

## The Impact of Brand Interactivity and Involvement, Moderated by Social Media Engagement, on Brand Trust, Self-Brand Connection, and Loyalty in Indonesian Online Education Platforms

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### ABSTRACT

The rapid growth of online education platforms in Indonesia has created intensified competition, making user loyalty and brand trust critical challenges for platform sustainability. This study investigates how brand interactivity and brand involvement influence brand loyalty through the mediating roles of social media customer brand engagement (CBE), self-brand connection, and brand trust in the context of Indonesian online education platforms. Utilizing a Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, the study surveyed 296 respondents aged 16–24 who had used online education platforms in the past year. The findings reveal that both brand interactivity and brand involvement significantly impact CBE. Furthermore, CBE acts as a strong mediator in the relationship between brand interactivity and brand involvement with brand trust, self-brand connection, and brand loyalty. CBE also has a direct influence on brand trust, self-brand connection, and brand loyalty. In addition, both brand trust and self-brand connection positively influence brand loyalty. These findings offer theoretical contributions to understanding brand engagement dynamics on social media and strategic implications for the online education industry to foster user loyalty by enhancing interactivity and emotional connection with the brand.

### KEYWORDS

Brand Engagement, Brand Interactivity, Brand Involvement, Brand Loyalty, Online Education Platform



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### INTRODUCTION

Indonesia is one of the largest internet user countries in the world with the number of users reaching 221.56 million by 2024. In Indonesia, the internet is massively used in various fields and industries, including the world of education (Bozkurt et al., 2024; Nguyen et al., 2025; Rodríguez-Torrico et al., 2024). The use of the internet in the education sector is implemented through various approaches,

one of which is through digital education platforms (Changani & Kumar, 2024; Ibrahim & Aljarah, 2024; Samarah et al., 2022a; Satar et al., 2024). The COVID-19 pandemic has also accelerated the adoption of digital education platforms, as face-to-face learning has become limited. The existence of digital education learning platforms in Indonesia continues to grow rapidly, marked by the presence of various platforms such as Ruangguru, Zenius, and Quipper. This learning platform offers a variety of educational services such as tutoring, internet-based exam simulations to online courses. Revenue in the 'Online Education Platform' segment of the electronic services market in Indonesia is expected to continue to increase between 2024 and 2026 with a total of 78.8 million US dollars (+15.23%).

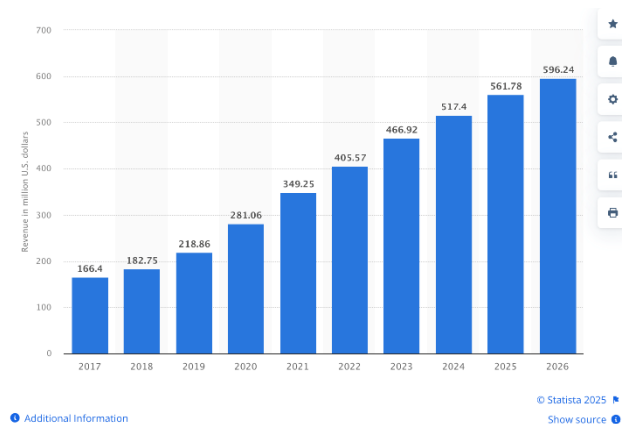


Figure 1. Online Education Platform Penetration Data  
Source: Statista. (2024). Online learning platforms - Indonesia

Although the growth of online education platforms in Indonesia is quite rapid, challenges related to user loyalty and trust remain a major concern. Several studies show that service quality, customer trust, and customer satisfaction significantly influence user loyalty. For example, research conducted on Ruangguru application users in Jambi City revealed that product quality, price, personal selling, e-WOM, and consumer satisfaction play important roles in shaping user loyalty. In addition, data security and privacy issues also affect users' trust in online education platforms. A lack of transparency and security guarantees can hinder user adoption and retention (Luo et al., 2025; Malhotra et al., 2016; Mujica-Luna et al., 2021; Ndhlovu & Maree, 2024; Obilo et al., 2021).

User loyalty is a key factor in the long-term success of online education platforms. Loyal users are more likely to continue using the service, recommend it to others, and are less sensitive to offers from competitors (Labrecque, 2014; Lawrence et al., 2013; Leckie et al., 2016). In the context of increasingly fierce competition, building and maintaining user loyalty is an essential strategy to ensure the sustainability and growth of the platform. Additionally, user loyalty can reduce the cost of acquiring new customers, as satisfied and loyal users tend to be effective

brand advocates (Arghashi & Arsun Yuksel, 2023; Moisescu et al., 2022; Rigdon et al., 2017; Samarah et al., 2022b).

