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Businesses

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Suggested Citation: Nanta, Teuku Muda; Noermijati, Noermijati; Rohman, Fatchur; Hussein, Ananda Sabil (2025) : The effect of digital touchpoint usage experience on customer loyalty mediated by digital engagement and customer satisfaction, *Businesses*, ISSN 2673-7116, MDPI, Basel, Vol. 5, Iss. 1, pp. 1-19,
<https://doi.org/10.3390/businesses5010003>

This Version is available at:

<https://hdl.handle.net/10419/338794>

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Article

The Effect of Digital Touchpoint Usage Experience on Customer Loyalty Mediated by Digital Engagement and Customer Satisfaction

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Abstract: This study aims to determine the influence of digital touchpoint usage experience, specifically through the myIndiHome application, on customer loyalty, with digital engagement and customer satisfaction as mediating variables. The study used a quantitative method to survey 385 active IndiHome broadband customers in Indonesia. Structural Equation Modelling–Partial Least Square (SEM-PLS) was used to analyze the data. The findings revealed that digital touchpoint usage positively and significantly affected digital engagement, customer satisfaction, and customer loyalty. Additionally, digital engagement and customer satisfaction had a positive and significant impact on customer loyalty. The results further demonstrated that digital engagement positively influenced customer satisfaction. Mediation analysis showed that digital engagement and customer satisfaction partially mediated the relationship between digital touchpoint usage and customer loyalty. This study demonstrates the role of digital experience, digital engagement, and customer satisfaction in fostering consumer loyalty. The current findings provide insights into the development of more effective marketing strategies, ensuring business sustainability and strengthening long-term relationships with customers.



Academic Editor: Aleksander Panasiuk

Received: 20 November 2024

Revised: 31 December 2024

Accepted: 13 January 2025

Published: 16 January 2025

Citation: Nanta, T. M., Noermijati, N., Rohman, F., & Hussein, A. S. (2025). The Effect of Digital Touchpoint Usage Experience on Customer Loyalty Mediated by Digital Engagement and Customer Satisfaction. *Businesses*, 5(1), 3. <https://doi.org/10.3390/businesses5010003>

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Keywords: digital touchpoints; customer loyalty; digital engagement; customer satisfaction; IndiHome; myIndiHome

1. Introduction

The current state of the Internet connectivity has become an essential need for Indonesians, especially since various daily activities, such as working, studying, and entertainment, now require Internet access. The COVID-19 pandemic has further emphasized the role of the Internet, forcing many activities to be carried out online to suppress the spread of the virus. In early 2022, the number of Internet users in Indonesia was 204.7 million, constituting approximately 73.7% of the entire population (Kemp, 2022). To meet this need, Telkom, a state-owned enterprise (SOE) engaged in the field of information and communication technology services and digital telecommunications in Indonesia, through the IndiHome product launched in 2015, provides fixed broadband services that use fiber optic technology. This service offers triple play—fast Internet access, landline telephone, and interactive television. By the end of 2023, IndiHome had 8.6 million active customers (Telkom, 2024).

IndiHome has expanded its reach to 496 provincial capitals, regencies, and cities throughout Indonesia, supported by a network of service offices down to the sub-district level. In addition to offline services at GraPari Telkom, customers can use various digital

touchpoints, such as the myIndiHome mobile application, the official IndiHome website, and official social media accounts. The myIndiHome application, launched in 2016, provides important features such as service registration, reporting disruptions, activating Over-the-Top (OTT) streaming services, and checking loyalty points. As of February 2022, this application had 1.5 million active users.

The vast Internet market in Indonesia also attracts many other providers to compete with IndiHome, including First Media, MyRepublic, Biznet, MNC Play, and XL Home. The Internet service provider market in Indonesia is categorized as a tight oligopoly, with several large players dominating the market (Sanjaya, 2015). Large Internet companies benefit from the ownership of network infrastructure and official licenses from the government, which are barriers for new competitors to enter. In addition, the large costs required, such as Capital Expenditure and Operational Expenditure, are also significant barriers (Octasyiva & Rurianto, 2020).

Although IndiHome leads the fixed broadband market with a share of 66.73% by the end of 2023, competition from other Internet service providers and OTT services such as Netflix, Disney+ Hotstar, and WeTV has begun to erode its market share. IndiHome's market share fell from 82.32% in 2020 to 66.73% in 2023, while the churn-to-sales ratio remained high despite increasing sales, prompting the need for research on IndiHome's customer loyalty (Yusuf & Wibowo, 2022).

Digital touchpoints, as part of a company's digital engagement strategy, play an important role in developing customer loyalty. An excellent digital touchpoint usage experience can increase digital engagement and customer satisfaction, ultimately driving customer loyalty (Song & Zinkhan, 2008). Telkom Indonesia continues to adopt a digital touchpoint strategy, with the myIndiHome application and website as the main channels. The use of digital touchpoints has increased significantly, from only 1% in 2019 to 25% in 2022 (Telkom, 2022). The increased usage of the myIndiHome application needs to be accompanied by research to evaluate the impact of the digital touchpoint usage experience on customer loyalty, with digital engagement and customer satisfaction as the mediating variables. Thus, it is expected that IndiHome will be able to maintain its market share and reduce the churn-to-sales ratio through the application updates.

This study intends to answer the following research question: how does the experience of using digital touchpoints, specifically through the myIndiHome application, influence customer loyalty, with digital engagement and customer satisfaction serving as mediating variables? Thus, this study focuses on factors that influence IndiHome's customer loyalty, primarily through the use of digital touchpoints and digital engagement. Customer loyalty plays an important role in keeping customers from switching to competitors. For this reason, companies must be able to provide high satisfaction with their services, including addressing customer complaints such as Internet speed problems. Research shows that customer satisfaction has a significant impact on customer loyalty (Özkan et al., 2019).

