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**THE IMPACT OF ELECTRONIC CUSTOMER RELATIONSHIP MANAGEMENT
(e-CRM) FEATURES ON e-LOYALTY AMONG ONLINE PURCHASERS: THE
MEDIATING ROLE OF e-CUSTOMER SATISFACTION**

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ABSTRACT

In the current digital business landscape, the shift towards e-commerce has resulted in intense competition among companies, posing a significant challenge to e-loyalty. Factors such as limited real-time responses, poor network connectivity, and inadequate website elements hinder e-customer satisfaction and e-loyalty in online purchases. Therefore, this research aims to determine the level of e-customer satisfaction with e-CRM features, identify the impact of e-CRM features on e-loyalty among online purchases, and examine the mediating role of e-customer satisfaction in the relationship between e-CRM features and e-loyalty in online purchasing. The study utilized SPSS and AMOS software for data analysis using responses from 384 Malaysian citizens in areas of Selangor and Kuala Lumpur who have experience with online purchases. The data were collected through an online survey using Google Forms. The study found out all attributes of e-CRM features had a significant relationship with e-customer satisfaction, but e-sales and e-support did not have found significant correlation with e-loyalty. This study also finds a positive relationship between the mediating role of e-customer satisfaction and the relationship between e-CRM and e-loyalty among online purchases. In conclusion, the study provides a clear overview of customer trends with online purchases through e-CRM features. Besides that, the study also provides an understanding of significant e-CRM features to enhance e-loyalty through e-customer satisfaction for e-commerce.

Keywords: e-commerce, e-loyalty, e-customer relationship management (e-CRM), e-customer satisfaction, online purchasing.

INTRODUCTION

In the new global marketing era, supply chains and operations have become critical issues for every business. The trend of technology has become a crucial tool in business marketing, with companies relying on digital and innovative technology development for their strategies and processes to enhance business value and performance (Singh & Chan, 2022; Suman Tiwari et al., 2019). The outbreak of the COVID-19 pandemic has forced many businesses to temporarily shut down, resulting in significant profit and revenue loss. Consequently, they have turned to technology, particularly the Internet, to address financial challenges. Nowadays, e-CRM is one of the trending technologies in the Fourth Industrial Revolution and IT, assisting organizations in operating and effectively running their businesses. Electronic Customer Relationship Management (e-CRM) is an innovative technology in business strategies, affects organizational performance, customer retention, and marketing by deeply understanding customer preferences through online purchasing histories.

According to MCMC (Malaysian Communications and Multimedia Commission, 2020), internet usage has increased by almost 24.6% in 9 years, from 64.1% in 2012 to 88.7% in 2020. This growing trend indicates a rise in people using the Internet for various activities, including online shopping, which has increased from 53.3% to 64.2%. Consequently, e-commerce has contributed significantly to Malaysia's GDP, with an 8.4% increase from 22.6% in information and communication technology (DOSM, 2021). With the rise in e-commerce, the business environment has become more competitive, focusing on speed, innovation, and collaboration strategies between industry players and customers (Anuriza & Kusumawardhani, 2021). Online purchasing, according to Kanchan et al. (2015), is a process where customers prefer to buy various products over the Internet without face-to-face interaction. Currently, Lazada, Malaysia's leading online shopping website (Chan et al., 2018), hosts 19,000 SMEs on its e-commerce platform and plans to increase this number to 50,000 next year. Many companies and SMEs have capitalized on this opportunity for online business, which presents a competitive advantage in marketing. The Malaysian government believes that e-commerce will bolster the nation's economy.

Adapting to new technology and changing market preferences, businesses need to dynamically adjust their business models to gain a competitive edge and achieve their goals. According to Akbar et al. (2020), price, ease of transaction, information quality, safety, and trust positively influence online purchasing decisions. The total internet usage for establishments increased by 11.9% from 2017 to 2019, indicating the growing competitiveness of the online retail industry, prompting e-tailers to focus on customer retention rather than merely acquiring customers (Kumar & Ayodeji, 2021). The global pandemic has influenced consumer shopping behaviour, with online features and services aiming to enhance customer satisfaction and retention. However, fake reviews and feedback reduce buyer confidence, especially for new merchants (Peña-García et al., 2020), highlighting the importance of trust in e-commerce (Ismail & Masud, 2020). Thus, this study aims to investigate the relationship between e-customer satisfaction and e-loyalty in the context of online purchases.

Moreover, increased competition online provides customers with more choices, affecting brand loyalty (Kumar & Ayodeji, 2021). Net benefit, including monetary gain, product search efficiency, convenience, timely delivery, enjoyment, product range, and flexibility, is a significant factor in e-customer satisfaction (Lim et al., 2016). Poor network connectivity and limited digital technology support are challenges faced by e-commerce businesses, impacting customer satisfaction (Ismail & Masud, 2020). Nevertheless, many businesses had already shifted their operations online pre-COVID-19, leveraging digital technologies to remain profitable (MIDA, 2021). Therefore, this study aims to examine the mediating role of e-customer satisfaction in the relationship between E-CRM and e-loyalty among online purchases.

The research questions for this study are:

1. What is the level of customer perception of e-CRM features for online purchases?
2. What is the relationship between e-CRM features, e-customer satisfaction, and e-loyalty among online purchasers?
3. What is the mediating role of e-customer satisfaction in the relationship between e-CRM features and e-loyalty among online purchasers?

