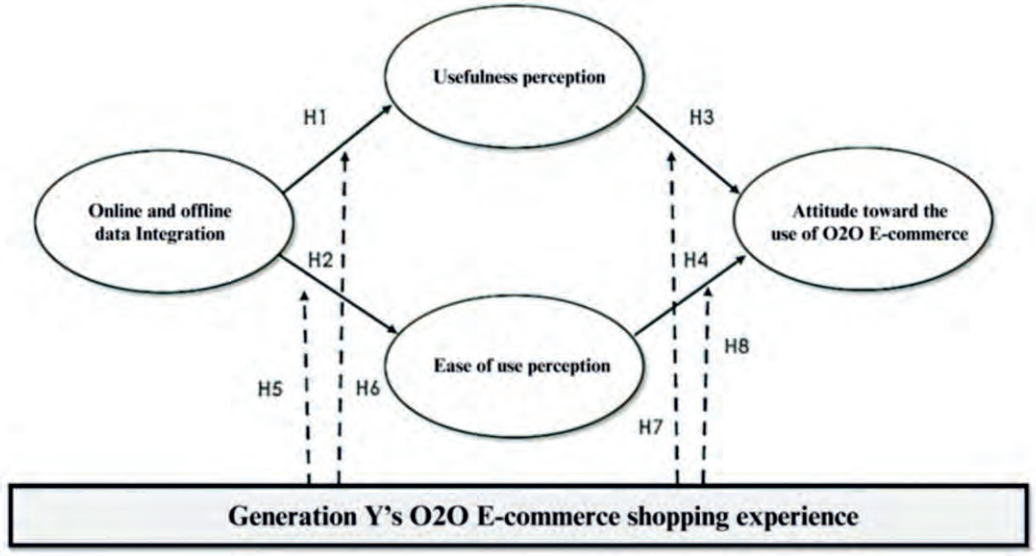
The technology acceptance model is used as a conceptual framework. In this model, the influence of external variables is not used. Therefore, it is considered that there is a correlation between the integration of online and offline information, perceived usefulness, and perceived ease-of-use. The correlation is related to attitudes toward the use of O2O e-commerce. This is a model of causal relationships to test the hypotheses, as shown in Figure 2.

Hypotheses

Yang et al. (2020) suggested that if consumers are assured that the new technology has a degree in which online data is combined with offline data on real-time physical in-store presentations, then the product or service orders can be quickly confirmed, and consumers can seamlessly switch between online and offline stores. Customers will then be aware that such technology is very useful and easy to use. Therefore, it is hypothesized that :

- **H1 :** Online and offline data integration has a positive influence on perceived usefulness.
- **H2 :** Online and offline data integration has a positive influence on perceived ease-of-use.

Figure 2. ***The Conceptual Framework***



Suprawan (2017) and Ko et al. (2017) observed that perceived usefulness and customers' perceived ease of use had a significant positive influence on attitudes towards using technology, including Facebook Live and O2O fashion mobile commerce. Therefore, it can be explained that if consumers believe that new technologies are useful for some simple tasks, in terms of acquiring knowledge of using such technology, customers will have positive attitudes towards using the technology. The hypotheses are posited in the research that if consumers are aware of the benefits and ease of use, consumers will have positive attitudes towards the use of O2O e-commerce.

↳ **H3 :** Perceived usefulness has a positive influence on the attitudes toward the use of O2O e-commerce.

↳ **H4 :** Perceived ease-of-use has a positive influence on Generation Y's attitudes towards the use of O2O e-commerce.

Regarding the review of literature, it is found that the experience variable is not included in the original TAM. Thorbjørnsen et al. (2002) stated that due to the novelty of the Internet, there are customer groups that differ greatly in terms of the amount of Internet media experiences, which play an important role in the effectiveness of marketing. In general, the amount of experiences in the electronic market has proven to be influential in determining user attitudes and behaviors (Bruner & Kumar, 2000).

Venkatesh et al. (2003) identified eight adoption models and suggested an empirically tested model themselves, both in cross-sectional and longitudinal studies (the unified theory of acceptance and use of technology or UTAUT), and identified four moderators which affected effort expectancy among their experience.

