Factors Influencing Loyalty to Buying and Selling Food Products through E-Marketplace in Thailand

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Abstract

Purpose: This study focuses on developing a structural equation model of variables influencing loyalty to buying and selling food products through e-marketplaces in Thailand. The variables investigated comprised food attributes, online system attributes, marketing innovations, attitudes, and satisfaction. **Research design, data and methodology:** An online questionnaire was used to collect data from a sample group (200 buyers and 200 sellers) using quota sampling. The data were analyzed using the structural equation model. **Results:** The developed structural equation model was consistent with the empirical data. Factors in the model could explain 40.1% of the variance in loyalty to buying and selling food products through e-marketplaces. Food attributes and online system attributes influenced satisfaction directly. Online system attributes, market innovation, and attitudes directly influenced loyalty. The developed model had no variation between groups of buyers and sellers. **Conclusions:** This research demonstrated the causal factors leading to consumer loyalty to buying and selling food products through e-marketplaces. The research findings help e-marketplace providers manage factors of buying and selling to comply with the needs of buyers and sellers, which will increase the number of buyers and sellers, help generate long-term profits for service providers, and increase the country's financial value.

Keywords: Online Distribution, E-marketplace, Food Product, Loyalty

JEL Classification Code: D11, D30, M31

1. Introduction

The global internet user population is currently experiencing steady growth, leading to a corresponding increase in online procurement and purchasing of goods and services. The number of online procurements and purchasers worldwide has risen from 3.78 billion in 2021 to 4.11 billion in 2022. Thailand holds the highest weekly online purchasing rate globally (We Are Social and Hootsuite, 2023). The online purchasing market in Thailand has witnessed a substantial growth of 29.87%, with a turnover increasing from 693 billion baht in 2021 to 900 billion baht in 2022 (Wunderman Thompson, Thailand, 2022). According to the survey of Internet users' behavior in Thailand in 2022, the number of Internet users buying goods and services online is relatively high. The e-marketplace is

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the most popular channel for buyers and the second most popular channel for sellers, following social media. Notably, the food category experiences the highest growth rate of 41% among products traded in e-marketplaces. Within this market, the Generation Y demographic, aged between 22 and 42 years, emerges as the most active group, accounting for 27.73% of food product buyers and sellers in the e-marketplace (Electronic Transactions Development Agency, 2022).

Buying and selling food products through e-marketplaces in Thailand is highly competitive because there are many buyers and sellers. Buyers can shop at any store that meets their needs. At the same time, sellers also have options. Since there are many e-marketplace platforms, sellers can choose to sell their products through any platform that can generate the most profit for their stores. As a result, e-marketplace service providers strive to cultivate buyer and seller loyalty to encourage continued engagement on their platforms. By implementing effective strategies, they aim to create a strong relationship between buyers and sellers, fostering a sense of trust and satisfaction. These efforts ultimately influence buyers' and sellers' decisions to return to the marketplace for future transactions (Solomon, 2015).

When considering the factors influencing electronic loyalty, it has been identified that electronic loyalty is influenced by attitudes (Fanoberova & Kuczkowska, 2016; Robina-Ramirez et al., 2020) and satisfaction (Mofokeng, 2021; Wibawa & Subriadi, 2018). The factors contributing to satisfaction and positive attitudes, ultimately leading to loyalty to buying and selling food products through e-marketplaces, encompass various aspects: 1) food attributes such as quality, pricing, variety, and packaging (Arfiandi & Sukresna, 2018; Grujic & Grujicic, 2017); 2) online system attributes such as ease of use, information reliability, security, privacy, and design (Azam et al., 2012; Fanoberova & Kuczkowska, 2016; Kok & Kim, 2021); and 3) marketing innovations, which are activities in the trade that lead to the discovery of new forms of marketing that can meet the real needs of customers (Hung et al., 2020; Wilson, 2014).

Due to the significance of online buying and selling, which can generate considerable economic value for Thailand, the e-marketplace becomes the platform that dominates online transactions more than any other. Particularly, the food category stands out as the most traded product. A platform provider that can create a favorable environment for food buyers and sellers can attract a large number of target buyers and gain profitable partnerships with suitable business entities. This, in turn, will contribute to the overall economic value creation of Thailand. According to a literature review, it is evident that factors related to food characteristics, online system characteristics, and marketing innovations significantly influence customer attitudes and satisfaction in using e-marketplaces, thereby promoting positive experiences in buying and selling products. Although some studies have investigated these factors, there are still several gaps in creating loyalty to buying and selling through e-marketplaces, such as inconsistent findings in some studies, isolated studies that did not study all five factors simultaneously (food attributes, online system attributes, marketing innovations, attitudes, and satisfaction), and specific studies on buyers' perspectives without considering the point of view of the sellers.