To build user loyalty, online education platforms need to focus on several key aspects. First, Brand Interactivity, which refers to the platform's ability to facilitate two-way interaction between users and service providers. High interactivity can increase user engagement and satisfaction (Hollebeek et al., 2019; Hughes et al., 2019; Kumar et al., 2025). Second, Brand Involvement, which denotes the level of emotional and cognitive engagement of users with the platform. High involvement can enhance user trust and loyalty. Third, Brand Trust, which reflects the user's perception of the platform's reliability and integrity. High trust reduces perceived risk and increases loyalty. Finally, Social Media Customer-Based Engagement (CBE) refers to the use of social media to build community and interaction with users. Engagement through social media can heighten brand visibility, strengthen trust, and drive loyalty. By managing these aspects effectively, online education platforms can build strong relationships with users, increase satisfaction, and ultimately foster long-term loyalty.

Based on the identified research gaps and the critical role of brand engagement in the digital education context, this study aims to examine the relationships among Brand Interactivity, Brand Involvement, Social Media Customer-Based Engagement (CBE), Brand Trust, Self-Brand Connection, and Brand Loyalty within Indonesian online education platforms. This research is expected to provide several benefits. First, it can serve as an additional reference regarding the influence of Brand Interactivity and Brand Involvement, moderated by CBE on Brand Trust, Self-Brand Connection, and Brand Loyalty. Second, it can offer insights for the education industry—particularly online education—in analyzing and planning strategies to enhance Brand Interactivity and Brand Involvement, moderated by CBE, together with Brand Trust and Self-Brand Connection, to increase Brand Loyalty.

## RESEARCH METHOD

This study employed a conclusive research design incorporating both descriptive and causal approaches to examine brand loyalty dynamics in online education platforms. The descriptive component outlined market characteristics, whereas the causal component identified cause-and-effect relationships between variables (Malhotra, 2016). The research was conducted in Indonesia, focusing on users of major online education platforms such as Ruangguru, Zenius, and Quipper.

The population consisted of Indonesian users of online education platforms aged 16–24 years who had used such platforms within the past year. Using a purposive sampling technique, 296 respondents who met the specified criteria were recruited. Data were collected through online structured questionnaires using a 5-

point Likert scale to measure six main constructs: brand interactivity, brand involvement, social media customer brand engagement (CBE), self-brand connection, brand trust, and brand loyalty. Each construct was measured using multiple indicators adapted from established scales in prior studies.

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS version 3.0. The analysis consisted of two stages: (1) measurement model evaluation assessing reliability and validity, and (2) structural model evaluation examining path coefficients, R-square values, and effect sizes to test the hypothesized relationships among constructs.

## RESULT AND DISCUSSION

### Measurement Model Analysis (Outer Model)

The external model analysis was carried out to measure and test the validity and reliability of the measurement indicators used in the model in this study. The following are the results of the validity and reliability testing for all variables using the help of Smart PLS software with PLS-SEM modeling.

#### *Reality Test*

In testing the measurement model (outer model) using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, one of the initial stages is to evaluate the reliability of the construct, to ensure that the indicators in each variable consistently measure the construct in question. There are three reliability measures used, namely Cronbach's Alpha, rho\_A, and Composite Reliability (CR).

Table 2. Main Test Reality Test

| NO | Variable | Cronbach's Alpha | rho_A | Composite Reliability | Remarks |
|----|----------|------------------|-------|-----------------------|---------|
| 1  | BInt     | 0.802            | 0.864 | 0.881                 | Proper  |
| 2  | BInv     | 0.868            | 0.899 | 0.920                 | Proper  |
| 3  | BL       | 0.773            | 0.812 | 0.867                 | Proper  |
| 4  | BT       | 0.777            | 0.785 | 0.871                 | Proper  |
| 5  | CBE      | 0.907            | 0.912 | 0.929                 | Proper  |
| 6  | SBC      | 0.684            | 0.688 | 0.826                 | Proper  |

Source: Processed Author Data (2025)

Based on the results of the analysis, it is shown that all constructs in this study have a Cronbach's Alpha value above 0.70, which is the minimum limit of feasibility for internal reliability according to Hair et al. (2019). The highest score was shown by the Customer Brand Engagement (CBE) construct of 0.907, followed by Brand Involvement (BInv) of 0.868, while the lowest value was in Self-Brand Connection (SBC) of 0.684. Despite being at the lower limits, these values are still acceptable in the context of social and behavioral research, especially if supported by adequate convergent and discriminative validity.