Regarding the aforementioned, it can be concluded that the experience variable has moderating effects on the relationship between perceived ease-of-use and attitudes; the relationship between perceived usefulness and attitudes; the relationship between the integration of online and offline information, perceived usefulness, and perceived ease-of-use. Hence, the hypotheses are posited as follows:

↳ **H5 :** Generation Y's O2O e-commerce shopping experience has a moderating effect between online and offline data integration and perceived usefulness.

↳ **H6 :** Generation Y's O2O e-commerce shopping experience has a moderating effect between online and offline data integration and perceived ease-of-use.

↳ **H7 :** Generation Y's O2O e-commerce shopping experience has a moderating effect between perceived usefulness and attitudes toward O2O e-commerce.

↳ **H8 :** Generation Y's O2O e-commerce shopping experience has a moderating effect between perceived ease-of-use and attitudes towards the use of O2O e-commerce.

Research Methodology

Data Collection and Sample

The study was undertaken from September 2020 – February 2021. The population and sample consisted of Generation Y customers aged 18–38 years (as of 2018) with experiences of buying community products through O2O e-commerce based on the marketing innovation program for sustainable product development to communities organized by RMUTT University. The sample size was determined based on the data analysis method. According to Hair et al. (2010), a suitable sample should comprise of at least 300 respondents. With 341 online questionnaire respondents, the data were sufficient to be analyzed by SEM.

Research Tool

A questionnaire based on concepts, theories, documents, and research related to technology acceptance are the tools in this research. The questionnaire was divided into three parts: general information of respondents, purchasing behavior through O2O e-commerce, and opinion on O2O e-commerce, which consisted of 17 questions using a 5-point Likert scale:

↳ Six questions were on online and offline information integration;

↳ Four questions were on perceived usefulness;

↳ Four questions were on perceived ease-of-use; and

↳ Three questions were on attitudes towards O2O e-commerce.

As presented in Table 1, the Cronbach's alpha coefficient equals 0.967, which is greater than 0.70, and the questionnaire is thus considered reliable (Hair et al., 2010).

Table 1. ***Cronbach's Alpha for Reliability Test (N = 40)***

Latent Variables	Number of Items	Cronbach's Alpha Coefficient
Online and offline integration	6	0.946
Perceived ease-of-use	4	0.935
Perceived usefulness	4	0.934
Attitudes toward the use of O2O e-commerce	3	0.935
	17	0.976

Data Analysis

The data were analyzed using SPSS version 23 and AMOS 18. To explain the general information of the respondents and purchasing behavior through O2O e-commerce, descriptive statistics were used. For inferential statistics, structural equation modeling (SEM) was employed to examine the basic terms of the analysis of statistical multivariate, such as investigating the outliers using squared Mahalanobis distance; questions with a *p*-value below 0.01 indicating that the data is higher or lower than normal. Samples that were found to exceed the standard were eliminated (Hair et al., 2010). The remaining samples were thus 320. Normality tested using skewness was between –0.48 and –0.34. Kurtosis was between –0.81 and –0.67. According to Kline (2015), if skewness is not more than 3 and kurtosis does not exceed 10, the data is normally distributed. Therefore, the data were suitable to apply structural equation modeling.

Research Analysis and Results

Analysis Results for General Information and Purchasing Behavior Through O2O E-Commerce

The majority of the respondents were women (261 women; 81.6%) ; 314 of the respondents (98.1%) were between 18 – 25 years; 289 respondents (90.3%) held bachelor's degrees. In terms of purchasing behavior through O2O e-commerce within a previous year, the results reveal that 148 respondents (46.3%) had purchased through O2O e-commerce in less than a month, followed by 109 respondents (34.1%), who had purchased through O2O e-commerce for 1 – 3 months; 187 respondents (58.4%) had purchased through O2O e-commerce less than four times, while 104 respondents (32.5%) had made purchases through O2O e-commerce 4–10 times a year; 227 respondents (70.9%) had a monthly income of not more than 10,000 THB, followed by 87 respondents (27.2%), who had a monthly income between 10,001 – 20,000 THB. The total amount of 277 respondents' purchase value, which accounted for 86.6%, did not exceed 5,000 THB.