One of the important loyalty indicators is the length of stay (LOS), which shows that customers who register through digital touchpoints tend to have a higher LOS in 0–6 months compared to customers who register through conventional channels (Li & Kannan, 2014). The experience of using digital touchpoints was chosen as the main variable that has the potential to influence customer loyalty. In accordance with the Service-Dominant Logic (SDL) theory, which emphasizes that customers play an active role in value creation, interactive experiences through digital touchpoints are very important (Lusch & Vargo, 2006). SDL also shows that service experiences, not products, are the center of value created together between companies and customers (Bruns & Jacob, 2016). With the SDL approach, researchers can gain insight into how digital touchpoints influence loyalty through more personal and continuous customer interactions.

Previous studies have shown that the use of digital touchpoints that prioritize human characteristics can increase customer satisfaction and loyalty (Bapat, 2017). However, several studies have found conflicting results, where digital touchpoints have a negative impact on customer loyalty when customer expectations for utility and ease of use are not met (Chen & Ching, 2006). In addition, privacy and security risks are also factors that inhibit loyalty (Akturan & Tezcan, 2012). This study aims to determine the influence of digital touchpoint usage experience, specifically through the myIndiHome application, on customer loyalty by including two mediating variables: digital engagement and customer satisfaction. Based on previous theories and empirical findings, this study is expected to contribute to further understanding how to increase customer loyalty through digital touchpoint strategies.

2. Hypothesis Formulation

The present research was based on nine hypotheses illustrating the relationship between digital touchpoint usage experience (DT) as the independent variables affecting the dependent variables, namely digital engagement (DE), customer satisfaction (CS), and customer loyalty (CL) (Figure 1). This research also sought to identify whether CS and DE mediated the influence of DT on CL.

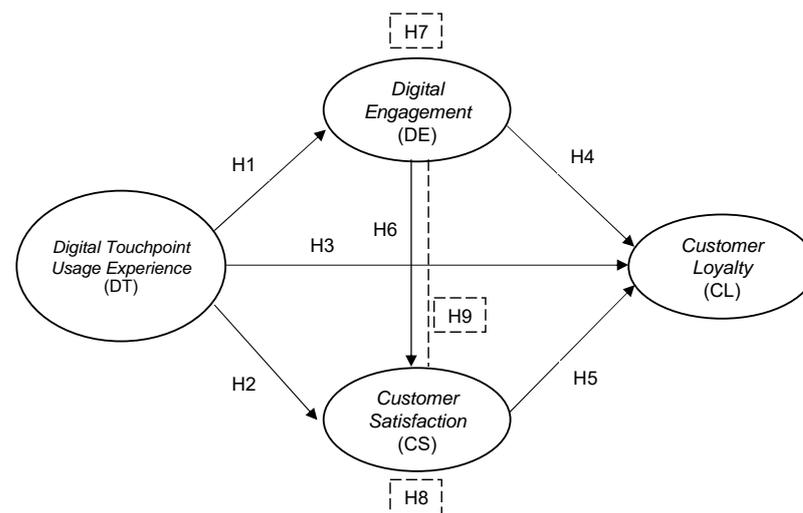


Figure 1. Research concept framework depicting the proposed relationship between variables.

2.1. The Effect of Digital Touchpoint Usage Experience on Digital Engagement

Digital touchpoints are mobile and online interactions by which customers can engage or communicate two-way with a business (Hendricks, 2018). Digital engagement between consumers and companies arises from the increasingly massive development of communication technology, where consumers can easily access a business's products and services. Engagement itself is a relational construct that occurs from the creative interaction and two-way relationship between customers and businesses or companies/brands (Hollebeek & Chen, 2014).

Sahara and Windasari (2022) conducted a study to understand the effectiveness of digital touchpoints in influencing consumer brand engagement in biotechnology start-ups. The main findings showed that digital touchpoints influenced consumer brand engagement in biotechnology start-ups. However, the moderator variables did not moderate the effectiveness of digital touchpoints on consumer brand engagement. The study provided a new perspective on the measurement of digital touchpoints' effectiveness and provided information for marketers to pay attention to important aspects to increase the engagement

of several digital touchpoints. Based on the description above, we hypothesized that the experience of using digital touchpoints had a significant effect on digital engagement.

H1: *Digital touchpoint use experience has a positive and significant effect on digital engagement.*

2.2. The Effect of Digital Touchpoint Usage Experience on Customer Satisfaction

In this research context, customer satisfaction refers to a customer's happiness or disappointment level after comparing the performance of IndiHome broadband Internet services with their expectations. Customer satisfaction can be influenced by several factors, including the experience of using digital touchpoints. Digital touchpoint usage experience that meets customer needs through digital touchpoint attributes can contribute to customer satisfaction. This is in accordance with research conducted by [Asfour and Haddad \(2014\)](#), which aimed to analyze the effect of using mobile banking services on customer satisfaction. The results of the study showed that there was a statistically significant effect of all dimensions of mobile banking services on customer satisfaction. In line with this, [Metlo et al. \(2021\)](#) found that perceived benefits, ease of use, credibility, and customer attitudes regarding the use of mobile banking had a significant effect on determining customer satisfaction in the banking sector. As such, we hypothesized that the digital touchpoint usage experience had a significant effect on customer satisfaction.

H2: *Digital touchpoint usage experience has a positive and significant effect on customer satisfaction.*

2.3. The Effect of Digital Touchpoint Usage Experience on Customer Loyalty

In the present research, customer loyalty is defined as the customer's positive attitude towards the company's products, i.e., Indihome broadband Internet. It reflects a commitment to continue using Indihome broadband Internet products. Previous research showed a relationship between digital touchpoint usage experience and customer loyalty, where satisfaction with the use of digital touchpoints could affect customer loyalty ([Ieva & Ziliani, 2018](#); [Straker & Wrigley, 2016](#)). [Straker and Wrigley \(2016\)](#) reported that choosing the right digital touchpoint helps customers meet their functional and emotional needs, which then has an impact on positive affective responses and ultimately leads to customer loyalty. This is also in accordance with the research results of [Ieva and Ziliani \(2018\)](#), which shows that digital touchpoint usage experience has a significant effect on customer loyalty. Thus, we proposed that the digital touchpoint usage experience had a significant effect on customer loyalty.