LITERATURE REVIEW

Definition of CRM

Customer Relationship Management (CRM) is a marketing activity primarily aimed at increasing e-customer satisfaction and maintaining closer relationships with existing customers. Visser and Fokkema (2021) describe that IT vendors, consulting firms, and companies have developed their conceptualizations, dividing the definition into three perspectives: the functional level, the customer-facing front-end level, and the strategic level. From a marketing strategy perspective, CRM integrates strategy, people, technology, and business processes to meet customer needs and desires and to establish profitable customer relationships in the long term. The success of CRM initiatives relies on various factors, including the backing of top management, seamless integration of IT systems, comprehensive employee training, and a significant pool of customer data (Farmania et al., 2021). Liu et al. (2012) also noted that CRM is a strategy and a dynamic approach to understanding and changing customer behaviours, thereby benefiting the banking sector through the acquisition of new customers, retention of existing customers, and enhancement of customers' profitability. This integration involves the application of customer services, sales, marketing, and support systems, categorized into three fundamental aspects: marketing, sales, and service. Moreover, from a technical standpoint, CRM encompasses the gathering and retention of customer data, the examination of profitability sustainability among consumers, and the adoption of a lifetime value approach to customer management (Libai et al., 2020).

The company leverages traditional CRM to interact with customers through face-to-face communication and address inquiries or complaints to evaluate customers' consumption experiences. Additionally, according to Kusumawati and Rahayu (2020), CRM tools encompass comprehensive customer information, necessitating the tracking of customers to identify those likely to generate higher profits compared to others. This facilitates a deeper understanding of individual customers, enabling the company to personalize its approach for each customer. As a result, it becomes evident that customers are the most crucial element in the firm's service delivery process. Thanh Nguyễn et al. (2021) noted that the CRM system model involves the information management of the business, aggregating customer data such as purchase history, keyword patterns, customer demographics, and other relevant information to attract new and existing customers, establish closer customer relationships, and expand markets and diversify products.

Definition of e-CRM

Electronic Customer Relationship Management, also known as e-CRM, was developed as an extension of the previous CRM system. In today's business world, the utilization of e-CRM as a management approach is widespread, especially in e-commerce. E-CRM is defined as the utilization of marketing activities, tools, and techniques delivered via the Internet to build and improve customer relationships in the long term to optimize their potential (Kumar & Mokha, 2022). E-CRM is a marketing strategy instrument that integrates IT infrastructure; e-commerce applies the e-CRM instrument to achieve the company's objective of increasing the customer base and expanding marketing by providing personalized service, maintaining

customer relationships, attracting new and existing customers, collecting customers' feedback, and providing convenience (Jarrah et al., 2020).

Nicoline and Kaplan (2020) indicate that e-CRM features are divided into three stages among online purchases: pre-purchase (web store properties and product variety), at-purchase (pricing and purchase conditions, payment methods, privacy, and security), and post-purchase (problem-solving, order tracking, and feedback). According to Kampani and Jhamb (2020), business transactions record customer purchase history and data through online customer relationship software for every e-purchase made. This enables companies to generate new ideas for serving customers more effectively to enhance their overall experience. The study also identifies major dimensions of online transactions that depend on trust, quality of information, website design, product variety, transaction capabilities, responsiveness, security, payment systems, delivery, reliability, ease of use, and customer service, impacting online customer satisfaction and e-loyalty.

Application of e-CRM

To meet e-customer satisfaction, companies must ensure consistency across all interaction channels, including the internet, email, telephone, wireless, mobile, and personal digital assistants, as well as various company departments such as sales, services, marketing, and other relevant areas (Grover, 2011). By maintaining consistency in these channels and across different functional areas, companies can provide a seamless and cohesive customer experience that enhances e-customer satisfaction (Keshvari, 2012).

Ahmed et al. (2019) concluded that e-CRM operations are not only focused on the Internet but also encompass a wide range of devices including PDAs, mobile phones, pagers, WAP phones, and set-top TV boxes. This expansion enhances the communication channels accessible to customers, integrating services across various devices and mediums. The modern shopping experience has seamlessly shifted from traditional brick-and-mortar stores to online platforms and now extends to virtually any device, enabling businesses to cater to customers from anywhere.

E-CRM is implemented electronically through internet-based platforms, web browsers, and other electronic media such as email and call centres. Computer technologies like data warehouses, customer profiles, and decision support systems are essential in e-CRM. Additionally, advancements in web and computer technologies have enabled the application of other tools such as voice portals (Interactive Voice Response), chatbots, virtual customer representatives, and web phones (IP Telephony/VoIP) in e-CRM (Adlin et al., 2019).

E-CRM Features

E-Sales

Sales play a crucial role in the CRM model, contributing significantly to an organization's efforts in creating and maintaining customer relationships through effective sales strategies. Haque et al. (2006) emphasized that developing an e-sales strategy involves considerations of product range and operational strategy. Karphammar and Brettschneider (2021) elaborated on e-sales as a feature of e-CRM, involving the comparison of products, prices, and services offered by different companies. Additionally, providing easy access to company information is essential in sales strategies to facilitate customer engagement. According to Hwang (2022), e-sales encompasses a comprehensive range of sales activities conducted over the Internet, specifically targeting online purchases of products and services.

E-Marketing

E-marketing serves as an auxiliary tool complementing e-business and e-commerce strategies by facilitating marketing and promotion via ICT (Mazzarol, 2015). E-marketing plays a crucial role in shaping consumers' attitudes and behaviours, exerting a significant influence on those engaged in online shopping (Priansa & Suryawardani, 2020). As referenced by Harsono (2011), an e-marketing strategy is implemented by organizations to achieve specific goals through delivery, creation, and communication, aiming to gain a competitive advantage in the market. These activities are geared towards creating value for organizations to better understand and fulfil consumer needs.

E-Support

Customer support addresses the desire of customers to have their concerns heard and resolved by real people, a need now fulfilled through electronic means (Ma et al., 2022). Hwang (2022) notes that e-support encompasses online activities aimed at resolving difficulties and complaints from customers making online purchases. Customer support integrates collaboration and communication tools to provide real-time responses. Disney Interactive, for instance, successfully implemented communication tools such as live chat and emails to promptly address customer inquiries (Karphammar & Brettschneider, 2021).