Results for Generation Y Customer Segmentation

In this section, segmentation is conducted by using the two-step cluster. Correspondence analysis was applied to analyze the placement of variables: Generation Y customers and their purchasing behavior, and the data are presented in a perceptual map (Palmer, 1993).

(1) ***Number and Group Names.*** From a two-step clustering analysis, Generation Y customers can be divided into three groups; Group 1 includes 118 respondents (37%), Group 2 includes 110 respondents (34%), and Group 3 includes 92 respondents (29%). The analysis results of positioning of Generation Y customers and purchasing behavior through the O2O e-commerce with correspondence analysis are shown in Figure 3. Group 1 is named "Less experience group," Group 2 is named "High experience group, " and Group 3 is named "Moderate experience group," as also shown in Figure 3.

(2) *General Information and Purchasing Behavior Through O2O E-Commerce Classified by Groups*

↳ ***Group 1.*** 81.4% of the respondents were female, 98.3% were between 18 – 25 years of age; 87.3% held bachelor's degrees. All of them (100.0%) had experience in purchasing products through O2O e-commerce for less than one month a year and less than four times a year. Their annual total purchase did not exceed 5,000 THB.

↳ ***Group 2.*** 75.5% of the respondents were female; 98.2% were between 18 – 25 years of age; 94.5% held

Figure 3. ***Numbers and Names of Groups***

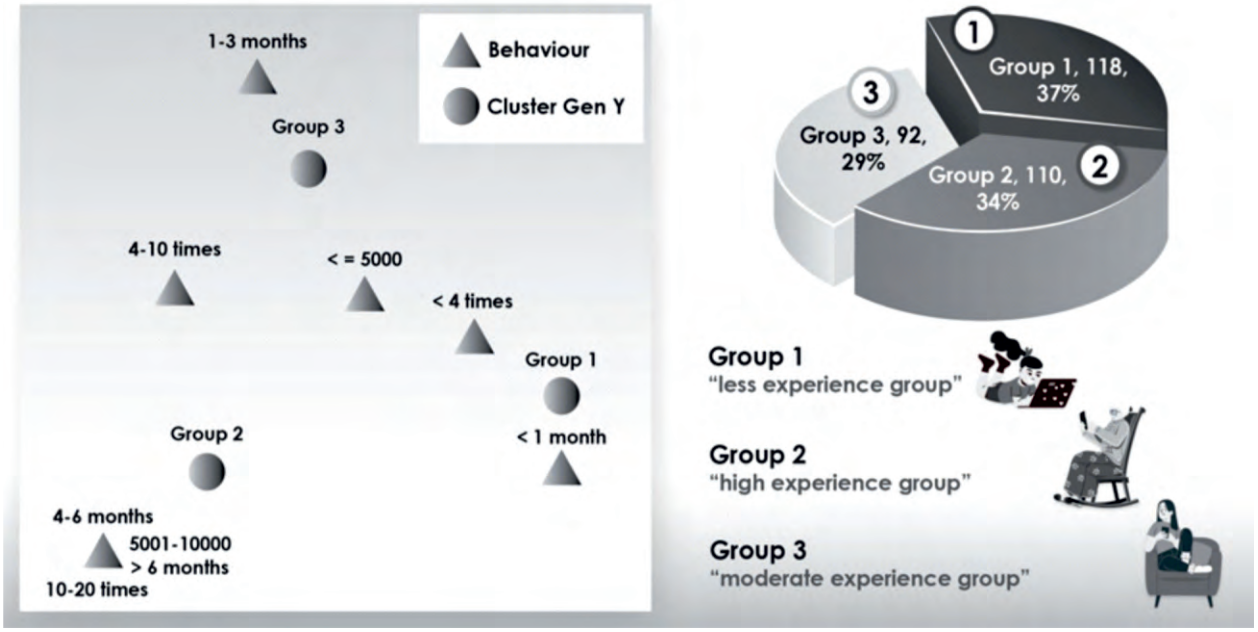


Table 2. ***General Information, Generation Y's Purchasing Behavior***

General Information	χ^2	*df*	Sig.	Purchasing Behavior	χ^2	*df*	Sig.
Gender	6.236*	2	.044	Experience	413.903*	6	.000
Age	0.067	2	.967	Frequency	180.003*	6	.000
Education	4.028	4	.402	Payment amount	94.834*	6	.000

Note. *$p < 0.05$.

bachelor's degrees; 38.2% experienced purchasing products through O2O e-commerce for more than 6 months a year; 53.6% purchased through O2O e-commerce 4 –10 times a year. Their annual total purchase was 5,000 THB (60.9%) and 5,001 –10,000 THB (26.4%).