H3: *Digital touchpoint usage experience has a positive and significant effect on customer loyalty.*

2.4. The Effect of Digital Engagement on Customer Loyalty

Previous empirical research showed that digital engagement could increase customer loyalty. [Bansal and Pruthi \(2021\)](#) reported that customer engagement through various interaction channels had a significant effect on customer loyalty ([Bansal & Pruthi, 2021](#)). In line with this, [Tuti and Sulistia \(2022\)](#), who analyzed the effect of customer engagement through digital touchpoints on brand loyalty via customer satisfaction and brand trust, found that customer engagement had a significant effect on brand loyalty. Based on the aforementioned explanation, we hypothesized that digital engagement had a significant effect on customer loyalty.

H4: *Digital engagement has a positive and significant effect on customer loyalty.*

2.5. The Effect of Customer Satisfaction on Customer Loyalty

The relationship between customer satisfaction and customer loyalty has been previously studied. [Chiguvi and Guruwo \(2017\)](#) investigated the impact of customer satisfaction on customer loyalty in the banking sector in Botswana. This study revealed a positive relationship between customer satisfaction and customer loyalty. Therefore, banks are recommended to influence customer satisfaction to positively achieve customer loyalty. [Özkan et al. \(2019\)](#) also reported that customer satisfaction affected loyalty through perceived value, image, and reputation. This finding is also in line with [Juwaini et al. \(2022\)](#), who found that e-satisfaction had a positive effect on e-loyalty, although it was not significant. Hence, we proposed that customer satisfaction had a significant effect on customer loyalty.

H5: *Customer satisfaction has a positive and significant effect on customer loyalty.*

2.6. The Effect of Digital Engagement on Customer Satisfaction

Empirical studies evaluating the relationship between digital engagement and customer satisfaction have been previously conducted. [Yadav and Arora \(2019\)](#) performed a study to analyze the effect of customer satisfaction on the use of e-wallets as a dependent variable and problems in e-wallets, risks, and solutions to increase the use of e-wallets as independent variables. The study's findings indicated a positive relationship between customer satisfaction and solutions in e-wallets and a negative relationship with problems in using e-wallets. In addition, engagement in the context of brands can also have an impact and be positively related to customer satisfaction ([Garzaro et al., 2020](#)). Based on previous studies, we hypothesized that digital engagement had a significant effect on customer satisfaction.

H6: *Digital engagement has a positive and significant effect on customer satisfaction.*

2.7. The Effect of Digital Touchpoint Usage Experience on Customer Loyalty Mediated by Digital Engagement

The increasing growth of online shopping has given rise to new shopping antecedents in business. Customer experience continues to be the most important source of long-term competitive advantage for retailers. To maintain long-term and sustainable consumer loyalty, retailers must continue to improve customer experience. Research conducted by [Ahmad et al. \(2022\)](#) found that online customer experience (measured as shopping environment, shopping procedures, staff service experience, and product experience) substantially affected customer engagement, which increased customer loyalty. Therefore, the mediation of customer engagement was confirmed in this study by associating it with the digital touchpoint usage experience and online customer loyalty. Based on the explanation above, we hypothesized that digital engagement can mediate the effect of digital touchpoint usage experience on customer loyalty.

H7: *Digital engagement mediates the effect of digital touchpoint usage experience on customer loyalty.*

2.8. The Effect of Digital Touchpoint Usage Experience on Customer Loyalty Mediated by Customer Satisfaction

Previous research found a reciprocal relationship between customer experience and customer satisfaction in e-retailing in Indonesia ([Zaid & Patwayati, 2021](#)). The study also found that customer experience had an indirect effect on customer loyalty through customer engagement, and customer engagement also has an indirect effect on customer satisfaction. This may indicate that customer satisfaction can mediate between the experience of using digital touchpoints and customer loyalty.

H8: *Customer satisfaction mediates the effect of digital touchpoint usage experience on customer loyalty.*

2.9. The Effect of Digital Touchpoint Usage Experience on Customer Satisfaction Mediated by Digital Engagement

In the hospitality environment, digital engagement through applications and interactions between customers and employees has a positive and significant effect on customer co-creation value behavior, which then determines customer satisfaction (Bouchriha et al., 2024). When customers are satisfied with digital engagement, they tend to participate in the brand's online activities and increase their desire to consume the product. Conversely, if they are not satisfied with the use of the company's digital channels, customer satisfaction will be affected (Majeed et al., 2022).

Another study found a reciprocal relationship between customer experience and customer engagement (Zaid & Patwayati, 2021). They also reported that customer experience had an indirect effect on customer satisfaction through customer engagement. Additionally, they found an indirect effect of customer engagement on customer satisfaction. Thus, we proposed that digital engagement could mediate the effect of digital touchpoint usage experience on customer satisfaction.

H9: *Digital engagement mediates digital touchpoint usage experience on customer satisfaction.*

3. Materials and Methods

Explanatory research was used in this study. The explanatory research method was intended to test the proposed hypothesis, enabling the research to identify the relationship and influence between the independent and dependent variables in the hypothesis (Sugiyono, 2013). This research applied a quantitative method using a questionnaire to test the theory and examine the relationship between variables. The questionnaire was divided into four sections, namely DT, DE, CS, and CL sections. In total, the questionnaire had 49 statements with a 7-point Likert scale [see Tables S1–S4]. The use of the Likert scale ranged from strongly disagree (1), disagree (2), tend to disagree (3), neutral (4), tend to agree (5), agree (6) to strongly agree (7). Before the research instrument was used, the instrument was evaluated for validity and reliability using the data collected from 30 respondents. A purposive sampling approach was used to recruit 385 participants with the following criteria: (i) active customer, (ii) has been subscribing to IndiHome for at least 6 months, and (iii) subscribed via MyIndiHome application.