Furthermore, rho\_A values as a more accurate alternative measure of reliability also show good results. All constructs had rho\_A values above 0.70, with the highest values again shown by CBE (0.912) and BInv (0.899). The SBC construct has a rho\_A value of 0.688, which is still close to the feasibility threshold and is declared feasible.

The Composite Reliability (CR) measure, which reflects the overall internal consistency of the construct, also shows very satisfactory results. All variables had a CR value above 0.80, with the highest values in CBE (0.929) and BInv (0.920), and the lowest value in SBC (0.826), which is still in the "Feasible" category.

Thus, it can be concluded that the entire construct in the measurement model has met the recommended reliability criteria. This shows that the indicators in each construct consistently measure the dimensions in question, making it feasible to proceed to convergent and discriminant validity testing in the next stage of analysis.

#### ***Convergent Validity Test***

After the reliability of the construct is declared, the next stage in testing the outer model is to evaluate the validity of the convergence. Convergent validity shows the extent to which the indicators in a construct are correlated with each other and are able to explain the latent variables they represent. One of the main indicators in testing the validity of the convergence is the outer loading value of each indicator against the measured construct.

According to Hair et al. (2019), the indicator is said to have good convergent validity if the outer loading value  $\geq 0.70$ . Values between 0.40 and 0.70 can still be considered to be maintained if the overall reliability value of the construct remains high (as seen from Composite Reliability and AVE), and if the indicator has strong theoretical support.

Table 3. Outer Loading test

|       | Brand<br>Interaction | Brand<br>Involvement | Brand<br>Loyalty | Brand<br>Trust | Social Media<br>Customer<br>Brand<br>Engagement | Self-Brand<br>Connection |
|-------|----------------------|----------------------|------------------|----------------|-------------------------------------------------|--------------------------|
| BInt1 | 0.898                |                      |                  |                |                                                 |                          |
| BInt2 | 0.873                |                      |                  |                |                                                 |                          |
| BInt3 | 0.754                |                      |                  |                |                                                 |                          |
| BInv1 |                      | 0.771                |                  |                |                                                 |                          |
| BInv2 |                      | 0.935                |                  |                |                                                 |                          |
| BInv3 |                      | 0.958                |                  |                |                                                 |                          |
| BL1   |                      |                      | 0.856            |                |                                                 |                          |
| BL2   |                      |                      | 0.719            |                |                                                 |                          |
| BL3   |                      |                      | 0.901            |                |                                                 |                          |
| BT1   |                      |                      |                  | 0.910          |                                                 |                          |
| BT2   |                      |                      |                  | 0.834          |                                                 |                          |
| BT3   |                      |                      |                  | 0.748          |                                                 |                          |
| CBE1  |                      |                      |                  |                | 0.828                                           |                          |
| CBE2  |                      |                      |                  |                | 0.852                                           |                          |
| CBE3  |                      |                      |                  |                | 0.897                                           |                          |

|      | Brand<br>Interaction | Brand<br>Involvement | Brand<br>Loyalty | Brand<br>Trust | Social Media<br>Customer<br>Brand<br>Engagement | Self-Brand<br>Connection |
|------|----------------------|----------------------|------------------|----------------|-------------------------------------------------|--------------------------|
| CBE4 |                      |                      |                  |                | 0.829                                           |                          |
| CBE5 |                      |                      |                  |                | 0.789                                           |                          |
| CBE6 |                      |                      |                  |                | 0.762                                           |                          |
| SBC1 |                      |                      |                  |                |                                                 | 0.756                    |
| SBC2 |                      |                      |                  |                |                                                 | 0.760                    |
| SBC3 |                      |                      |                  |                |                                                 | 0.830                    |

Source: Processed Author Data (2025)

Based on the results of the outer loading test, all indicators in the measurement model showed a loading value above the minimum threshold of 0.70. This indicates that each indicator has a strong correlation with the construct it measured, so it can be concluded that the convergent validity for all constructs in this study has been well met. Convergent validity is one of the important conditions in the analysis of measurement models, as it shows that the indicators in a single construct actually measure the same concept consistently.