Therefore, this study examines the influences of food attributes, online system attributes, marketing innovations, attitudes, and satisfaction on loyalty to purchasing and selling food products through electronic marketplaces in Thailand using structural equation model (SEM) analysis. The invariance of the model between groups of buyers and sellers was tested to lead to new findings, reducing the gap in previous studies that did not study the mentioned 5 causal factors simultaneously and did not compare differences between the groups. E-marketplace users can utilize the findings of this study to increase loyalty to purchasing and selling to increase profits for their businesses.

2. Literature Review and Hypothesis

2.1. Food Attributes

Food attributes encompass the information and properties of food that enable basic functions to achieve a defined quality, such as food quality, pricing, variety, and packaging (Grujic & Grujicic, 2017).

2.1.1. Effect of Food Attributes on Loyalty

Food with desirable attributes, aligned with consumer demand and purchased through e-marketplaces, has the potential to attract repeat food purchasers, leading to the development of customer loyalty. This corresponds with the findings of several studies that supported the positive impact of food attributes on customer loyalty (Irianto et al., 2017; Musa et al., 2015; Prasetyo et al., 2021); however, a few studies did not support that food attributes had an impact on customer loyalty (Fakefare, 2021; Sataya et al., 2021). Drawing upon these research insights, the present study formulates the following hypotheses:

H1: Food attributes influence loyalty.

2.1.2. Effect of Food Attributes on Attitude

Food attributes, especially quality and price, influence consumer perceptions of its value. This will lead to a positive attitude toward buying and selling that food. This is in line with the majority of studies reporting that food attributes had a positive influence on attitude (Arfiandi & Sukresna, 2018; Grujic & Grujicic, 2017); however, a few

studies did not support this finding. For example, Robina-Ramirez et al. (2020) reported that certain food attributes (e.g., food price) did not influence consumers' food purchasing attitudes. This research hypothesizes that:

H2: Food attributes influence attitude.

2.1.3. Effect of Food Attributes on Satisfaction

Food attributes are directly linked to the value and satisfaction that arise in the customer's mind. When buying and selling food through electronic marketplaces, buyers need the opportunity to see real food. Therefore, they must rely on the characteristics of the food when making purchasing decisions. Food with attributes that meet buyers' needs can create buyers' satisfaction (Arfiandi & Sukresna, 2018; Grujic & Grujicic, 2017). Hence, this research hypothesizes that:

H3: Food attributes influence satisfaction.

2.2. Online System Attributes

Online system attributes are the unique structure (or functionality) and capability of the online system. An excellent online system must feature ease of use, quality information, security, user privacy, and a user-friendly design that promptly responds to users (Yousuf & Wahab, 2017).

2.2.1. Effect of Online System Attributes on Loyalty

Favorable online system attributes (e.g., ease of use, quality of information, security, and privacy) influence online acceptance and loyalty behaviors. A previous study revealed that online system attributes had a positive influence on user loyalty (Fakfare, 2021; Mofokeng, 2021). Therefore, this research formulates the hypothesis as follows:

H4: Online system attributes influence loyalty.

2.2.2. Effect of Online System Attributes on Attitude

The desirable attributes of online systems play a significant role in buying and selling products through e-marketplaces. When buyers and sellers recognize the quality of the online system, they will have emotions that will eventually lead to a positive attitude toward online shopping (Moon et al., 2017). This is consistent with previous research findings supporting the idea that online system attributes affect attitudes toward e-marketplaces (Azam et al., 2012; Kok & Kim, 2021). Therefore, this study hypothesizes that:

H5: Online system attributes influence attitudes.

2.2.3. Effect of Online System Attributes on Satisfaction

Online system attributes, both in terms of ease of use, information reliability, security, privacy, and design, are attributes of a good online system and are factors supporting online use and leading to online satisfaction (Ting et al., 2016). According to the literature review, most of the study's results were consistent. Studies supported the idea that online system attributes positively influenced e-marketplace usage satisfaction (Azam et al., 2012; Ting et al., 2016; Kok & Kim, 2021; Fakfare, 2021). Based on these observations, the present study proposes the following hypothesis:

H6: Online system attributes influence satisfaction.

2.3. Marketing Innovations

Marketing innovation is a set of activities that includes design, production, management, and commercial operation. These activities lead to the discovery of new forms of marketing that can meet customers' needs, such as customer relationship building, unique value introduction, new service creation, and marketing promotion (Nybakk, 2012).

2.3.1. Effect of Marketing Innovation on Loyalty

Marketing innovations are used to meet customer needs. The gains from marketing innovations, especially customer relationship innovations, lead to long-term customer loyalty. Existing customers are highly likely to make future purchases (Hung et al., 2020; Hussain et al., 2012; Wilson, 2014). Thus, this study hypothesizes that:

H7: Marketing innovations influence loyalty.

2.3.2. Effect of Marketing Innovation on Attitude

Marketing innovation involves introducing new experiences that customers may not have perceived before. It aims to create a positive buying and selling experience for customers, leading to a positive attitude toward buying and selling products. This can be observed through a literature review, where the majority of studies are consistent in supporting the positive influence of marketing innovations on attitudes (Hung et al., 2020; Wilson, 2014). Based on these premises, this research set up the following hypothesis:

H8: Marketing innovations influence attitudes.