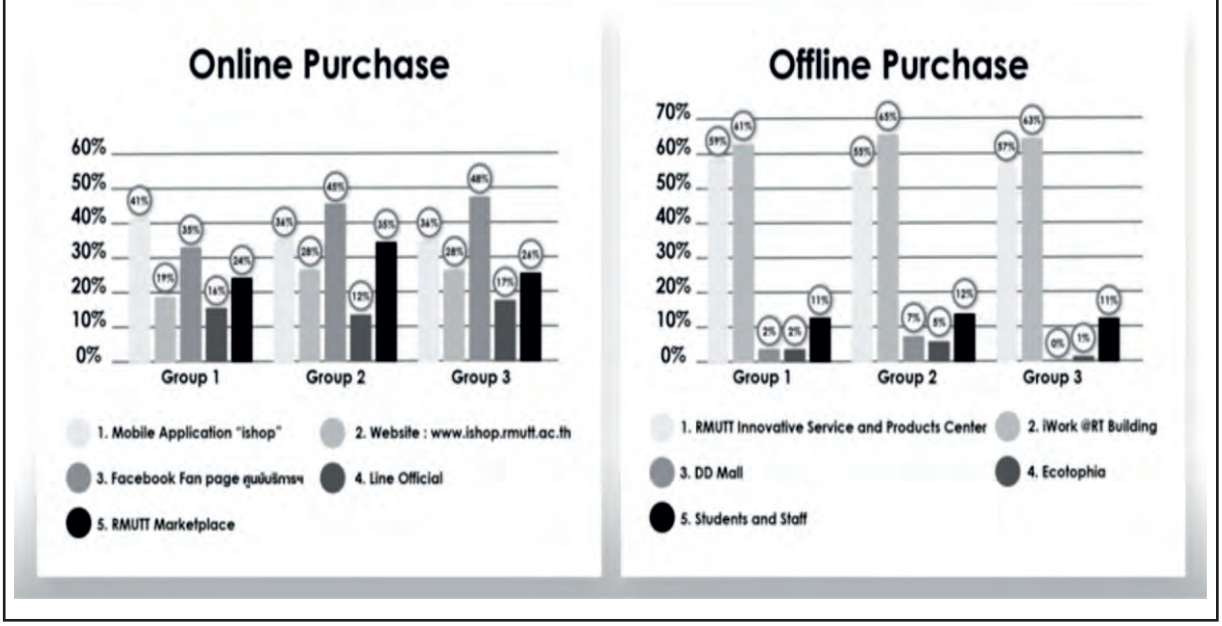
↳ ***Group 3.*** 89.1% of the respondents were female; 97.8% were between 18 – 25 years of age; 89.1% held bachelor's degrees. All of them (100.0%) experienced purchasing products through O2O e-commerce for 1–3 months a year; 51.1% purchased through O2O e-commerce less than 4 times, and 48.9% purchased 4 – 10 times a year. The annual total purchase of all respondents did not exceed 5,000 THB.

Regarding Generation Y's purchasing behavior through O2O e-commerce, the chi-square test reveals that, among general information, gender is statistically and significantly different at the 0.05 level. In addition, their experience, frequency, and payment amount are statistically significant at the 0.05 level, as presented in Table 2.

(3) *Comparison of Generation Y's Online and Offline Purchases*

↳ ***Online Purchases.*** Most of the Generation Y customers in Group 1 purchased using "Ishop" application at

Figure 4. ***Comparison of Generation Y's Online and Offline Purchases***



41.0%, followed by Facebook fan page of the Service Center for Innovation and Product Distribution at 34.9%. Customers in Group 2 purchased via Facebook fan page at 45.9%, followed by the "Ishop" application at 36.5%, and RMUTT Marketplace Facebook group at 35.3%. Customers in Group 3 purchased on the Facebook fan page at 48.3%, followed by the "Ishop" application at 36.2%.