E-System

E-system encompasses all e-CRM features and support provided by a company to facilitate online purchases by customers (Hwang, 2022). Thanh Nguyễn et al. (2021) indicated that convenience and ease of use are paramount for an e-system to enhance customer satisfaction. These features play a crucial role in improving website effectiveness, including visual characteristics, site navigability, format, content, security, download speed, navigation, interactivity, and design. From the perspective of Internet banking, these features significantly contribute to enhancing e-customer satisfaction (Hoi Yen et al., 2016).

E-customer Satisfaction

E-customer satisfaction is a measure used to evaluate the overall customer experience with a product or service from a company. Evaluating satisfaction involves assessing a person's feelings about a product or service by comparing the organization's performance to customer expectations. It is influenced by several factors such as friendly and knowledgeable employees, accurate and timely billing, competitive pricing, quality products/services, and good value for money, and efficient service (Musa et al., 2012). Satisfaction serves as an indicator of the quality of service provided to existing customers and reflects the company's ability to attract new customers (Galina et al., 2022).

Conceptual Framework

The study on the impact of e-CRM features and e-loyalty among online purchases, with the mediating role of e-customer satisfaction, will involve the development of ten hypotheses. The dependent variable for the study is e-loyalty, while the independent variables are e-CRM features, which are divided into e-Sales, e-System, e-Marketing, and e-Support, and the mediating variable is e-customer satisfaction. The conceptual framework is illustrated in Figure 1. The hypotheses developed in the study are outlined below:

Regarding past studies by Kumar and Mokha (2022), dynamic consumer tastes and needs change according to the environment, and e-CRM can manage customers to foster long-term relationships. Therefore, the results of this study reveal that e-CRM has a significant positive impact on e-customer satisfaction and e-

loyalty. It suggests that stimuli from e-CRM such as customized products, transaction security, payment methods, problem-solving, online feedback, and frequently asked questions influence customer behaviour and foster e-loyalty.

From the perspective of Mokha and Kumar (2022), the study has observed that the expansion of digital platforms and managing customer relationships are associated with improved e-customer satisfaction. Hwang (2022) examined the impact of e-Sales, e-Marketing, e-System, and e-Support on e-customer satisfaction, finding significant positive effects. Similarly, in an investigation of Turkish fashion companies, Nicoline and Kaplan (2020) verified a 41.9% increase in annual income through e-CRM features, impacting e-customer satisfaction and e-loyalty in online shopping. Additionally, Nor Alina and Husnayati (2016) demonstrated that e-CRM enhances e-customer satisfaction, particularly in the post-purchase phase, with a positive effect on loyalty. A study on AHASS Putri Jaya Motor Group Brebes also found that an e-CRM program affects the level of e-customer satisfaction (Anuriza & Kusumawardhani, 2021).

H1: e-CRM features have a significant positive impact on e-customer satisfaction

H1-1: e-Marketing has a significant positive impact on e-customer satisfaction.

H1-2: e-Sales has a significant positive impact on e-customer satisfaction.

H1-3: e-Support has a significant positive impact on e-customer satisfaction.

H1-4: e-System has a significant positive impact on e-customer satisfaction.

According to Mokha and Kumar (2022), the study demonstrates that investment in e-CRM significantly impacts e-loyalty. E-CRM features facilitate the maintenance and establishment of long-lasting relationships with customers, fostering loyalty towards banks. Similarly, in AHASS Putri Jaya Motor Group Berbes, the e-CRM program is shown to increase the level of e-loyalty (Anuriza & Kusumawardhani, 2021). Hwang (2022) found that statistically, e-Marketing and e-Sales have a significant positive influence on e-loyalty, while e-Support and e-System show the opposite effect. Nor Alina and Husnayati (2016) discovered that customers become loyal to online purchases when they perceive security and privacy throughout the purchase cycle. Sasono et al. (2021) also demonstrated the importance of e-CRM and e-Marketing in increasing e-loyalty in the context of the HVAC industry. Additionally, Rashwan et al. (2019) noted that the level of e-loyalty to electronic banking services is influenced by satisfaction with adequate information on security.

H2: e-CRM features have a significant positive impact on e-loyalty.

H2-1: e-Marketing has a significant positive impact on e-loyalty.

H2-2: e-Sales has a significant positive impact on e-loyalty.

H2-3: e-Support has a significant positive impact on e-loyalty.

H2-4: e-System has a significant positive impact on e-loyalty.

From the perspective of the banking sector, researchers have demonstrated that e-loyalty is influenced by e-customer satisfaction (Mokha & Kumar, 2022). Moreover, e-customer satisfaction also positively influences e-loyalty in the context of online purchases (Hwang, 2022). Customers tend to share and recommend products or services to their friends when they have had a satisfying experience. Anuriza and Kusumawardhani (2021) confirmed that e-customer satisfaction plays a crucial role in enhancing e-loyalty within a company. In a study of online shopping in Pakistan, researchers observed that e-service quality (efficiency, system availability, fulfillment, and privacy/security) significantly impacts e-customer satisfaction and e-loyalty. As mentioned by Khan et al. (2019), e-retailers should prioritize e-service quality to deliver orders accurately and on time, thereby strengthening e-customer satisfaction and e-loyalty.

H3: E-customer satisfaction has a significant positive impact on e-loyalty.

According to the study by Kumar & Mokha (2022), the result of e-customer satisfaction mediates the relationship between e-CRM and e-loyalty partially. The findings indicate that e-CRM stimuli partially impact e-loyalty with the mediation of e-customer satisfaction. Hwang (2022) concluded that e-customer satisfaction significantly mediates the link between e-CRM features and e-loyalty. However, electronic banking satisfaction as a mediator does not influence the relationship between e-CRM dimensions (expected security) and providing positive feedback to others, and intentions to repeat electronic transactions (Anuriza & Kusumawardhani, 2021).