2.3.3. Effect of Marketing Innovation on Satisfaction

The incorporation of marketing innovations in e-marketplaces facilitates a superior buying and selling experience for customers, exceeding their expectations. This exceptional service fosters positive satisfaction in purchasing and selling products (Hung et al., 2020; Wilson, 2014). Thus, this study hypothesizes that:

H9: Marketing innovations influence satisfaction.

2.4. Attitudes

Attitude is a person's beliefs or feelings toward an object,

expressed as an acceptable or negative evaluation that tends to produce a particular behavior (Kotler & Keller, 2012). Attitude is closely related to loyalty. This can be explained by the theory of reasoned action, which states that human beings are rational. Human behavior, therefore, only occurs with prior consideration. If an individual believes that behavior will bring positive results, he/she tends to have a positive attitude toward that behavior and increase his/her intention to do it (Ajzen, 2012).

2.4.1. Effect of Attitude on Loyalty

Considering the context of buying and selling goods through e-marketplaces, when buyers and sellers believe that buying and selling through an e-marketplace will have positive results, they will have a positive attitude toward buying and selling through that e-marketplace. As a result, they intend to buy or sell products and engage in more buying and selling activities, leading to loyalty to buying and selling. This is consistent with previous research that indicated that attitude positively influenced electronic loyalty (Cha, 2020; Fanoberova & Kuczkowska, 2016; Robina-Ramirez et al., 2020). Thus, this research hypothesizes that:

H10: Attitude influences loyalty.

2.5. Satisfaction

Satisfaction is the expression of the positive emotions and feelings of customers. The comparison of the expectations of customers who buy products/services and the results obtained from actual purchases has demonstrated that if the results are higher than the expectations, the customers will be satisfied (Kotler & Keller, 2012).

2.5.1. Effect of Satisfaction on Loyalty

Satisfaction is closely related to loyalty. Evidence from a measurement using a numerical scale of the relationship between satisfaction and loyalty yielded similar results. That is, it has a strong positive correlation between satisfaction and loyalty. The relationship between satisfaction and loyalty is nonlinear. In other words, loyalty increases rapidly when satisfaction peaks (Mofokeng, 2021). This is in line with previous research findings that satisfaction positively influences loyalty to buying and selling goods through e-marketplaces (Mofokeng, 2021; Wibawa & Subriadi, 2018). Thus, this study hypothesizes that:

H11: Satisfaction influences loyalty.

2.6. Loyalty

Loyalty is a psychological trait that arises from the constant satisfaction of the customer coupled with the emotional attachment that happens to the service providers, leading to a state of willingness and consistency in engagement associated with preference over patronage (Rai & Srivastava, 2014). Loyalty can be viewed from two perspectives: attitudinal loyalty and behavioral loyalty. Attitudinal loyalty is related to psychological implications measured by consumers' emotions and feelings toward a product or service, such as repeat purchase intention, first-choice consideration, unwillingness to switch to competing products, and feelings of attachment (Fakefare, 2021). Behavioral loyalty is the loyalty expressed by customer behavior toward a product or service over time, such as repeat purchases, word of mouth, positive mentions, memberships, and complaint behaviors (Mofokeng, 2021; Ting et al., 2016).

3. Methodology

3.1. Population

The sample used in the study was the working-age people in Thailand aged between 22 and 42 years old who bought products through online channels the most (Electronic Transactions Development Agency, 2023) and used to buy or sell food products through at least 1 e-marketplace for at least 3 months.

3.2. Sample Size

The sample size for structural equation model analysis was determined using the criteria of Hair et al. (2018), who proposed that the SEM analysis should have a sample-to-observed variable ratio of 20:1, but the minimum sample size must be at least 100 samples. This study had 16 observed variables. Therefore, the sample size was set to 320 samples. To minimize research inconsistencies, 400 samples (200 buyers and 200 sellers) were collected using quota sampling.

3.3. Measurement

A Likert scale questionnaire was employed, utilizing a 5-point rating scale that ranged from 1 (strongly disagree) to 5 (strongly agree). The questionnaire consisted of 6 parts according to the latent variables studied. The questionnaires on the food and online system attributes were adapted from the Mofokeng scale (Mofokeng, 2021). The marketing innovation questionnaire was adapted from the scale of Robina-Ramirez et al. (2020). The questionnaires on attitude and loyalty were adapted from the scale of Sataya et al. (2021). The questionnaire on satisfaction was adapted from the Fakfare scale (2021). All questionnaires were examined

for content validity, and the item objective congruence (IOC) index of all questions was greater than 0.50. Those questionnaires were tested with 30 non-sample food buyers and sellers through e-marketplaces. Cronbach's alpha coefficient for all variables was greater than 0.70. The confidence values of food attributes, online system attributes, marketing innovations, attitudes, satisfaction, and loyalty were 0.945, 0.9919, 0.913, 0.827, 0.900, and 0.812, respectively.