In the Brand Interaction construct, all indicators show a high correlation strength to the construct, with loading values of BInt1 (0.898), BInt2 (0.873), and BInt3 (0.754), respectively. Although BInt3 has the lowest value among the three, it remains above the recommended minimum limit and is therefore worth maintaining in the model.

The Brand Involvement construct shows a very strong level of convergent validity, with the loading values of the indicators BInv1 (0.771), BInv2 (0.935), and BInv3 (0.958). These values reflect that all indicators have a significant contribution in representing respondents' engagement with brands.

Furthermore, the Brand Loyalty construct also meets the criteria of convergent validity. The indicators, namely BL1 (0.856), BL2 (0.719), and BL3 (0.901), show consistency in measuring consumer loyalty. Although BL2 recorded the lowest scores, it remained within a statistically acceptable range.

In the Brand Trust construct, the indicators BT1 (0.910), BT2 (0.834), and BT3 (0.748) show that the perception of trust in the brand has been well measured. All indicators show a strong correlation to their constructs, supporting the reliability and validity of consumer confidence measurements.

The Social Media Customer Brand Engagement (CBE) construct consists of six indicators, all of which show high and consistent loading values: CBE1 (0.828), CBE2 (0.852), CBE3 (0.897), CBE4 (0.829), CBE5 (0.789), and CBE6 (0.762). This shows that cognitive, affective, and behavioral aspects of customer engagement on social media have been adequately measured through the indicators used.

Finally, the Self-Brand Connection construct measured through three indicators, SBC1 (0.756), SBC2 (0.760), and SBC3 (0.830), also met the criteria of

convergent validity. Although two indicators have relatively lower loading values than the others, they all remain above the recommended threshold. This is supported by the reliability value of the construct which has been proven to be adequate in previous tests. Overall, the results of the outer loading test strengthen the validity of the constructs used in the model, and show that the indicators developed in this study have been able to represent the latent variables validly and consistently.

The convergent validity in the measurement model was also tested through the Average Variance Extracted (AVE) value. AVE measures the proportion of the variance of the indicator that the construct successfully explains. According to Hair et al. (2019), a construct is said to have adequate convergent validity if the AVE value  $\geq 0.50$ .

Table 4. Average Variance Extracted Test

| Construct | AVE   | Remarks |
|-----------|-------|---------|
| BInt      | 0,717 | Valid   |
| BInv      | 0,795 | Valid   |
| CBE       | 0,684 | Valid   |
| SBC       | 0,612 | Valid   |
| BL        | 0,688 | Valid   |

Source: Processed Author Data (2025)

Based on the results of data processing, all constructs in the model show AVE values that are above the minimum threshold, with the following details: Brand Interaction (0.717), Brand Involvement (0.795), Customer Brand Engagement (CBE) (0.684), Self-Brand Connection (SBC) (0.612), and Brand Loyalty (BL) (0.688). These values show that more than 50% of the variance of the indicators in each construct can be explained by their respective latent variables. Thus, it can be concluded that all constructs in the model have met the convergent validity, both based on the outer loading and AVE values.

#### ***Discriminating Validity Test***

Discriminant validity indicates the extent to which a construct is completely different from other constructs in the model. One of the methods used to test the validity of discriminators is the Fornell-Larcker criterion. According to Fornell and Larcker (1981), discriminant validity is fulfilled if the square root of AVE (shown on the diagonal of the table) is greater than the correlation value between the construct and the other construct (the value outside the diagonal).

Table 5. Uji Fornell-Lacker Test



|      | Brand<br>Interaction | Brand<br>Involvement | Brand<br>Loyalty | Brand<br>Trust | Social Media<br>Customer<br>Brand<br>Engagement | Self-Brand<br>Connection |
|------|----------------------|----------------------|------------------|----------------|-------------------------------------------------|--------------------------|
| BInt | 0.844                |                      |                  |                |                                                 |                          |
| BInv | 0.151                | 0.892                |                  |                |                                                 |                          |
| BL   | -0.035               | -0.074               | 0.829            |                |                                                 |                          |
| BT   | 0.066                | -0.077               | 0.792            | 0.833          |                                                 |                          |
| CBE  | -0.224               | -0.265               | 0.406            | 0.391          | 0.827                                           |                          |
| SBC  | -0.075               | -0.123               | 0.490            | 0.482          | 0.578                                           | 0.783                    |

Source: Processed Author Data (2025)

Based on the results of the discriminant validity test using the Fornell-Larcker method, it was obtained that all constructs in the model met the suggested criteria. In this method, discriminant validity is stated to be met if the square root value of the AVE of a construct is greater than the correlation value of that construct with other constructs in the model. The values of the square root of AVE are displayed on the diagonal part of the Fornell-Larcker correlation table, while the correlation values between constructs are displayed outside the diagonal.