H4: The mediating role of e-customer satisfaction in the relationship between e-CRM features and e-loyalty in online purchasing.

H4-1: The mediating role of e-customer satisfaction in the relationship between e-Marketing and e-loyalty in online purchasing.

H4-2: The mediating role of e-customer satisfaction in the relationship between e-Sales and e-loyalty in online purchasing.

H4-3: The mediating role of e-customer satisfaction in the relationship between e-Support and e-loyalty in online purchasing.

H4-4: The mediating role of e-customer satisfaction in the relationship between e-System and e-loyalty in online purchasing.

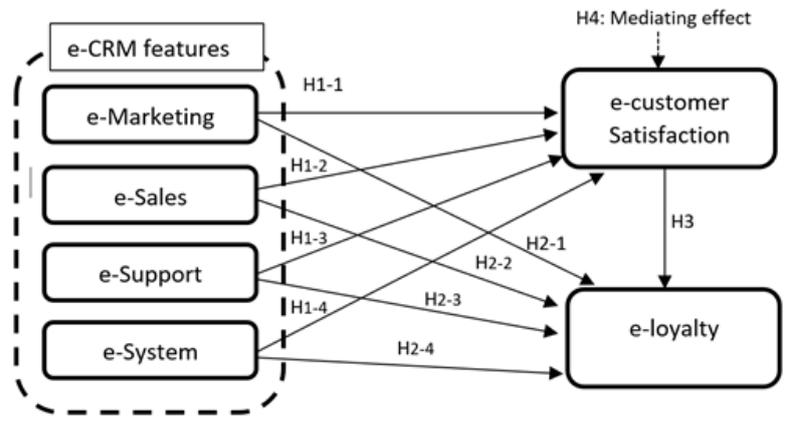


Figure 1
Conceptual framework

METHODOLOGY

Research Design

The research design serves as a plan to guide students in understanding the research methodology, encompassing aspects such as the frequency of data collection, target population selection, data collection methods, and data analysis techniques. Generally, the design is tailored to address specific research questions. Abutabenjeh and Jaradat (2018) delineated six steps of research design, including 1) data collection, 2) measures for variables, 3) identification of the sample or test population, 4) contacting subjects, 5) data analysis plan, and 6) presenting findings. Quantitative research approaches aim to achieve objectivity, control, and precise measurement in the research process. Methodologically, these approaches rely on deductive design, focusing on refuting and building evidence supporting specific theories and hypotheses (Leavy, 2022). A quantitative approach was employed in this study to provide a comprehensive understanding of the impact of e-CRM activity and e-loyalty with the mediating role of e-customer satisfaction. The survey questionnaire was administered as an online survey using Google Forms. Two types of analysis tools, namely SPSS version 27 and SEM SmartPLS 4.0, were utilized to investigate the research question.

Respondents

In this study, the researcher employed simple random sampling to generalize the results from a large population. The simple random sampling method entails randomly selecting individuals from the population to represent the research findings, thereby ensuring greater accuracy (Majid, 2018). According to Ahmad (2016), simple random sampling involves selecting a subset of respondents from a population,

where each individual within the population has an equal probability of being chosen. The target population of interest in this study comprises Malaysian individuals in Selangor with experience in online purchasing via websites or applications. The researcher selected a sample from this population using a simple random sampling approach. As per DOSM (2021), the total population of Malaysia is 32.7 million, with the statistically estimated population aged 15 to 64 years being 22.7 million. Based on the findings of Krejcie and Morgan (1996), the maximum number of total respondents, 384, was determined as the study's sample size. Out of the total of 384 respondents surveyed, only 275, which is 71%, agreed to participate in the study. In most cases, a survey response rate of 50% or higher is considered excellent (Ahmad, 2016).

Research Instrument

The study employed a survey method to obtain fresh data from the target population. This study utilized a dual method for data collection, encompassing both physical and online approaches. The questionnaire comprised closed-ended questions which were adapted from a previous study by Hwang (2022), with an estimated average time for respondents to answer all questions of 6 minutes. The survey was divided into four sections: Sections A, B, C, and D. Section A pertains to the demographic information of the respondents. Section B assesses customer perception of e-CRM features during online purchases. Section C evaluates the level of e-customer satisfaction, which serves as a mediating variable. The final section, Section D, measures e-loyalty. The questionnaire utilized a close-ended survey format calculated using a 5-point Likert scale. Respondents were required to answer each question using a five-point Likert scale ranging from 1 = "strongly disagree" to 5 = "strongly agree".

Content validity, as defined by Yusoff (2019), is a tool used to assess the relevance of the assessment instrument and to ensure that it represents all the targeted constructs for research purposes. Two experts validated the survey to determine whether the tools or items fulfil the research objectives (Kumar, 2014). Expert A, an Associate Professor from Universiti Tun Hussein Onn Malaysia, specializes in business management and innovation, while Expert B, a senior lecturer from Universiti Tun Hussein Onn Malaysia, specializes in operations management. Both experts have provided valuable feedback on the research questionnaire.

The collected data from 30 respondents in the pilot test were used to assess internal reliability consistency. The overall reliability of this study, encompassing a total of 18 items, was calculated at 0.954, as shown in Table 1. Ahmad (2016) indicates that an alpha value greater than 0.7 is acceptable in reliability testing.