3.4. Sample Collection Method

The online questionnaire was created using Survey Can, a system that can answer the questionnaire only once, either from the same computer or from a single IP address. After that, the researcher asked permission to collect data from the administrators of the e-marketplace websites in Thailand, including Shopee, Lazada, and JD Central. These websites are well known among food buyers and sellers. Each of them has more than 100,000 subscribers, resulting in more targeted samples for the study. After accepting permission, the researcher requested permission from the website administrators to post a questionnaire link with a clarification document. The clarification document was to inform respondents of the research purpose, which is for educational purposes only and will have no impact on them, to obtain consent from respondents for participating in the research, and to ask for their cooperation in answering the questionnaire. The qualified respondents included working people aged between 22 and 42 who used to buy or sell a food product through the website for not less than 3 months.

3.5. Data Analysis

3.5.1. Analysis of Preliminary Agreement of Variables

The analyses of preliminary agreement of variables for the structural equation model analysis consisted of 1) assessing the curved normal distribution of variables by considering skewness and kurtosis, and 2) assessing the relationship between the variables based on the Pearson product-moment correlation coefficient to observe whether there is a problem of multicollinearity.

3.5.2. Tests for the Structural Equation Model

Confirmatory component analysis of latent variables: Confirmatory component analysis of latent variables comprised 1) examination of the conformity of the latent variable measurement model and the empirical data from the goodness of fit measure as shown in Table 1, and 2) evaluation of the convergent validity of the latent variable measurement model from the standardized factor loading and average variance extracted (AVE) and evaluation of reliability by determining internal consistency from

Cronbach's alpha coefficient and the composite reliability (CR).

The conformity of the structural equation model: The conformity of the structural equation model was tested based on the hypothesis and the empirical data from the conformity indices in Table 1.

Influence path between latent variables in the structural equation model: The influence paths between latent variables in the structural equation model, both the path from exogenous variables showing effects on endogenous variables (or line γ) and the path from endogenous variables showing effects on endogenous variables (or line β), were analyzed to determine whether the analytical results support the research hypothesis or not.

Table 1: The Goodness of Fit Statistics for the Measurement Model (Hair et al., 2018).

Fit Indices	Acceptable Rate
χ^2	$p > 0.05$
χ^2/df	< 3
Goodness of fit index (GFI)	≥ 0.90
Comparative fit index (CFI)	≥ 0.90
Normed fit index (NFI)	≥ 0.90
Tucker-*Lewis* index (TLI)	≥ 0.90
Root mean square error of approximation (RMSEA)	≤ 0.08
Standard root mean square residual (SRMR)	≤ 0.08

Mediated effect: The direct, indirect, and total effects between latent variables in the structural equation model were analyzed. Then, the significance of the indirect effect was tested by the Bootstrapping method. If the test result is statistically significant, the variable influences a mediated variable.

Invariance of the structural equation model between buyers and sellers: This test considers the chi-square difference ($\Delta \chi^2$) and the difference in degrees of freedom (Δdf). This test is known as the chi-square difference test. If the chi-square difference is not statistically significant ($p > 0.05$), the structural equation model has an invariance between groups (Hair, Black, Babin, & Anderson, 2018).

4. Results and Discussion

4.1. Results

4.1.1. Analysis Results of Preliminary Agreement of Variables

Table 2 shows the results of analyzing the normal distribution of the variables. When considering the skewness values, it was found that the observed variables

were left-skewed (SK < 0). This demonstrates that the data for all variables have a score higher than the mean. The skewness values were between -1.363 and -0.047. Considering the kurtosis values (KU), it was observed that all observed variables had a kurtosis value lower than normal (Platy Kurtic). The calculated kurtosis values were less than 3 (KU < 3), indicating that the data for the observed variables are relatively flat. The data for the observed variables were highly distributed, with kurtosis values ranging from -0.885 to 2.158. The skewness and kurtosis values were close to zero, suggesting that the observed variables exhibit a normal curve distribution.

The Pearson product-moment correlation coefficient analysis results are shown in Table 2. The results demonstrated 15 pairs of latency relationships between 6 latent variables. All pairs of latent variables were positively correlated at a significant level of 0.01. The sizes of the relationships, or the correlation coefficients, were between 0.160 and 0.575, which were at most 0.85, indicating that the latent variables had a not very high degree of correlation. Therefore, there was no problem with multilinearity. Hence, all latent variables were suitable for confirmatory component and structural equation model analyses (Hair et al., 2018).

Table 2: Normality of Observed Variables.