Since the research framework (Figure 1) is complex and includes many constructs and/or model relationships, the data were analyzed using the Structural Equation Modeling–Partial Least Square (SEM-PLS) technique (SmartPLS). PLS-SEM was conducted in two stages, namely through instrument test (outer model) and structural model and hypothesis tests (inner model). The outer model test was carried out by determining the validity and reliability of the instrument. The validity of the instrument was evaluated using the loading factor, average variant extracted (AVE), Fornell–Larcker criterion, and heterotrait–monotrait (HTMT) ratio, while the instrument's reliability was evaluated using Cronbach's alpha and composite reliability. Next, the inner model was evaluated based on the ability to estimate endogenous constructions through path coefficient, goodness of fit, and model fit indices. The inner model evaluation also included hypothesis testing. The independent variable tested was DT, while the dependent variables were DE, CS, and CL (Figure 1). In evaluating the influence of DT on CL mediated by CS and DE, this research followed the method by Marinkovic and Kalinic (2017). This research was also conducted in March 2024 until its completion.

4. Results

The results described in this section consisted of outer model evaluation (convergent validity, discriminant validity, composite reliability, and Cronbach's alpha) and inner model evaluation (path coefficient test, goodness of fit, and model fit indices), followed by hypothesis testing analysis.

4.1. Outer Model Evaluation

4.1.1. Convergent Validity

The outer loading or loading factor value was calculated to evaluate the convergent validity. An indicator in the research instrument was considered to have good validity if the outer loading value > 0.7 (Sahara & Windasari, 2022). Convergent validity is very important in the entire research process because it ensures that the indicators used to measure a construct are highly correlated and effectively represent the intended variable. Table 1 shows that all indicators of the research variables have outer loading values of >0.7 , demonstrating that all indicators have good validity and can be further analyzed.

Table 1. Outer loading values of research indicators.

Variable	Indicator	Outer Loading	Validity
Digital Touchpoint Usage Experience (X)	DT1	0.892	Valid
	DT2	0.889	Valid
	DT3	0.866	Valid
	DT4	0.865	Valid
	DT5	0.885	Valid
	DT6	0.874	Valid
	DT7	0.876	Valid
	DT8	0.888	Valid
	DT9	0.873	Valid
	DT10	0.848	Valid
	DT11	0.867	Valid
Digital Engagement (Z1)	DE1	0.871	Valid
	DE2	0.858	Valid
	DE3	0.869	Valid
	DE4	0.864	Valid
	DE5	0.857	Valid
	DE6	0.854	Valid
	DE7	0.828	Valid
	DE8	0.852	Valid
	DE9	0.833	Valid
Customer Satisfaction (Z2)	CS1	0.835	Valid
	CS2	0.857	Valid
	CS3	0.845	Valid
	CS4	0.865	Valid
	CS5	0.879	Valid
	CS6	0.866	Valid
	CS7	0.86	Valid
	CS8	0.859	Valid
	CS9	0.883	Valid
	CS10	0.875	Valid

Table 1. Cont.

Variable	Indicator	Outer Loading	Validity
Customer Loyalty (Y)	CL1	0.875	Valid
	CL2	0.871	Valid
	CL3	0.879	Valid
	CL4	0.855	Valid
	CL5	0.876	Valid
	CL6	0.874	Valid
	CL7	0.865	Valid
	CL8	0.892	Valid
	CL9	0.865	Valid
	CL10	0.836	Valid
	CL11	0.849	Valid
	CL12	0.861	Valid
	CL13	0.862	Valid
	CL14	0.87	Valid
	CL15	0.867	Valid
	CL16	0.855	Valid
	CL17	0.832	Valid
	CL18	0.831	Valid
	CL19	0.843	Valid

Notes: DT = digital touchpoint usage experience; DE = digital engagement; CS = customer satisfaction; CL = customer loyalty; the number following the abbreviation represents different item indicators.

4.1.2. Discriminant Validity

Discriminant validity analysis was conducted to ensure that the constructs or latent variables in the model are distinct. It was carried out by examining the AVE value, Fornell–Larcker criterion, and HTMT ratio. An AVE value of > 0.5 indicates a good model (Sahara & Windasari, 2022). Table 2 illustrates that all variables, i.e., DT, DE, CS, and CL, have AVE values of > 0.5 , indicating that each variable has good discriminant validity.

Table 2. Average variant extracted (AVE) for the research variables.

Variable	AVE	Validity
Digital Touchpoint Usage Experience (X)	0.765	Valid
Digital Engagement (Z1)	0.729	Valid
Customer Satisfaction (Z2)	0.744	Valid
Customer Loyalty (Y)	0.741	Valid

In the Fornell–Larcker criterion, the discriminant validity was evaluated by comparing the square root of each AVE in the diagonal with the correlation coefficients (off-diagonal) for each construct in the relevant rows and columns (Dhir et al., 2020). The correlation of each construct with the other constructs was larger than the square root of its AVE (Table 3), indicating that the discriminant validity between the constructs was not supported based on the Fornell–Larcker criterion. It is plausible that the criterion may not be suitable for this study since a simulation study reported that about 10.80% of cases were not suitable to use the Fornell–Larcker criterion to establish their discriminant validity (Henseler et al., 2015). To solve this problem, we relied on the HTMT ratio, which had superior performance.

Table 3. Fornell–Larcker criterion results.

Variable	Customer Loyalty	Customer Satisfaction	Digital Engagement	Digital Touchpoint Usage Experience
Customer Loyalty (Y)	0.861			
Customer Satisfaction (Z2)	0.885	0.863		
Digital Engagement (Z1)	0.888	0.971	0.854	
Digital Touchpoint Usage Experience (X)	0.861	0.932	0.933	0.875

The HTMT ratio is the average value of item correlation between constructs relative to the average correlation for items measuring the same construct. In this study, the constructs were conceptually different, so the HTMT threshold value applied was <0.85 (Hair et al., 2019). Table 4 shows that all research variables have values > 0.85 , highlighting that they do not meet the HTMT threshold value. This indicates a potential issue with discriminant validity, where the constructs are likely to contain overlapping items according to the participants' points of view (Ab Hamid et al., 2017). Nonetheless, since the discriminant validity has been proven with AVE, the research instrument was valid for further use.