Table 1

Pilot Test Result

Variables	No. of items	Cronbach's alpha	Result Interpretation
E-Marketing	3	0.918	Excellent
E-Sales	3	0.863	High
E-Support	3	0.827	High
E-System	3	0.914	Excellent
E-Customer satisfaction	3	0.788	High
E-Loyalty	3	0.896	High
Overall reliability	18	0.954	Excellent

Data Analysis

Two software analyses were conducted to compute and analyse the raw data: Statistical Package for the Social Sciences (SPSS) Version 27 and SEM SmartPLS 4.0. SPSS was used for demographic analysis and descriptive analysis. The results of the descriptive analysis were reported in mean and standard deviation to determine the level of customer perception of e-CRM features. Furthermore, two software analyses were conducted to compute and analyze the raw data: Statistical Package for the Social Sciences (SPSS) Version 27 and SEM SmartPLS 4.0. SPSS was used for demographic analysis and descriptive analysis. The results of the descriptive analysis were reported in mean and standard deviation to determine the level of customer perception of e-CRM features. Furthermore, structural equation modelling (SEM) was implemented to verify the model of the research. The relationship between e-CRM features, e-customer satisfaction, and e-loyalty was analysed using SmartPLS 4.0. A path coefficient analysis of direct effects was conducted to strengthen the relationships between e-CRM features and e-customer satisfaction and e-loyalty. Additionally, the bootstrapping procedure verified the indirect effect of the mediating role of e-customer satisfaction in the relationship between e-CRM features and e-loyalty among online purchases in the research model.

RESULTS

Measurement Model

The measurement model is a method used to assess the quality and accuracy of measurements, aiming to illustrate the relationship between latent indicators and their underlying constructs (Kumar, 2014). This study utilized PLS 4.0 analysis software to evaluate the measurement model, which involved assessing indicator reliability, internal consistency, and convergent validity with the SEM PLS algorithm.

Indicator reliability measures the relationship between latent indicators and constructs, indicating the extent to which the latent construct influences or explains the indicators. Hair et al. (2017) suggest that an outer loading value greater than or equal to 0.7 indicates high reliability, while values between 0.4 and 0.7 may require consideration for removal to enhance composite reliability. Table 2 demonstrates that all items met the reliability threshold, ranging from 0.759 to 0.906.

Internal consistency reliability assesses the extent to which items consistently measure the same underlying concept or construct. It is evaluated using the composite reliability (CR) method, with values greater than or equal to 0.7 considered acceptable (Hair et al., 2017). Table 2 reveals satisfactory composite reliability values for each latent construct, ranging from 0.795 to 0.867, indicating consistency and reliability.

Convergent validity examines the correlation between variables and alternative measures of the same construct (Krabbe, 2016), typically assessed through Average Variance Extracted (AVE) (Awang, 2013). An AVE value equal to or greater than 0.5 is considered substantial and statistically significant (Hair et al., 2017). Table 2 indicates strong statistically significant AVE values ranging from 0.695 to 0.790 for each variable, meeting the criterion for convergent validity 0.695.

Table 2
Measurement Model

Constructs	Indicators	Loading	AVE	CR
E-Loyalty	CL 1	0.864	0.790	0.867
	CL 2	0.896		
	CL 3	0.906		
E-Customer Satisfaction	CS 1	0.876	0.695	0.795
	CS 2	0.861		
	CS 3	0.759		
E-Marketing	EM 1	0.868	0.751	0.836
	EM 2	0.864		
	EM 3	0.868		
E-Sales	ES 1	0.871	0.743	0.829
	ES 2	0.862		
	ES 3	0.852		
E-Support	EU 1	0.840	0.733	0.825
	EU2	0.884		
	EU 3	0.844		
E-System	EY 1	0.869	0.733	0.823
	EY 2	0.891		
	EY 3	0.807		

Structural Model

To calculate the significant relationships within the structural model, a bootstrapping procedure with 5000 samples was employed (Hair et al., 2017). The path coefficient was then reported to examine whether certain hypotheses had a significant relationship. This examination encompassed both the hypotheses of direct effect and those of indirect effect. The path coefficient, which evaluates the relationship of a variable with other variables, was determined, following the guidelines proposed by Hair et al. (2017). The report included the path coefficient developed by the standard error, the t-values, and the p-values through a bootstrapping procedure of a minimum of 5000 samples. Thus, Table 3 presented the results of hypothesis testing for direct effects, while Table 4 displayed the results of hypothesis testing for indirect effects. Additionally, Figure 2 provided a visual representation of the structural model, aiding the researcher in obtaining an overview of the significant relationships within the model. The hypotheses were tested by running 5000 samples of bootstrap in SmartPLS 4.0, adhering to the guidelines proposed by Hair et al. (2017), where the accepted critical value for the two-tailed test of the path coefficient should be equal to or greater than 1.96, with a probability of error of 5% or less.

The first analysis aimed to examine hypothesis development 1 (H1), which investigated the extent to which the relationship between e-CRM features and e-customer satisfaction existed. Table 3 indicated that hypotheses H1-1 (EM→CS), H1-2 (ES→CS), H1-3 (EU→CS), and H1-4 (EY→CS) demonstrated positive significance, with recorded t-values of 3.062 (0.002), 3.633 (0.000), 2.099 (0.036), and 2.488 (0.013), respectively. These results suggested a strong positive correlation between these two variables, leading to the acceptance of hypothesis 1.

Furthermore, hypothesis 2 aimed to investigate the relationship between e-CRM features and e-loyalty. The null hypothesis (H0) for H2 proposed that e-CRM features did not have a significant positive influence on e-loyalty, while the alternative hypothesis (H1) stated the opposite. Table 3 revealed the t-values and p-values of H2-1 (EM→CL), H2-2 (ES→CL), H2-3 (EU→CL), and H2-4 (EY→CL) to be 2.655 (0.008), 0.127 (0.899), 1.169 (0.242), and 4.817 (0.000), respectively. Consequently, the alternative hypotheses of H2-1 and H2-4 were accepted, indicating a significant positive influence, while the null hypotheses of H2-2 and H2-3 were accepted, suggesting that the variables of e-Sales and e-Support had no significant positive influence on e-loyalty.