Variables	Item	Mean	S.D.	Skewness	Kurtosis
Food attributes (FAT)	FAT1	3.95	0.76	-0.692	0.220
	FAT2	4.05	0.74	-0.944	0.897
	FAT3	4.05	0.76	-0.951	0.873
	FAT4	3.90	0.73	-0.626	0.400
Online attributes (OAT)	OAT1	4.21	0.62	-0.480	-0.303
	OAT2	4.10	0.66	-0.407	0.083
	OAT3	4.06	0.68	-0.202	-0.822
	OAT4	3.95	0.75	-0.262	-0.885
Marketing innovation (MIN)	MIN1	3.93	0.67	-0.092	-0.578
	MIN2	3.85	0.66	-0.047	-0.626
	MIN3	4.00	0.66	-0.280	-0.430
	MIN4	4.01	0.67	-0.478	0.277
Attitude (ATT)	ATT1	3.96	0.97	-1.363	2.158
	ATT2	4.00	0.97	-1.309	2.070
	ATT3	3.95	0.99	-1.253	1.769
	ATT4	3.98	0.98	-1.326	2.031
Satisfaction (SAT)	SAT1	3.92	0.88	-0.506	-0.409
	SAT2	4.01	0.80	-0.578	-0.012
	SAT3	3.99	0.87	-0.577	-0.323
	SAT4	4.05	0.84	-0.627	-0.140
Loyalty (LOY)	LOY1	3.92	0.77	-0.545	0.361
	LOY2	4.03	0.73	-0.586	0.684
	LOY3	4.10	0.65	-0.538	1.287
	LOY4	3.88	0.73	-0.424	0.592

Table 3: Pearson's Product-moment Correlation Coefficient of Latent Variables.

	Mean	S.D.	FAT	OAT	MIN	ATT	SAT	LOY
FAT	3.99	0.67	1					
OAT	4.08	0.60	0.447**	1				
MIN	3.95	0.59	0.518**	0.575**	1			
ATT	3.97	0.84	0.199**	0.216**	0.207**	1		
SAT	3.99	0.71	0.223**	0.243**	0.235**	0.329**	1	
LOY	3.98	0.59	0.310**	0.534**	0.427**	0.234**	0.160**	1

Significance level: **$p < 0.01$
Note: FAT = Food attributes, OAT = Online attributes, MIN = Marketing innovation, ATT = Attitude, SAT = Satisfaction, LOY = Loyalty.

4.1.2. Results of Testing the Structural Equation Model

Results of confirmatory component analysis of latent variables: A confirmatory component analysis was conducted to determine whether the measurement model of latent variables was consistent with the empirical data. Table 4 presents the validity and reliability of the measurement model. The results demonstrated that the measurement models of all latent variables were consistent with the empirical data ($\chi^2/df < 3$; p-value > 0.05; GFI, CFI, NFI, and TLI ≥ 0.90; RMSEA, SRMR ≤ 0.08).

When examining convergent validity, it was found that all latent variables had standard component weights and average variance extracted values greater than 0.50. The confidences, tested by determining the internal consistency from Cronbach's alpha coefficient and the total confidence value of latent variables, were found to be greater than 0.70, indicating that the latent variable utilized to develop the structural equation model in this research and the questions in the questionnaire employed to measure the observed variables were appropriate.

The results of the conformity analysis of the structural equation model: The structural equation model, including variables of food attributes, online system attributes, marketing innovations, attitudes, and satisfaction, was consistent with empirical data ($\chi^2 = 242.712$; $df = 212$; $\chi^2/df = 1.145$; p-value = 0.073; GFI = 0.953; CFI = 0.995; NFI = 0.963; TLI = 0.994; RMSEA = 0.019, SRMR = 0.019), as shown in Table 5.

The results of analysis of the influence path between latent variables in the structural equation model: Figure 1 depicts the analysis of influence paths between latent variables in the structural equation model. It was found that the causal influence coefficient of exogenous variables affecting endogenous variables had 9 paths. The four paths, shown as solid lines, demonstrated that exogenous variables had a statistically significant effect on endogenous variables. That is, food attributes directly affected satisfaction ($\gamma = 0.132$), online system attributes directly affected loyalty (γ

= 0.485) and satisfaction (γ = 0.154), and marketing innovation directly affected loyalty (γ = 0.153) statistically significantly. The other six paths, shown as dotted lines, indicated that endogenous variables did not affect endogenous variables. For the coefficient of causal influence paths of endogenous variables affecting endogenous variables, there were 2 paths. One of them, shown as a solid line, indicated that attitude had a direct effect on loyalty (β = 0.129). Another line, shown as a dotted line, demonstrated that satisfaction had no effect on loyalty. It can be concluded that the research results are consistent with the five research hypotheses, as shown in Table 6.