↳ ***Offline Purchases.*** Most of Generation Y customers in Group 1 purchased at iWork Building, RMUTT at 61.0%, followed by RMUTT Service Center for Innovation and Product Distribution at 59.3%. Customers in Group 2 purchased at the iWork Building at 64.8%, followed by RMUTT Service Center for Innovation and Product Distribution at 54.6%. Customers in Group 3 purchased at the iWork Building at 63.0%, followed by RMUTT Service Center for Innovation and Product Distribution at 56.5%, as illustrated in Figure 4.

Results of the Structural Equation Modeling Analysis

Structural equation modeling (SEM) consists of measurement and structural models. Thus, a two-step procedure was used in this study (Anderson & Gerbing, 1988). Confirmatory factor analysis (CFA) was conducted first, followed by the structural equation modeling utilized to test the hypotheses.

Results of the Confirmatory Factor Analysis

Confirmatory factor analysis was conducted to test the four latent variables: online and offline data integration, perceived usefulness, perceived ease-of-use, and attitudes towards the use of O2O e-commerce. Online and offline data integration was measured by observable variables: IOOI1, IOOI2, IOOI3, IOOI4, IOOI5, and IOOI6. Perceived usefulness was measured by observable variables: PU1, PU2, PU3, and PU4. Perceived ease-of-use was measured by observable variables: PEU1, PEU2, PEU3, and PEU 4. Lastly, attitudes towards the use of O2O e-commerce were measured by observable variables: AD1, AD2, and AD3.

Conformity Verification of the Measurement Model with Empirical Data

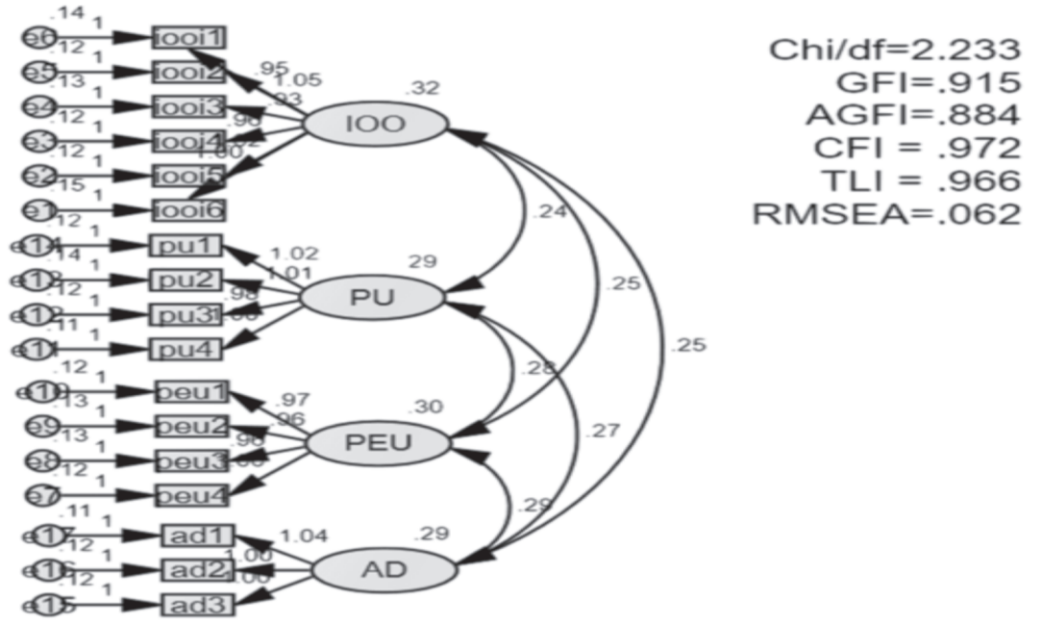
The goodness of fit statistics was applied to verify the conformity of the measurement model with empirical data, as presented in Table 3 and Figure 5. The measurement model meets the criteria with CMIN/*DF* = 2.233, GFI = 0.915, AGFI = 0.884, CFI = 0.972, TLI = 0.966, and RMSEA= 0.062 (Janssens et al., 2008). Thus, the measurement model is suitable and corresponds to the data obtained from observable variables or empirical data.