Lastly, the third hypothesis aimed to investigate whether e-customer satisfaction exerted a significant positive effect on e-loyalty. The null hypothesis (H0) posited that e-customer satisfaction did not have a significant positive effect on e-loyalty, while the alternative hypothesis (H1) stated otherwise. The t-value for this hypothesis was reported as 6.677, with a p-value of 0.000 ($p < 0.05$), indicating a strong significant relationship between the two variables. Consequently, hypothesis 3 was accepted.

Table 3

Hypothesis testing direct effects

Hypothesis	Relationship	Std Beta (β)	t-value	p-value	Interpretation
H1-1	EM→CS	0.190	3.062	0.002	Accepted
H1-2	ES→CS	0.322	3.633	0.000	Accepted
H1-3	EU→CS	0.142	2.099	0.036	Accepted
H1-4	EY→CS	0.195	2.488	0.013	Accepted
H2-1	EM→CL	0.179	2.655	0.008	Accepted
H2-2	ES→CL	0.010	0.127	0.899	Rejected
H2-3	EU→CL	0.075	1.169	0.242	Rejected
H2-4	EY→CL	0.328	4.817	0.000	Accepted
H3	CS→CL	0.376	6.677	0.000	Accepted

The bootstrapping procedure was utilized to measure the mediating effect and test H4. The fourth hypothesis aimed to investigate the indirect effect of the variables, focusing on the mediating role of e-customer satisfaction in the relationship between e-CRM features and e-loyalty among online purchasing. As depicted in Table 4, the attributes of e-CRM encompassed in this hypothesis include e-Marketing, e-Sales, e-Support, and e-System. Initially, the t-value of the H4-1 indirect effect of e-Marketing on e-loyalty through e-customer satisfaction was found to be significant at 2.699 (p-value: 0.007, $p < 0.05$), thus supporting hypothesis H4-1. The second relationship, represented by H4-2, examined the indirect effect of e-Sales on e-loyalty through e-customer satisfaction. The analysis of indirect effects revealed significance with a t-value of 3.217 (p-value: 0.001, $p < 0.05$), thereby accepting hypothesis H4-2. Next, H4-3 examined the relationship between e-Support and e-loyalty through e-customer satisfaction. The results indicated a significant mediating effect, with a recorded t-value of 2.060 (p-value=0.039, $p < 0.05$), leading to the acceptance of hypothesis H4-3. Lastly, H4-4 investigated the indirect effect of e-System on e-loyalty through e-customer satisfaction. The bootstrapping analysis yielded a significant t-value of 2.295, with a corresponding p-value of 0.022, below the significant level of 0.05. Consequently, hypothesis H4-4 was supported.

Table 4

Hypothesis testing indirect effects

Hypothesis	Relationship	Std Beta	t-value	p-value	Interpretation
H4-1	EM→CS→CL	0.071	2.699	0.007	Accepted
H4-2	ES→CS→CL	0.121	3.217	0.001	Accepted
H4-3	EU→CS→CL	0.053	2.060	0.039	Accepted
H4-4	EY→CS→CL	0.073	2.295	0.022	Accepted

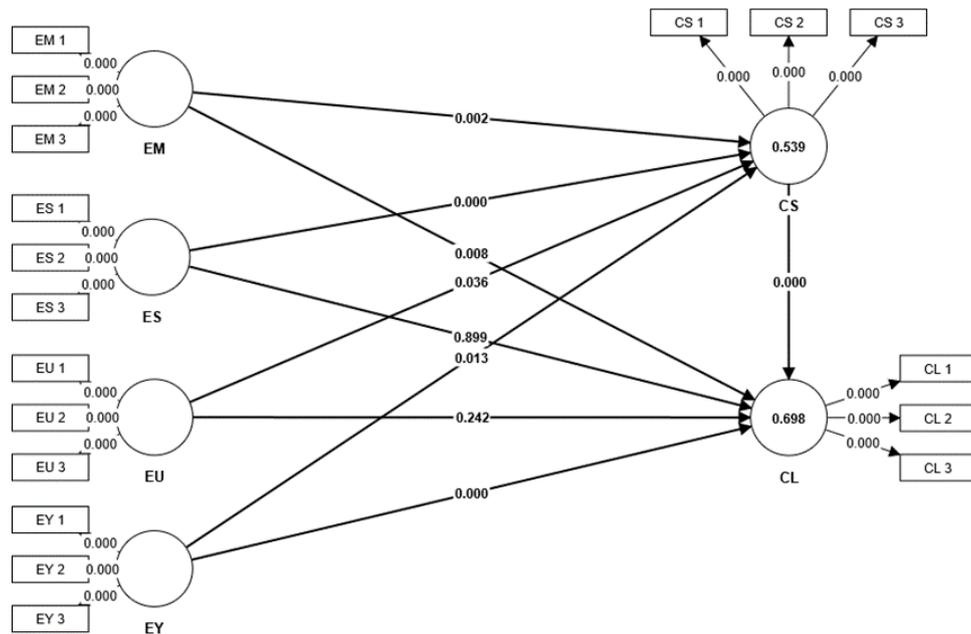


Figure 2
Structural Model

DISCUSSION

The Level of Customer Perception of the E-CRM Features for Online Purchases

The first objective of this study was to determine the level of customer perception of e-CRM features for online purchases. This was achieved by examining the mean and standard deviation for the latent construct. Table 5 presents the average mean scores for e-CRM features. The mean values for customer perception of e-CRM features for online purchases ranged from 3.98 to 3.94. Similar studies by Nicoline and Kaplan (2020) indicate that the measurement of e-CRM features was detailed, covering pre-purchase (web store, product variety), at-purchase (pricing and purchase conditions, payment methods, privacy, and security), and post-purchase (problem-solving, order tracking, after-sales services), as also noted by Anuriza and Kusumawardhani (2021). These data contribute to a clearer understanding of customers’ deeper insights into e-CRM features in online purchases, leveraging e-commerce to expand the customer base by understanding customer behaviours. Therefore, the results reflect positive customer perceptions. The high customer perception of e-CRM features indicates the potential to influence e-customer satisfaction and e-loyalty (Hwang, 2022).