**Table 4:** Validity and Reliability of Measurement Model.

Variables	Item	Loading	Cronbach's α	C.R.	AVE
Food attributes (FAT) (χ^2/df = 1.297; *p* = 0.090; GFI = 0.981; CFI = 0.997; NFI = 0.985; TLI = 0.993; RMSEA = 0.027; SRMR = 0.017)	FAT1	0.891	0.920	0.966	0.878
	FAT2	0.999			
	FAT3	0.890			
	FAT4	0.964			
Online system attributes (OAT) (χ^2/df = 1.145; *p* = 0.260; GFI = 0.986; CFI = 0.999; NFI = 0.990; TLI = 0.997; RMSEA = 0.019; SRMR = 0.012)	OAT1	0.959	0.912	0.952	0.834
	OAT2	0.951			
	OAT3	0.988			
	OAT4	0.731			
Marketing innovation (MIN) (χ^2/df = 1.158; *p* = 0.159; GFI = 0.986; CFI = 0.972; NFI = 0.977; TLI = 0.995; RMSEA = 0.020; SRMR = 0.017)	MIN1	0.856	0.904	0.949	0.822
	MIN2	0.894			
	MIN3	0.979			
	MIN4	0.893			
Attitude (ATT) (χ^2/df = 1.900; *p* = 0.150; GFI = 0.995; CFI = 0.998; NFI = 0.996; TLI = 0.994; RMSEA = 0.047; SRMR = 0.010)	ATT1	0.813	0.877	0.888	0.664
	ATT2	0.847			
	ATT3	0.816			
	ATT4	0.782			
Satisfaction(SAT) (χ^2/df = 1.939; *p* = 0.144; GFI = 0.995; CFI = 0.997; NFI = 0.995; TLI = 0.992; RMSEA = 0.049; SRMR = 0.010)	SAT1	0.747	0.858	0.862	0.610
	SAT2	0.886			
	SAT3	0.733			
	SAT4	0.749			

Variables	Item	Loading	Cronbach's α	C.R.	AVE
Loyalty (LOY) (χ^2/df = 1.156; *p* = 0.315; GFI = 0.997; CFI = 0.999; NFI = 0.996; TLI = 0.998; RMSEA = 0.020; SRMR = 0.006)	LOY1	0.767	0.834	0.838	0.567
	LOY2	0.873			
	LOY3	0.708			
	LOY4	0.644			

Table 5: Summary of Goodness Fit Indices for the Structural Equation Model.

Fit Indices	Acceptable Rate	Values of the Structural Equation Model
χ^2	*p* > 0.05	0.073
χ^2/df	< 3	1.145
GFI	≥ 0.90	0.953
CFI	≥ 0.90	0.995
NFI	≥ 0.90	0.963
TLI	≥ 0.90	0.994
RMSEA	≤ 0.08	0.019
SRMR	≤ 0.08	0.019

Note: Acceptable rate was obtained from the study of Hair et al. (2018).
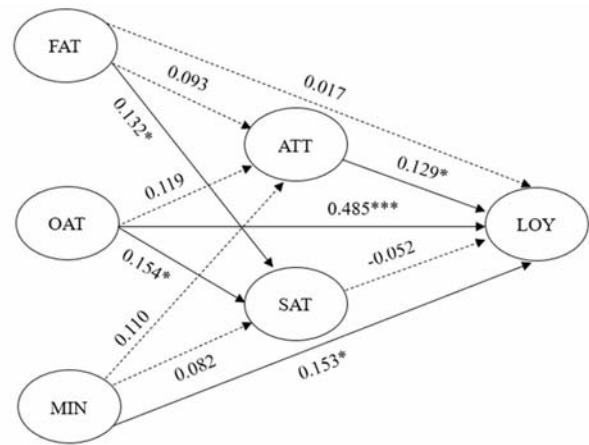
Figure 1: Path Coefficients for the Structural Equation Model.

The results of mediated effect analysis: Table 7 shows the causal influence of the structural equation model. Considering the direct, indirect, and total effects of the variables in the structural equation model, it was found that loyalty was directly influenced by online system attributes (γ = 0.485), marketing innovation (γ = 0.153), and attitude (β = 0.129) statistically significantly. Satisfaction was directly influenced by food attributes (γ = 0.132) and online system attributes (γ = 0.154), with statistical significance. Considering the indirect effects of food attributes, online system attributes, and marketing innovations delivered to loyalty through attitude and satisfaction variables, it was found that the test results were not statistically significant.

This indicates that attitudes and satisfaction are not mediated variables mediating the relationships between loyalty and food attributes, online system features, and marketing innovations.

Table 6: Hypothesis Testing Results of the Structural Model

Path Diagram	Path Coefficient	t-value	p-value	Hypothesis Supported
Gamma: γ_i				
FAT → LOY	0.017	0.303	0.762	Rejected
FAT → ATT	0.093	1.429	0.153	Rejected
FAT → SAT	0.132	2.013*	0.044	Accepted
OAT → LOY	0.485	6.700***	0.000	Accepted
OAT → ATT	0.119	1.560	0.119	Rejected
OAT → SAT	0.154	2.021*	0.043	Accepted
MIN → LOY	0.153	2.195*	0.028	Accepted
MIN → ATT	0.110	1.375	0.169	Rejected
MIN → SAT	0.082	1.029	0.303	Rejected
Beta: β_i				
ATT → LOY	0.129	2.436*	0.015	Accepted
SAT → LOY	-0.052	-0.963	0.335	Rejected

Significance levels: *$p < 0.05$, ***$p < 0.001$
Note: FAT = Food attributes, OAT = Online system attributes, MIN = Marketing innovation, ATT = Attitude, SAT = Satisfaction, LOY = Loyalty.