Table 4. HTMT results.

Variable	Customer Loyalty	Customer Satisfaction	Digital Engagement	Digital Touchpoint Usage Experience
Customer Loyalty (Y)				
Customer Satisfaction (Z2)	0.911			
Digital Engagement (Z1)	0.918	1.014		
Digital Touchpoint Usage Experience (X)	0.882	0.965	0.97	

4.1.3. Composite Reliability

The reliability of the research instrument was tested using the composite reliability. Reliability indicates the level of stability and consistency of a research instrument in measuring a construct without random errors or bias, even when the instrument was used under different conditions and times. A variable is considered to meet the composite reliability if it has a composite reliability value of ≥ 0.7 . As shown in Table 5, the composite reliability values of all research variables are ≥ 0.7 . These results indicated that each variable fulfilled composite reliability requirement and demonstrated high reliability.

Table 5. Composite reliability of research variables.

Variable	Composite Reliability	Reliability
Digital Touchpoint Usage Experience (X)	0.973	Reliable
Digital Engagement (Z1)	0.960	Reliable
Customer Satisfaction (Z2)	0.967	Reliable
Customer Loyalty (Y)	0.982	Reliable

4.1.4. Cronbach's Alpha

In addition to composite reliability, the reliability of the instrument was also evaluated using Cronbach's alpha. A variable is considered reliable or meets Cronbach's alpha if the Cronbach's alpha value is >0.7 . The Cronbach's alpha value of each variable was >0.7 (Table 6), showing that each research variable fulfills the Cronbach's alpha value requirements. Therefore, the variables in this research were highly reliable.

Table 6. Cronbach’s Alpha Results.

Variable	Cronbach’s Alpha	Reliability
Digital Touchpoint Usage Experience (X)	0.969	Reliable
Digital Engagement (Z1)	0.954	Reliable
Customer Satisfaction (Z2)	0.962	Reliable
Customer Loyalty (Y)	0.981	Reliable

4.2. Inner Model Evaluation

All hypothesis testing was examined based on inner model testing (structural model) results, which included R² output, coefficient parameters, t-statistics, and p-values. After bootstrapping, the values of R² output, coefficient parameters, t-statistics, and p-values were obtained (Figure 2). This study followed the general guidelines of t-statistics > 1.96, a positive beta coefficient, and a p-value of < 0.05 (5%).

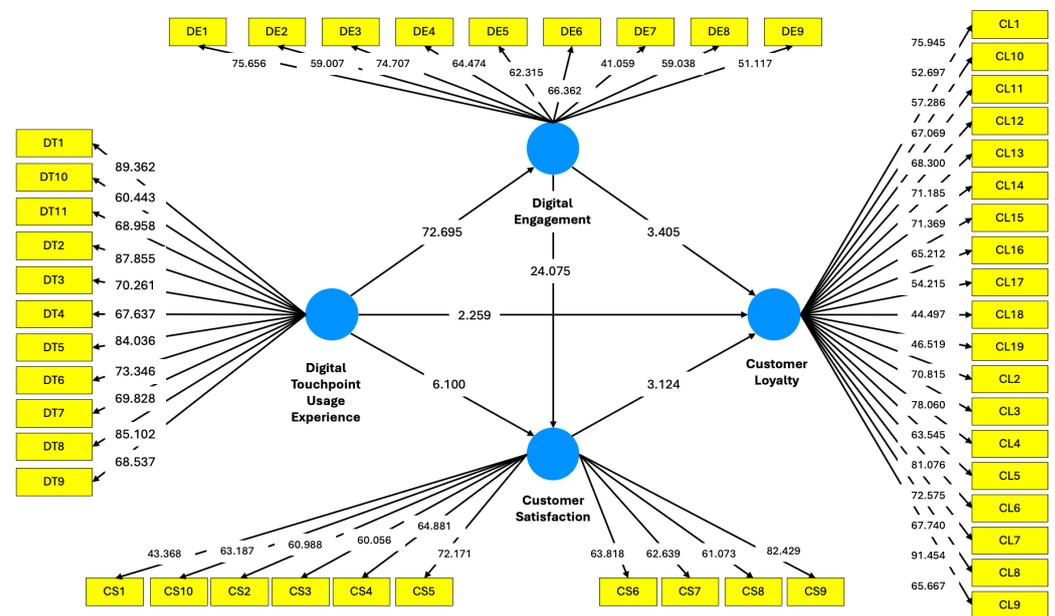


Figure 2. Bootstrapping results with t-statistics.

4.2.1. Path Coefficient Test

To determine the degree to which the independent variable influenced the dependent variable and its statistical significance, a path coefficient evaluation was performed. The results of the analysis indicated that DT significantly affected CL both directly and indirectly. The direct path from DE to CL was positive and significant, with a path coefficient of 0.188 (p = 0.025). In addition, DE affected CL indirectly through two important mediators, namely CS and DE.

DE played a role as a mediator between DT and CL. This was evidenced by the high and significant coefficient path value between DT and DE (0.933; p = 0.001) and between DE and CL (0.410; p = 0.001). CS also played a role as a mediator between DT and CL, as shown by the positive and significant coefficient path value between DT and CS (0.203; p = 0.001) and between CS and CL (0.311; p = 0.002). Both mediators were partial mediators, with DE emerging as a stronger mediator than CS. This showed that although DT directly affected CL, its impact would be stronger when customers were digitally engaged and satisfied with the IndiHome experience.