Table 3. ***Measurement Model Criteria***

Measure		Threshold*
CMIN/*DF*	Chi-square value / degree of freedom	1.0 – 3.0
GFI	Goodness of fit index	> 0.80
AGFI	Adjusted goodness of fit index	> 0.80
CFI	Comparative fit index	> 0.90
TLI	Tucker – Lewis index	> 0.90
RMSEA	Root mean square error of approximation	0.05 – 0.08

Note. *Janssens et al. (2008).

Figure 5. ***Measurement Model***



Validity Verification of the Measurement Model

To verify the validity of the measurement model, convergent validity and discriminant validity are used. Convergent validity is evaluated by factor loading of observable variables, and the value must be greater than 0.5. The composite reliability (CR) of the latent variables must be greater than 0.7. The average variance extracted (AVE) of latent variables must be greater than 0.5. Discriminant validity is evaluated by the average variance extracted (AVE), the maximum shared variance (MSV), and the average shared variance (ASV) with the criteria that AVE > MSV or AVE > ASV (Hair et al., 2010).

The convergent validity results show that the factor loading values of observable variables are between 0.816 and 0.860, greater than 0.5. The CR values of all latent variables are greater than 0.7. The AVE values of all latent variables are greater than 0.5, which meets the criteria. Thus, the measurement model is convergently valid. The results of discriminant validity show that online and offline data integration, as one of the four latent variables, has AVE values greater than the ASV values, as shown in Table 4. Thus, online and offline data integration as a latent variable only measures itself but does not measure other latent variables. However, observable variables of the other three latent variables also measure themselves and the other latent variables. This indicates that the measurement model has low discriminant validity.

Hypotheses Testing

The coefficients of latent variables indicate that online and offline data integration affects perceived usefulness and perceived ease-of-use. Perceived usefulness and perceived ease-of-use affect attitudes towards the use of O2O e-commerce at a significance level of 0.05, as presented in Table 5. Thus, hypotheses H1– H4 are accepted.

To analyze the moderating effects of Generation Y customers, a two-group model comparison was conducted by testing the model twice. For the first time, the unconstrained model was considered, which allows parameters to

Table 4. ***Validity Verification of the Measurement Models***

Latent Variables	AVE	CR	MSV	ASV
Online and offline integration	0.704	0.934	0.679	0.794
Perceived ease-of-use	0.699	0.903	0.958	0.846
Perceived usefulness	0.704	0.905	0.914	0.820
Attitudes toward the use of O2O e-commerce	0.717	0.884	0.958	0.848

Remarks* AVE = average variance extracted ; CR = composite reliability ; MSV = maximum shared variance ; ASV = average shared variance.

Table 5. ***Influence Coefficients***

Influence Pathways	*B*	Beta	S.E.	C.R.	*P*
IOO -- > PU	0.799	0.841	0.054	14.862	***
IOO -- > PEU	0.829	0.854	0.055	15.190	***
PU --> AD	0.402	0.411	0.048	8.320	***
PEU --> AD	0.613	0.642	0.052	11.793	***

Remarks : *IOO* = Online and offline data integration, *PU* = Perceived usefulness, *PEU* = Perceived ease-of- use, *AD* = Attitudes towards the use of O2O e-commerce.

be independently calculated. The default model was used at this stage. For the second time, undesirable parameter values of both groups were set to be the same, which is a constrained model. The values were set as Fix1, Fix2, Fix3, and Fix4. Fix1 determines the parameters of IOO→PU, Fix2 determines the parameters of IOO→PEU, Fix3 determines the parameters of PU→AD, and Fix4 determines the parameters of PEU→AD. The difference in chi-square and degree of freedom *(DF)* between the unconstrained model and constrained model is used as a criterion to determine the moderating effects of the variables (Awang, 2012).