Table 7: Causal Influence of Structural Equation Model

Causes	Effects of ATT		
	DE	IE	TE
FAT	0.093	-	0.093
OAT	0.119	-	0.119
MIN	0.110	-	0.110
ATT	-	-	-
SAT	-	-	-
R²	0.074		
Causes	**Effects of SAT**		
	DE	IE	TE
FAT	0.132*	-	0.132
OAT	0.154*	-	0.154
MIN	0.082	-	0.082
ATT	-	-	-
SAT	-	-	-
R²	0.095		
Causes	**Effects of LOY**		
	DE	IE	TE
FAT	0.017	0.005	0.022
OAT	0.485***	0.007	0.492
MIN	0.153*	0.010	0.163
ATT	0.129*	-	0.129
SAT	-0.052	-	-0.052
R²	0.401		

Significance levels: *$p < 0.05$, ***$p < 0.001$
Note: FAT = Food attributes, OAT = Online system attributes, MIN = Marketing innovation, ATT = Attitude, SAT = Satisfaction, LOY = Loyalty, DE = Direct effect, IE = Indirect effect, TE = Total effect.

The results of testing the invariance of the structural equation model between buyers and sellers: Testing for invariance in the measurement model began with testing the model in which each group is independent. The results are shown in Table 8. It was shown that the measurement models of both groups were consistent with the empirical data. When measuring the invariance of the number of components and pattern of the model (configural model), it was found that the measurement models of both groups had the same number of components and measurement patterns. When measuring the invariance of the component weight (metric model) compared to the base model (configural model), it was found that the $\chi 2$ value was not statistically significant. When measuring the invariance of component weight and intercept simultaneously (scalar model) compared with the metric model, it was found that the $\chi 2$ value was not statistically significant. Therefore, it can be concluded that the measurement model is invariant between groups of buyers and sellers.

Table 8: Tests for Measurement and Structural Invariance Models

	χ^2	df	Model Comparison		
			Comparison	$\Delta\chi^2$	Δdf	p-value
Single Group Solutions					
Overall sample	242.712	212			
Buyer form	242.338	212			
Seller form	219.880	212			
Measurement Invariance					
Configural model	462.219	424			
Metric model	472.001	442	2 vs 1	9.782	18	0.939
Scalar model	499.973	466	3 vs 2	27.972	24	0.261
Structural Invariance					
Free parameter	462.219	424			
Equal parameter	472.424	435	2 vs 1	10.204	11	0.512

Testing for invariance of the structural equation model began with a discriminant analysis to determine whether two structural equation models have the same pattern. It was found that the two structural equation models were consistent with the empirical data. The invariance of the structural equation model was then tested by independent parametric multi-group confirmatory factor analysis (MGCFA). It was observed that the two structural equation models were consistent with the empirical data. When testing the invariance of the path coefficient by assigning the path coefficients for both groups to be equal and then comparing the chi-square value with the independent parametric test, it was found that the χ^2 value was not statistically significant. This indicates that the structural equation models are invariant or there is no difference between the groups.

Therefore, the loyalty structural equation model for

buying and selling food products through e-marketplaces in Thailand does not have cross-group variation between buyers and sellers in both measurement and structural equation models. This means that this structural equation model can be used to describe both buyer and seller groups.

4.2. Discussion

According to the development of the structural equation model, it was found that loyalty to buying and selling food products through e-marketplaces in Thailand was influenced directly by the variables of online system attributes, marketing innovation, and attitudes. This outcome is consistent with previous studies, which found that online system attributes influenced behaviors of acceptance and loyalty to the use of online systems (Fakfare, 2021; Mofokeng, 2021). As for marketing innovation, it was used to meet customers' needs. Long-term customer loyalty will be gained through marketing innovation, particularly by building positive customer relationships. Moreover, existing customers will likely make future purchases (Hung et al., 2020; Hussain et al., 2012; Wilson, 2014). The relationship between attitude and loyalty can be explained through rational action theory. This theory is based on the idea that if a person believes that doing a behavior will result in a positive effect, he or she tends to have a good attitude toward that behavior and have a greater intention to do that behavior. Therefore, when buyers or sellers believe buying or selling goods through an e-marketplace channel will lead to positive results, they will have a positive attitude toward buying or selling goods. As a result, they have more intention to buy or sell products and greater buying or selling behavior, resulting in loyalty to buying and selling products (Ajzen, 2012). This is consistent with previous research, which found that attitude positively influenced electronic loyalty (Fanoberova & Kuczkowska, 2016; Robina-Ramirez et al., 2020).