Table 5
Average mean score of e-CRM features

E-CRM features	Average mean score
E-Marketing	3.940
E-Sales	3.960
E-Support	3.850
E-System	3.980

The Relationship between E-CRM Features, E-Customer Satisfaction, and E-Loyalty among Online Purchasers

The second objective of this study was to investigate the relationship between e-CRM features, e-customer satisfaction, and e-loyalty in the context of online purchases. According to Table 6, the results showed that all e-CRM features were correlated with e-customer satisfaction. The study found that all independent variables of e-CRM features had a significant correlation with e-customer satisfaction, especially e-Sales, which exhibited a strong positive correlation. In other words, most users prefer e-commerce, and providing preferences and real-time tracking to buyers can achieve customer satisfaction through seamless transactions. Hence, the high level of e-Sales in online shopping enables an increase in customer satisfaction. Furthermore, e-Marketing in e-CRM was found to have a significant relationship with e-customer satisfaction. Priansa and Suryawardani (2020) highlighted that marketing providing special offers or discounts had a significant influence on customers engaging in online shopping. Meanwhile, e-Support also showed a significant correlation with e-customer satisfaction. This agreement was supported by Rashwan et al. (2019), suggesting that the more efficient the response to customer requirements and problem-solving, the more customers rely on support to seek solutions. In other words, e-Support can enhance relationships by effectively solving customer problems, leading to higher customer satisfaction with online shopping and e-CRM features. Additionally, this analysis supports the theory that the e-System of e-CRM features has the potential to impact e-customer satisfaction. Acknowledging that the system integrates e-CRM features and helps customers enjoy online purchases without face-to-face interactions, a well-designed system provided to meet market tastes leads to increased customer satisfaction with e-CRM features.

Regarding the relationship between e-CRM and e-loyalty, certain independent variables were found to have a significant relationship with e-loyalty. The study demonstrated that the correlation between e-marketing and e-loyalty was significant, in agreement with a previous study (Sasono et al., 2021). The results indicate that with the frequency of offers or discounts, customers are more likely to repurchase from the same platform (Dynamics et al., 2016). Therefore, e-commerce platforms must provide appropriate offers to the market to increase customer attention to repurchasing. Ke Er (2020) notes that the marketing approach has a strong positive correlation with customer satisfaction. Another e-CRM activity showing a significant relationship with e-loyalty is the e-system, supported by previous studies (Hwang, 2022). The criteria of the e-CRM system, including ease of use, menu design, and payment systems, can increase customer retention (Rashwan et al., 2019). For instance, according to reports, Zhiwei Hub owner Ooi Zhi Wei declared that Shopee's marketing features and personalized user experience enabled the development of a loyal customer base of over 400,000 followers within five years (Priveta, 2023). However, the results do not align with the theory that e-Sales and e-Support have an insignificant relationship with e-loyalty. This discrepancy disagrees with Hwang (2022), who found a significant correlation between e-Sales and e-Support on e-loyalty. The insignificant result may be affected by the inadequate representation of e-Sales and e-Support items, with each variable represented by only three indicators, which may not be sufficient to establish a relationship with e-loyalty. Additionally, customers may not prioritize sales and support during online purchases because they may rely more on their own judgment than on the seller's effectiveness in answering their questions. The agreement of Hwang (2022) that e-loyalty has a significant correlation with e-CRM features such as e-Marketing, e-Sales, e-Support, and e-System is partially disagreed with in this study.

The analysis results reveal that the correlation between e-customer satisfaction and e-loyalty was significant, indicating that when customer satisfaction with e-CRM increases, customer loyalty also increases simultaneously (Nurjannah et al., 2022). Moreover, e-customer satisfaction was found to be

significant in e-loyalty through the establishment of a good relationship with customers (Hwang, 2022). When e-commerce establishes a good relationship with new and existing customers, meets their expectations, and fulfils their requirements to increase their satisfaction, the customer base expands, leading to free advertisement and profitable customer retention for e-commerce to expand their value (Machi, 2022). Consequently, better management of e-CRM services for customers will extend the brand and reputation to the market, and customers will share their experiences with friends and relatives through word-of-mouth (Kumar & Mokha, 2022).

Table 6

Summary of the results of the direct effect hypothesis

Hypothesis	Significant Level	Result
H1-1: e-Marketing has a significant positive impact on e-customer satisfaction.	3.062 (0.002)	Accepted
H1-2: e-Sales has a significant positive impact on e-customer satisfaction.	3.633 (0.000)	Accepted
H1-3: e-Support has a significant positive impact on e-customer satisfaction.	2.099 (0.036)	Accepted
H1-4: e-System has a significant positive impact on e-customer satisfaction	2.488 (0.013)	Accepted
H2-1: e-Marketing has a significant positive impact on e-loyalty.	2.655 (0.008)	Accepted
H2-2: e-Sales has a significant positive impact on e-loyalty.	0.127 (0.899)	Rejected
H2-3: e-Support has a significant positive impact on e-loyalty.	1.169 (0.242)	Rejected
H2-4: e-System has a significant positive impact on e-loyalty.	4.817 (0.000)	Accepted
H3: E-customer satisfaction has a significant positive impact on e-loyalty.	6.677 (0.000)	Accepted

The Mediating Role of E-Customer Satisfaction in the Relationship between E-CRM Features and E-Loyalty among Online Purchasers

The last objective of this study was to examine the mediating role of e-customer satisfaction in the relationship between e-CRM and e-loyalty in online purchasing. Table 7 summarizes the results of the indirect effect supported in this study. The findings are consistent with previous studies showing that e-CRM features such as e-marketing, e-sales, e-system, and e-support have a strong correlation with e-loyalty through the indirect effect of e-customer satisfaction (Anuriza & Kusumawardhani, 2021). This analysis is supported by previous research by Nurjannah et al. (2022), which indicated that providing more accurate and quality information as a marketing strategy can increase customer satisfaction and loyalty.