The results show that the moderating effect of Generation Y customers is statistically significant at the 0.05 level (chi-square of dependent variables and constrained model is more than chi-square at *DF* = 4). The different groups of Generation Y customers affect the relationship between online and offline data integration and perceived usefulness. Thus, hypothesis H5 is accepted. Different groups of Generation Y customers also affect the relationship between online and offline data integration and perceived ease-of-use. Thus, hypothesis H6 is accepted. Different groups of Generation Y customers affect perceived usefulness and attitudes towards the use of O2O e-commerce. Therefore, hypothesis H7 is accepted. Lastly, different groups of Generation Y customers affect perceived ease-of-use and attitudes towards the use of O2O e-commerce. Thus, hypothesis H8 is accepted. The results are presented in Table 6 and Table 7.

Table 6. ***Comparison between Chi-Square of Unconstrained Model (Default Model) and Constrained Model to Test the Moderating Effect of Generation Y Customers' Shopping Experience Through O2O E-Commerce***

Model	CMIN	*DF*	*P*	CMIN/*DF*
Default model	847.274	345	.000	2.456
Fix1	864.361	348	.000	2.484
Fix2	860.487	348	.000	2.473
Fix3	865.591	348	.000	2.487
Fix4	906.669	348	.000	2.605

Note. Fix1 determines the parameters of *IOO → PU* ; Fix2 determines the parameters of *IOO → PEU* ; Fix3 determines the parameters of *PU → AD* ; Fix4 determines the parameters of *PEU → AD.*

Table 7. ***Results of Moderating Effect of Generation Y Customers' Shopping Experience Through O2O E-Commerce***

Model	$\Delta\chi^2$	ΔDF	Hypothesis	Significant	Result
Fix1	17.088	3	H5	>7.815	Accepted
Fix2	13.213	3	H6	>7.815	Accepted
Fix3	18.318	3	H7	>7.815	Accepted
Fix4	59.396	3	H8	>7.815	Accepted

Note. * $\Delta\chi^2$ = Differences between chi-square of default model and chi-square of Fix1, Fix2, Fix3, and Fix4.

ΔDF = Differences between *DF* of default model and *DF* of Fix1, Fix2, Fix3, and Fix4.

Chi square = 7.815 (where *DF* = 4, *p* - value = 0.05).

Discussion

Online and Offline Data Integration has a Positive Influence on Perceived Usefulness and Perceived Ease-of-Use

The findings show that online and offline data integration has a positive influence on perceived usefulness and perceived ease-of-use at a significance level of 0.05. This is consistent with Yang et al.'s (2020) work that online to offline commerce was useful and easy to use.

Perceived Usefulness and Perceived Ease-of-Use have a Positive Influence on Attitudes Towards O2O E-Commerce

The findings show that perceived usefulness and perceived ease-of-use have a positive influence on attitudes towards O2O e-commerce at a significance level of 0.05. This is in line with the hypotheses. Davis et al. (1989), Chung and Nam (2020), and Riantini (2018) also explained that perceived usefulness and perceived ease-of-use influenced attitudes towards the usage, including the use of O2O services. Also, in consistency with the study by Thomas and Mathew (2021), it was found that attitudes had an influence on the purchase of the Generation Y segment.

Since this research aims to find ways to develop and support local communities to generate sustainable income, the university thus acts as a middleman in purchasing products from the communities and distributing them using the O2O model to create content on various social media and trying on new operating models. For example, products from local communities were processed into ready-to-eat foods with delivery services, and students made reviews through social media channels to reach Generation Y customers. Hence, the customers will feel more confident in the products. Also, consistent with Jose and Koshy's (2018) study, it was found that fears and concerns about food safety were triggers that motivated individuals to develop positive attitudes towards food products which lead to a healthy lifestyle. This is also in line with Nandi and Singh's (2021) study, as the study found that young adults were more willing to engage with Facebook ads, which was one of the factors that contributed to their perceptions that cooking is easy and has health benefits. Therefore, there were good attitudes towards purchasing products through O2O e-commerce with product reviews by young students as well.

Generation Y's O2O E-Commerce Shopping Experience has a Moderating Effect on the Relationship Between Online and Offline Data Integration and Perceived Usefulness and Perceived Ease-of-Use, and on the Relationship Between Perceived Usefulness and Perceived Ease-of-Use and Attitudes Towards O2O E-Commerce

Generation Y customers were divided into three groups based on their O2O e-commerce purchase behavior; Group 1: Less experience group, Group 2: High experience group, and Group 3: Moderate experience group.