4.2.2. Goodness of Fit

The R^2 value indicates the variance that can be explained by an endogenous (dependent) construct in the model. This shows how well the independent (exogenous) variables explain the variance in the dependent variable. An R^2 value of ≥ 0.67 in the structural model suggests that the influence of exogenous variables on endogenous variables falls in the good category (Latan & Ghozali, 2015). Meanwhile, if the result is between 0.33 and 0.67, it is in the moderate category. If the result is between 0.19 and 0.33, it falls in the weak category. The R^2 values for DE, CS, and CL are shown in Table 7.

Table 7. R^2 values of research variables.

Variable	R^2 Values
Digital Engagement (Z1)	0.871
Customer Satisfaction (Z2)	0.948
Customer Loyalty (Y)	0.801

The R^2 value for the DE variable was 0.871 (Table 7), which meant that DT could explain DE by 87.1%, while the remaining 12.9% could be influenced by other variables that were not studied. The R^2 value of the CS variable was 0.948. This value showed that the DT and DE variables could explain CS by 94.8%, while the remaining 5.2% could be influenced by other variables not included in the study. Lastly, the CS had an R^2 value of 0.801. This value showed DT, DE, and CS could explain CL by 80.1%, while the remaining 19.9% could be influenced by other variables that were not studied. The high R^2 value for the three variables showed that the variables included in the model were very relevant in predicting CL.

Table 8 demonstrates that the DT has a very strong influence on DE with an F^2 value of 6.755. This value made DE the most dominant factor in the model. DE had a large effect on CS ($F^2 = 1.525$). CS, which also mediated the relationship between DT and CL, had a smaller effect size value ($F^2 = 0.025$), indicating that the influence of CS on CL was less dominant than DE.

Table 8. F^2 values.

Variable	Digital Engagement	Customer Satisfaction	Customer Loyalty
Digital Touchpoint Usage Experience (X)	6.755	0.102	0.021
Digital Engagement (Z1)			0.025
Customer Satisfaction (Z2)		1.525	0.043
Customer Loyalty (Y)			

The goodness of fit was observed from the Q^2 predictive relevance value, where the Q^2 value of >0 indicated that the model had predictive relevance. In contrast, the Q^2 value of <0 suggested the model had less predictive relevance. The Q^2 values for all variables were more than 0 (Table 9). Thus, the research model had good goodness of fit, confirming that the model could predict output effectively (high predictive relevance).

Table 9. Q² values.

Variable	SSO	SSE	Q ² (=1 – SSE/SSO)
Customer Loyalty (Y)	7315.000	3007.407	0.589
Customer Satisfaction (Z2)	3850.000	1156.763	0.700
Digital Engagement (Z1)	3465.000	1282.661	0.630
Digital Touchpoint Usage Experience (X)	4235.000	4235.000	

4.2.3. Model Fit Indices

To confirm the results of goodness of fit, model fit indices were examined. These indices comprised the standardized root mean square residual (SRMR), d_ULS, d_G, NFI, and Chi². The general guidelines for the appropriate scale values of SRMR and NFI were <0.08 and >0.90, respectively (Al Tarawneh et al., 2023). The values of SRMR and NFI were at the appropriate levels (Table 10). Thus, the model was fit and had the appropriate level of reliability and validity.

Table 10. Model fit indice results.

Parameter	Estimated Model
SRMR	0.029
d_ULS	1.053
d_G	1.927
NFI	3613.769
Chi ²	0.855

4.2.4. Hypothesis Testing

The analysis of hypothesis testing results provides insights into the relationships between DT, DE, CS, and CL (Table 11). Direct effects were observed between these variables, with DT showing a significant positive impact on DE (path coefficient = 0.933, $p < 0.000$), suggesting that a positive experience with digital touchpoints like the myIndiHome application enhances customer engagement. DT also positively influenced CS (path coefficient = 0.203, $p < 0.000$) and CL (path coefficient = 0.188, $p = 0.025$), indicating that well-designed digital interactions directly contribute to customer satisfaction and loyalty. DE also had a strong direct impact on CL (path coefficient = 0.410, $p = 0.001$), while CS similarly influenced CL (path coefficient = 0.311, $p = 0.002$). Additionally, DE significantly affected CS (path coefficient = 0.782, $p < 0.000$), showing that higher engagement enhances satisfaction.

The mediation analysis revealed the intricate dynamics among the variables. DE partially mediated the relationship between DT and CL (path coefficient = 0.382, $p = 0.001$), highlighting that the impact of DT on loyalty is enhanced when customers are highly engaged through digital channels. CS also acted as a mediator between DT and CL, though with a smaller path coefficient of 0.063 ($p = 0.004$), indicating that increased satisfaction further boosts loyalty. While both DE and CS play mediating roles, DE emerged as the stronger influence, emphasizing the importance of engaging customer experiences in driving loyalty.

DE also mediated the influence of DT on CS (path coefficient = 0.227, $p = 0.002$), showing that engaging digital experiences can enhance customer satisfaction. These findings underscored the pivotal role of digital touchpoints in shaping customer perceptions and behavior. Overall, the results suggested that DT had significant effects on DE, CS, and CL, both directly and indirectly.

Table 11. Hypothesis testing results.

Hypothesis	Construct	Original Sample	T-Statistic	p-Values	Result
H1	Digital Touchpoint Usage Experience => Digital Engagement	0.933	72.695	0.000	Accepted
H2	Digital Touchpoint Usage Experience => Customer Satisfaction	0.203	6.100	0.000	Accepted
H3	Digital Touchpoint Usage Experience => Customer Loyalty	0.188	2.259	0.025	Accepted
H4	Digital Engagement => Customer Loyalty	0.410	3.405	0.001	Accepted
H5	Customer Satisfaction => Customer Loyalty	0.311	3.124	0.002	Accepted
H6	Digital Engagement => Customer Satisfaction	0.782	24.075	0.000	Accepted
H7	Digital Touchpoint Usage Experience => Customer Loyalty mediated by Digital Engagement	0.382	3.444	0.001	Accepted
H8	Digital Touchpoint Usage Experience => Customer Loyalty mediated by Customer Satisfaction	0.063	2.905	0.004	Accepted
H9	Digital Touchpoint Usage Experience => Customer Satisfaction mediated by Digital Engagement	0.227	3.056	0.002	Accepted