Table 7

Summary of the results of the indirect effect hypothesis

Hypothesis	Significant level	Result
H4-1: The mediating role of e-customer satisfaction in the relationship between e-Marketing and e-loyalty among online purchasing.	2.699 (0.007)	Accepted
H4-2: The mediating role of e-customer satisfaction in the relationship between e-Sales and e-loyalty among online purchasing.	3.217 (0.001)	Accepted
H4-3: The mediating role of e-customer satisfaction in the relationship between e-Support and e-loyalty among online purchasing.	2.060 (0.039)	Accepted
H4-4: The mediating role of e-customer satisfaction in the relationship between e-System and e-loyalty among online purchasing.	2.295 (0.022)	Accepted

CONCLUSION

At the conclusion of this research, the three research objectives and thirteen hypotheses have been satisfactorily achieved. The first research objective was to determine the level of customer perception of e-CRM features for online purchases. The results indicate a high level of customer perception of e-CRM features, with four attributes influencing customer perception as demonstrated through descriptive analysis verified by mean and standard deviation. Furthermore, the second research objective aimed to investigate the relationship between e-CRM features, e-customer satisfaction, and e-loyalty among online purchasers. Results showed that all e-CRM features have a positively significant correlation with e-customer satisfaction. However, e-sales and e-support did not have a statistically significant effect on e-loyalty, while e-marketing and e-system showed statistically significant effects on e-loyalty. The third objective focused on examining the mediating role of e-customer satisfaction in the relationship between e-CRM and e-loyalty in online purchasing. The findings demonstrate that all e-CRM features have a significant correlation with e-loyalty through the indirect effect of e-customer satisfaction. This suggests that all e-CRM features have the potential to affect e-loyalty by mediating the role of e-customer satisfaction, as determined by the path coefficient of the bootstrapping procedure.

The study's findings offer valuable insights into the significance of e-CRM activities for both customers and e-commerce companies. It serves as a guide for businesses considering the adoption of e-CRM strategies to improve e-customer satisfaction and foster e-loyalty, especially in the face of evolving market dynamics driven by factors like climate change and increasing competition. Investing in e-CRM allows companies to maintain customer relationships without relying solely on human resources. Understanding the relationship between e-CRM activities and e-loyalty can provide a competitive edge in the market. Additionally, the findings highlight the need for e-commerce companies to adapt to market trends and tailor e-CRM features to customer preferences. By analysing e-Marketing, e-Sales, e-Support, and e-System activities, businesses can develop strategies to meet customer expectations and achieve their goals. Moreover, the study sheds light on the direct and indirect effects of e-CRM activities on e-loyalty, emphasizing the role of e-customer satisfaction as a mediator. Overall, the study underscores the potential of e-CRM features to enhance customer satisfaction and promote loyalty in the online purchasing landscape.

This study acknowledges several limitations and challenges encountered during the research process, particularly regarding data collection. Firstly, the sample size and composition present limitations, with only 275 respondents participating instead of the intended 384. While this sample size is deemed adequate,

a larger sample would have yielded more reliable and accurate results. However, logistical constraints, including time and financial limitations, prevented the attainment of a larger sample size. Geographical constraints also impacted the study's generalizability, as it focused exclusively on the Selangor State, making it difficult to extrapolate the findings to users in other regions with different experiences. Additionally, the study's scope was limited to examining customer perception and the broad e-CRM features of e-Marketing, e-Sales, e-Support, and e-System in relation to enhancing e-loyalty and e-customer satisfaction. The study did not delve into the specific components and attributes of these e-CRM features, which may have limited its ability to identify the most influential factors in promoting e-loyalty and e-customer satisfaction.

Based on the results discussed above, several recommendations can be made. Firstly, for future studies, it is advisable to increase the sample size by including users from various states across Malaysia who engage in online shopping. A larger and more diverse sample will enhance the validity and accuracy of data regarding e-loyalty and e-customer satisfaction. Therefore, future research could expand the sample size and make the survey accessible to the wider public interested in online purchasing, including individuals aged 17 to 20 who are entering the workforce after completing secondary school. Moreover, future studies could delve deeper into exploring the relationship between e-CRM features and e-loyalty and e-customer satisfaction. Researchers may consider examining additional factors within e-CRM features, such as service quality, perceived risk, ease of use, and real-time responsiveness. Given the ongoing advancements in the IT industry and the widespread adoption of e-commerce, studies could also explore specific sectors like food and beverage, clothing, or services to understand how e-CRM impacts these industries.

Furthermore, it is recommended that e-commerce companies enhance their e-CRM activities on their platforms to improve customer satisfaction and loyalty. These companies could focus on improving the review system by implementing AI filters or verification features to manage customer reviews effectively. This technology can automatically filter out irrelevant or low-quality reviews, ensuring customers feel secure and confident in their online shopping experience. Additionally, introducing gamification elements such as mini-games to incentivize customer engagement and promote marketing activities could enhance the overall shopping experience. For example, customers could earn points or rewards through mini-games, incentivizing them to make purchases even when items are left pending in their shopping carts.

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