Food attributes and online system attributes statistically impacted satisfaction in buying and selling food products through e-marketplaces. This may be because buyers need to see real food when buying and selling food through e-marketplaces. They, therefore, rely on food attributes in making purchasing decisions. If the food they want to buy is in line with their needs, they will be satisfied with purchasing that food. This is consistent with previous research findings supporting the idea that food attributes could create satisfaction in food purchases (Arfiandi & Sukresna, 2018; Grujic & Grujicic, 2017). At the same time, good system attributes are a conducive factor in the use of online systems, leading to online satisfaction (Azam et al., 2012; Fanoberova & Kuczkowska, 2016; Kok & Kim, 2021).

The factors that did not affect the loyalty to buying and selling food products through e-marketplaces and did not align with the research hypotheses were found to be the food attributes (H1) and customer satisfaction (H11). This may be because customers made a purchase not only for the product but also for the benefits derived from the purchase, taking into account the advantages of the brand product, product quality, and overall benefits received from the product. These factors are compared and aligned with the arising needs. Products with good attributes that do not align with the customer's needs may not lead to repeat purchases (Fakefare, 2021; Prasetyo et al., 2021; Sataya et al., 2021). Customer satisfaction may not always impact loyalty, especially in terms of behavioral loyalty, which reflects consumer behavior towards the product at a specific time, such as repeat purchases. This behavior is influenced by several factors beyond customer satisfaction, including marketing activities, advertisements, and promotions (Baron et al., 2010), consistent with the study by Smith (2020) that found no direct influence of customer satisfaction on repeat purchases.

The factors that did not influence attitudes and did not align with the research hypotheses included food attributes (H2), online system attributes (H5), and marketing innovations (H8). This may be because attitudes are a personal matter, resulting from the combination of feelings, thoughts, and beliefs that individuals have towards something, manifested in the form of value judgments, which can be positive or negative. Moreover, the evaluation of individuals towards the same thing can be similar or different. Hence, the positive attributes of food, online systems, and marketing innovations in buying and selling products through e-marketplaces may create positive attitudes for some buyers and sellers but may not affect the positive attitudes of others, depending on their evaluations (Kotler & Keller, 2012). However, the research findings still aligned with previous studies that found no significant influence of food attributes, online system attributes, or marketing innovations on attitudes toward buying and selling products (Robina-Ramirez et al., 2020).

According to testing H9, it was found that marketing innovations did not have an impact on satisfaction, which contradicted the proposed research hypothesis. This might be because satisfaction is a subjective matter involving customers' feelings, opinions, or decisions arising from comparing products or services to their perceived expectations. Therefore, the use of marketing innovations in buying and selling products through e-marketplaces may only generate satisfaction for certain buyers and sellers (Kotler & Keller, 2012).

The structural equation model can be utilized to describe both groups of buyers and sellers. Therefore, e-commerce marketplace users must pay attention to online system attributes, marketing innovations, and user attitudes if they strive to build buyers' and sellers' loyalty. This is because

such factors have a direct influence on loyalty. The online system attributes should be easy to use, have reliability in the information, be secure, and have privacy. Moreover, marketing innovations should be introduced to the online system to build long-term customer loyalty and a good attitude toward customers when buying and selling products. This approach will make customers more loyal to buying and selling products through the e-marketplace.

5. Conclusions & Implications

The structural equation model of variables influencing loyalty to buying and selling food products through e-marketplaces in Thailand consisted of food attributes, online system attributes, marketing innovations, attitudes, and satisfaction. The model was consistent with the empirical data. The variables in the model could explain 40.1 percent of the variance in loyalty to buying and selling food products through e-marketplaces in Thailand. Online system attributes, marketing innovations, and attitudes directly impacted loyalty to buying and selling food products through e-marketplaces. Food attributes and online system attributes statistically impacted satisfaction in buying and selling food products through e-marketplaces. This structural equation model had no cross-group variation between buyers and sellers. Hence, it can be employed to describe buying and selling products through e-marketplaces in Thailand.

This study provides theoretical implications that can demonstrate causal factors (online system attributes, marketing innovations, and attitudes) that lead to positive experiences in buying and selling food products through e-marketplaces. These implications can support research endeavors and serve as references for researchers interested in investigating the aforementioned topics. Regarding practical implications, based on the research findings, it is evident that online system attributes have the most significant influence on customer loyalty to buying and selling food products through e-marketplaces. Therefore, websites should prioritize the development of their online systems by designing and enhancing the platforms to facilitate easy, convenient, and efficient transactions. For example, incorporating diverse and categorized search tools to simplify the process of finding products through the system can enhance user convenience. A limitation of this research is that the results can only explain the factors that influence customer loyalty to buying and selling food products through e-marketplaces during a specific timeframe. As time passes or new technologies emerge, other factors may come into play and influence customer loyalty differently. Thus, future researchers interested in this topic should consider adding additional factors to their

studies to gather more comprehensive data, such as economic, social, and technological factors, which can provide a broader understanding of the factors that influence customer loyalty.

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