5. Discussion

DT had a significant positive impact on DE, indicating that a positive experience with digital touchpoints improves customer engagement. This finding is in line with research by Sahara and Windasari (2022) and Bouchriha et al. (2024), who also reported that digital touchpoints played an important role in consumer engagement. This finding also confirms that a positive experience through the myIndiHome application, which is responsive, interactive, user-friendly, and feature-rich, can increase customer cognitive, emotional, and behavioral engagements (Marbach et al., 2016). Mobile applications have been shown to be more effective than websites in driving engagement because they offer a more immersive and portable experience (Wang, 2020). Enhanced personalization features, responsive customer support, and interactive content can strengthen digital engagement. In addition, regular updates based on user feedback help maintain the relevance of the application to customer needs, continuously improving the experience.

DT also positively influenced CS and CL, suggesting that properly designed digital interactions directly contribute to customer satisfaction and loyalty. This finding confirms that a good digital experience—through a user-friendly, responsive, and feature-rich interface—can increase customer satisfaction, especially when it meets or even exceeds customer expectations. Refining digital features based on user feedback is essential in maintaining satisfaction. The implementation of personalization elements, such as customized content and instant support, further enriches the digital experience and ensures that the application remains relevant to user needs. In addition, regular application updates encourage a positive and sustainable customer experience. The positive influence of DT on customer satisfaction aligns with previous studies (Bouchriha et al., 2024), which also reported a positive relationship between digital touchpoints and customer satisfaction, both in Internet services and other sectors such as banking (Metlo et al., 2021).

As mentioned previously, a good digital touchpoint usage experience directly contributed to increased customer loyalty. For IndiHome and similar service providers, improving the usability and design of the myIndiHome application is essential to strengthening customer retention. Personalization features such as tailored content, real-time support,

and interactive functions can enrich customers' digital experiences. By using advanced data analytics, service providers can identify behavioral trends and areas for improvement, enabling more effective and targeted service improvements. A strong feedback mechanism is also needed so that services remain responsive to customer input, fostering deeper engagement and increasing loyalty. This finding supports previous research by [Bowden and Mirzaei \(2021\)](#), which emphasized the importance of digital engagement in building loyalty.

Digital engagement had a positive and significant effect on customer loyalty, corroborating research by [Hollebeek and Chen \(2014\)](#) and [Brodie et al. \(2011\)](#), who reported that customer engagement can increase loyalty through strong psychological connections and positive interactions with brands. The study by [So et al. \(2016\)](#) also highlights that digital platforms and new media allow companies to connect with customers more effectively, strengthening long-term relationships. Likewise, [Tuti and Sulistia \(2022\)](#) emphasized the importance of engagement in building loyalty through customer trust and satisfaction. To increase customer loyalty, IndiHome needs to enrich interactions through elements such as gamification, AI-based chatbots, and virtual assistants, which provide instant and personalized support. Customer behavior data analysis can help identify areas for improvement, while online communities can foster a sense of belonging. Regular updates to digital platforms based on user feedback are also important to maintain service relevance.

Customer satisfaction had a positive and significant relationship on customer loyalty, highlighting the importance of customer satisfaction in building customer loyalty. Satisfied customers tend to create good relationships with the company, increase the likelihood of repurchasing, engage in positive recommendations, and reduce price sensitivity ([Ahmad et al., 2022](#)). When satisfaction increases, customer loyalty also increases, while a decrease in satisfaction can result in a significant decrease in loyalty. To corroborate this, [Chiguvu and Guruwo \(2017\)](#) found that satisfaction had a significant impact on loyalty in the banking sector. [Özkan et al. \(2019\)](#) also emphasized the role of perceived value, reputation, and image in shaping loyalty, while [Juwaini et al. \(2022\)](#) reported that e-satisfaction has a positive effect on e-loyalty. For IndiHome and similar service providers, focusing on improving customer satisfaction is critical to strengthening loyalty and maintaining competitiveness in the market.

Digital engagement had a positive and significant relationship on customer satisfaction. This finding confirms that effective digital engagement, especially through the myIndiHome application, can improve customer satisfaction by creating a more interactive, personal, and satisfying experience. Digital engagement plays an important role as a channel for digital touchpoints in influencing customer satisfaction, strengthening the relevance of digital strategies in meeting user expectations. For IndiHome, optimizing the myIndiHome application through regular updates and the addition of features such as gamification, user forums, and live streaming sessions can increase engagement and a sense of togetherness among users. Improved interface design and user experience are also important in creating customer satisfaction. Leveraging mobile technology, such as personalized push notifications and exclusive access to content or promotions, can strengthen engagement and differentiate the myIndiHome application from other platforms. These findings support the research of [Yadav and Arora \(2019\)](#), which showed that higher digital engagement through platforms such as e-wallets increases customer satisfaction.

Digital engagement plays a significant role in mediating the relationship between digital touchpoint usage experience and customer loyalty. High-quality digital interactions through the myIndiHome application increase customers' cognitive, emotional, and social engagement, which ultimately drives loyalty. This finding is in line with service marketing theory and is supported by [Ahmad et al. \(2022\)](#), who found that digital experience affected customer engagement and loyalty. For IndiHome, prioritizing digital touchpoint

improvements through AI-based personalization, real-time support, and gamification feature integration can deepen customer engagement. In addition, building a community on a digital platform can create a sense of belonging and strengthen loyalty. By continuously updating the application based on data analysis and user feedback, IndiHome can improve customer experience sustainably.