In this study, the three elements, namely experience, perceived usefulness, and perceived ease-of-use, are the main parameters of the technology acceptance model (TAM). It, therefore, led to the hypothesis that Generation Y customers' shopping experience through O2O e-commerce has a moderating effect on the relationship between the main variables in the technology acceptance model (TAM). It is also found that Generation Y customers' shopping experience through O2O e-commerce influenced the main variables in the technology acceptance model (TAM). This is consistent with the study of Castañeda et al. (2007), who explained that the experience of using the Internet and the experience of using websites had a moderating effect on perceived usefulness, perceived ease-of-use, and attitudes towards the use of website acceptance model (WAM), and internet experience and website

experience had a moderating effect on perceived ease-of-use and attitudes towards the website acceptance model (WAM).

Managerial and Theoretical Implications

Managerial Implications

Customers in Thailand are increasingly turning to digital platforms in the post-COVID-19 period. Rather than leaving their houses to buy products, they prefer to purchase products online through digital platforms. The results of this study will thus assist marketers in better comprehending Generation Y customers. According to this study, customers can access product descriptions, quality, and read reviews on the websites using smartphones while trying and testing the products offline. If customers make an online purchase, the order will be confirmed by a salesperson in a store, and the customers can get the products immediately. These functions help customers make smarter purchases and allow them to conveniently use all the information to evaluate alternatives that contribute to perceived usefulness. With the integration, the boundary of online and offline data integration will be removed. Since customers can easily switch from an online platform to an offline store with freedom, this increases customer confidence and the possibility to make a purchase, and leads to perceived ease-of-use.

For example, RMUTT University as a middleman, purchased potential products from local communities. The products were then developed and sold using the O2O e-commerce. This project concentrated on online and offline data integration by creating a lot of content for several social media platforms so that customers could make a purchase decision based on the aforementioned information. Customers could also see the products at the offline store. Even though a purchase could be made online, they could get the products immediately at the store.

Therefore, marketers can connect and combine the available channels from the purchase process to delivery in order to encourage customers to get the product easily, smoothly, and conveniently, which is a path to improve customer satisfaction.

Theoretical Implications

In this study, the findings' primary contribution to the theory is the moderating effects of Generation Y's O2O e-commerce shopping experience. To develop theory in this study, based on the technology acceptance model (TAM), the project of RMUTT University highly focused on Generation Y customers' experience.

This study backs up the idea that the variables of online and offline data integration positively influence perceived usefulness and perceived easy-to-use. Perceived usefulness and perceived easy-to-use positively influenced customers' attitudes towards the use of O2O e-commerce. Moreover, Generation Y's O2O e-commerce shopping experience influenced the relationship between online and offline data integration and perceived usefulness. Also, perceived easy-to-use influenced the relationship between perceived usefulness, perceived easy-to-use, and attitudes towards the use of O2O e-commerce.

Limitations of the Study and Suggestions for Future Research

In the study, there are some limitations. Local communities produced the products used in this study, and I selected only two product groups, namely bamboo charcoal skincare products and processed products from bamboo shoots, for trial distribution, which had a relatively limited period of operation (approximately 9 months). Moreover, there were also limitations due to the COVID-19 situation affecting distribution through offline channels.

Since online and offline data integration influences perceived usefulness and perceived ease-of-use, which are the main variables that lead to purchase acceptance through O2O e-commerce based on the technology acceptance model, customers tend to have two behaviors: webrooming and showrooming. Webrooming customers refer to customers who find some basic information on the website, read product reviews, and compare prices prior to purchasing at an offline store, while showrooming customers refer to customers who visit an offline store but make a purchase online. In the case of either type of customer behaviors, an online store is important in different contexts. Thus, it is suggested that future research should concentrate on webrooming and showrooming behaviors.

Author's Contribution

Dr. Salitta Saribut conceived the idea and developed a quantitative research design to undertake the empirical study. She extracted research papers with high repute, filtered these based on keywords, and generated concepts and codes relevant to the study design. The author also undertook data collection, numerical computations, and the writing and editing of the final manuscript.

Conflict of Interest

The author certifies that she has no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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