The test results show that the square root value of AVE for each construct is in the range between 0.783 to 0.892. In detail, the highest  $\sqrt{\text{AVE}}$  value is found in the Brand Involvement construct of 0.892, followed by Brand Trust (0.833), Brand Loyalty (0.829), Customer Brand Engagement or CBE (0.827), Brand Interaction (0.844), and Self-Brand Connection (0.783). All of these values are higher than the correlation value of the construct in question with other constructs, both in the same row and column.

As an illustration, the Customer Brand Engagement (CBE) construct has a  $\sqrt{\text{AVE}}$  value of 0.827, which is greater than the correlation value with the constructs of Brand Loyalty (0.406), Brand Trust (0.391), and Self-Brand Connection (0.578). The same is true for other constructs, such as Brand Loyalty which has an  $\sqrt{\text{AVE}}$  of 0.829, higher than its correlation with Brand Involvement (-0.074), Brand Trust (0.792), and Brand Interaction (-0.035).

These findings show that each construct in the model has good conceptual clarity and does not experience significant overlap with each other. In other words, the validity of the discriminant has been achieved, and each construct can be ascertained to measure different dimensions statistically as well as conceptually within the framework of this research model.

### Structural Model Analysis (Inner Model)

After the measurement model (outer model) is declared valid and reliable, the next stage in the Partial Least Squares Structural Equation Modeling (PLS-



SEM) analysis is the testing of the structural model or inner model. The first step in the internal evaluation of the model is to conduct multicollinearity testing, to ensure that there is no high correlation between the predictor variables in the model. This test was carried out using the Variance Inflation Factor (VIF) value.

Table 6. Variance Inflation Factor Test

|       | VIF   |
|-------|-------|
| BInt1 | 1.854 |
| BInt2 | 1.998 |
| BInt3 | 1.534 |
| BInv1 | 1.652 |
| BInv2 | 5.576 |
| BInv3 | 6.545 |
| BL1   | 1.699 |
| BL2   | 1.470 |
| BL3   | 2.114 |
| BT1   | 2.586 |
| BT2   | 1.874 |
| BT3   | 1.577 |
| CBE1  | 2.577 |
| CBE2  | 3.307 |
| CBE3  | 4.137 |
| CBE4  | 2.329 |
| CBE5  | 2.562 |
| CBE6  | 2.375 |
| SBC1  | 1.283 |
| SBC2  | 1.320 |
| SBC3  | 1.454 |

Source: Processed Author Data (2025)

According to Hair et al. (2019), a good VIF value is below 5, and a VIF value below 3.3 is even considered more ideal. If there are indicators with very high VIF values (above 5), it may indicate a multicollinearity problem, which can affect the stability of the estimated coefficients in the model.

Based on the results of the VIF test in the table, most indicators show a VIF value that is within the tolerance limit, which is below 5. Some indicators such as BInt1 (1,854), BInt2 (1,998), and BInt3 (1,534) show low VIF values, which indicates the absence of symptoms of multicollinearity in the Brand Interaction construct. The same is also seen in other constructs such as Brand Loyalty (BL1 = 1,699; BL2 = 1,470; BL3 = 2,114) and Self-Brand Connection (SBC1 = 1,283; SBC2 = 1,320; SBC3 = 1,454), all of which are in the safe category.

However, there are two indicators in the Brand Involvement construct, namely BInv2 (5,576) and BInv3 (6,545), which show that the VIF value exceeds the ideal threshold. However, the model can still be continued with the note that the PLS-SEM context is predictive and tolerant of moderate multicollinearity, as long as there is no evidence showing a significant impact on the stability of the model estimates. Hair et al. (2017) explain that VIF values between 5 to 10 are still

acceptable in some cases, especially if the values of reliability and validity of the construct have been met. Therefore, in the context of this study, the Brand Involvement construct can still be used in structural models, while noting that the interpretation of the results in this construct needs to be done with caution.