Next, customer satisfaction significantly mediated the relationship between digital touchpoint usage experience and customer loyalty. These results indicate that a good digital experience increases satisfaction, which then strengthens customer loyalty. Digital touchpoints that meet or exceed customer expectations will increase satisfaction and, ultimately, loyalty. These findings support the theory of service marketing (Oliver, 1999) and research by Juwaini et al. (2022) regarding the vital role of satisfaction in driving loyalty. However, customer satisfaction is not the only mediator, as digital engagement has been shown to be a stronger mediator, reflecting the more significant role of engagement in the digital era (Asakdiyah et al., 2023). This illustrates that increasing engagement provides more benefits than increasing satisfaction in building loyalty. Strategically, IndiHome should leverage advanced data analytics and AI to enhance digital touchpoints and meet customer expectations. Integration of features such as real-time analytics, predictive maintenance alerts, and AI-based personalization can improve service satisfaction and reliability. In addition, reward-based loyalty programs can strengthen customer commitment and encourage long-term advocacy.

Lastly, digital engagement significantly mediated the relationship between digital touchpoint usage experience and customer satisfaction. These results are supported by the service marketing literature, which emphasizes the role of engagement in building customer satisfaction (Homburg & Giering, 2000). These findings underline that a quality digital experience—with a user-friendly, responsive, and interactive interface—facilitates customer engagement cognitively, emotionally, and behaviorally (Asfour & Haddad, 2014), which ultimately increases satisfaction. The mediating role of digital engagement is partial because there is a direct relationship between digital touchpoint usage experience and customer satisfaction. Strategically, IndiHome can increase engagement and satisfaction by providing self-service through the myIndiHome application, such as FAQs and troubleshooting guides. Holding virtual events in the application, such as webinars with influencers, can also strengthen customer relationships.

Overall, this research reveals the exact nature of the relationship between digital touchpoint usage experience, digital engagement, customer satisfaction, and customer loyalty. It captures the dynamic nature of customer experience, where nowadays, many businesses incorporate digital touchpoints to improve customer loyalty as a result of rapid technological developments (Ieva & Ziliani, 2018; Baddam, 2022). The existence of digital touchpoints adds complexity to customer loyalty as we need to consider digital touchpoint usage experience and digital engagement. It is undeniable that promoting customer experience is one of the highest priorities for business since it shapes satisfied and loyal customers (Witell et al., 2020). Hence, updating and enriching the features in digital touchpoint is paramount to business sustainability.

This study has several limitations that need to be considered. Although the sample size of 385 respondents is sufficient, further research with a larger sample is needed for a more comprehensive understanding. The use of questionnaires as a data collection method presents potential bias and subjectivity in responses, so the results need to be interpreted with caution. In addition, this study did not include external factors such as market trends, business competition, and economic conditions, which may affect the results. The time of data collection in March 2024 also limits interpretation, as changes in policies or technology trends after that period may affect customer behavior. To strengthen the relevance and

generalizability of the findings, future research is recommended to expand the scope, consider external factors, and use longitudinal methods to capture changes in customer behavior over time. These limitations provide room for further research to understand the digital touchpoint usage experience and customer loyalty in more depth.

6. Conclusions

This study confirms that the experience of using digital touchpoints has a significant influence on digital engagement, satisfaction, and customer loyalty. A positive experience in using digital touchpoints not only builds cognitive, emotional, and behavioral customer engagement, but also creates more meaningful interactions with the service. The better this experience, the higher the customer's digital engagement, which in turn drives loyal behavior towards the service provider.

In addition, a responsive and easy-to-use digital touchpoint experience plays an important role in increasing customer satisfaction. When digital platforms meet or even exceed user expectations, customer satisfaction increases. This satisfaction is not only the result of good service quality but also reflects how effectively customers can meet their needs through digital channels. The satisfaction increase ultimately strengthens customer loyalty, indicating that the relationship between digital experience and loyalty is direct and inseparable.

Digital engagement also plays a key role in shaping customer loyalty. When customers feel psychologically connected to a service and brand, they tend to be more loyal and committed to continuing to use the service. Digital engagement serves not only as a means to strengthen emotional connections with customers but also has a direct influence on their perceptions and behaviors toward the company. Thus, this engagement helps build stronger long-term relationships.

The study also reveals that satisfaction and engagement serve as partial mediators in the relationship between digital touchpoint usage experience and loyalty. Digital engagement enhances customer experience by making interactions more personal and engaging, which, in turn, drives their satisfaction. This customer satisfaction then becomes an important foundation in creating loyalty, indicating that loyalty is not only influenced by the initial experience but also by the quality of engagement and satisfaction that is built over time.

The mediating effect between engagement and satisfaction highlights the complexity of creating shared value between customers and companies. An effective digital touchpoint experience not only interacts directly with customers but also strengthens the interconnected elements of engagement and satisfaction to form loyalty. Therefore, companies need to focus on optimizing digital touchpoints and engagement strategies to create satisfying and sustainable customer experiences.

To the best of our knowledge, this is the first study elucidating the relationship between digital touchpoint usage experience, digital engagement, customer satisfaction, and customer loyalty in the context of the Indonesian information and communication technology sector. More importantly, this study highlights the importance of synergy between digital experience, engagement, and satisfaction in creating customer loyalty. By understanding the mediating role of digital engagement and customer satisfaction, companies can create more effective marketing strategies. This enables companies to strengthen long-term relationships with customers and achieve business sustainability in the competitive digital era.

Supplementary Materials: The following supporting information can be downloaded at <https://www.mdpi.com/article/10.3390/businesses5010003/s1>: Table S1: Digital touchpoint usage experience section of the questionnaire; Table S2: Digital engagement section of the questionnaire; Table S3: Customer satisfaction section of the questionnaire; Table S4: Customer loyalty section of the questionnaire.

Author Contributions: T.M.N. carried out the conceptualization, methodology, data collection, analysis, wrote, and prepared the article under the supervision of F.R., and A.S.H. N.N. was responsible for reviewing and editing the article. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by The Research and Community Service Agency of Faculty of Economics and Business, Universitas Brawijaya, Indonesia (Approval Code: 12722/UN10.F0201/B/PT/2024; Data of Approval: 25 November 2024).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest.

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