Meanwhile, indicators in the Customer Brand Engagement (CBE) construct show VIF variation, with the highest score at CBE3 (4,137) and lowest score at CBE6 (2,375). Although some indicators are close to the 5 threshold, the overall value is still acceptable because it is below the critical limit. The VIF value in the Brand Trust construct is also in the safe range, with the highest value at BT1 (2,586) and the lowest at BT3 (1,577).

Overall, the results of the VIF test show that this model does not experience excessive multicollinearity, and the predictor variables in the inner model can be further analyzed to test the relationships between constructs in the structural model.

#### ***Coefficient of Determination Test (R-Square)***

Furthermore, in the structural model analysis using PLS-SEM, the determination coefficient (R-Square) is used to assess the extent to which independent constructs are able to explain the variability of dependent constructs. The R-Square value ( $R^2$ ) describes the proportion of variance of an endogenous construct that can be explained by the exogenous constructs in the model. The higher the  $R^2$  value, the greater the model's predictive ability of the variable.

Table 7. Test R Square

|     | <b>R Square</b> | <b>R Square Adjusted</b> |
|-----|-----------------|--------------------------|
| BL  | 0.646           | 0.642                    |
| BT  | 0.153           | 0.150                    |
| CBE | 0.105           | 0.099                    |
| SBC | 0.334           | 0.332                    |

Source: Processed Author Data (2025)

The test results showed that the Brand Loyalty (BL) construct had an R-Square value of 0.646, indicating that 64.6% of the variability of brand loyalty can be explained by the predictive construct in the model. This value is relatively high and reflects that the model has strong predictive power on consumer loyalty. Meanwhile, the  $R^2$  value in the Self-Brand Connection (SBC) construct was recorded at 0.334, which is included in the medium category. This means that the model is able to explain 33.4% of the variation in the consumer's emotional relationship with the brand.

In other constructs, such as Brand Trust (BT) and Customer Brand Engagement (CBE), the R-Square values of 0.153 and 0.105 respectively, which are relatively low. However, in the context of consumer behavior research, these values are still acceptable, especially given that psychological factors are often influenced by a variety of external variables that cannot be fully accommodated in the model

### ***F-Square Test (Effect Size)***

Furthermore, to assess the relative contribution of each independent construct to the dependent construct, a test was carried out using the value of f-Square ( $f^2$ ). This value indicates how much the R-Square of a dependent construct changes when its independent construct is removed from the model. The greater the value of  $f^2$ , the greater the influence of the construct in explaining the target variable.

Table 8. Test F Square

|      | <b>BInt</b> | <b>BInv</b> | <b>BL</b> | <b>BT</b> | <b>CBE</b> | <b>SBC</b> |
|------|-------------|-------------|-----------|-----------|------------|------------|
| BInt |             |             |           |           | 0.039      |            |
| BInv |             |             |           |           | 0.061      |            |
| BL   |             |             |           |           |            |            |
| BT   |             |             | 1.081     |           |            |            |
| CBE  |             |             | 0.007     | 0.180     |            | 0.501      |
| SBC  |             |             | 0.020     |           |            |            |

Source: Processed Author Data (2025)

The results of the analysis show that the Brand Trust (BT) construct has a huge influence on Brand Loyalty (BL), with a value of f-Square of 1.081. These findings suggest that consumer trust in brands plays a dominant role in shaping loyalty. In addition, customer engagement through social media or Customer Brand Engagement (CBE) also showed a strong influence on Self-Brand Connection (SBC), with an f-Square value of 0.501, indicating that consumer engagement cognitively, emotionally, and behaviorally plays an important role in creating personal closeness to the brand.

Several other pathways in the model show moderate to small contributions. For example, the influence of CBE on Brand Trust has an f-Square value of 0.180, which indicates a moderate contribution in explaining trust in the brand. On the other hand, the effects of Brand Involvement and Brand Interaction on CBE had f-Square values of 0.061 and 0.039, respectively, which fall into the subcategory, but still contribute to the model.

Meanwhile, the effect of CBE on Brand Loyalty and Brand Involvement on Brand Loyalty, with f-Square values of 0.007 and 0.020, respectively, showed very small effects. Nevertheless, the presence of this small influence remains relevant in social research, as it shows the contribution of these variables in a broader context, although not statistically dominant.

Overall, the results of the R-Square and f-Square tests indicate that the model has a stable and relevant relationship structure. The variables Brand Trust and Customer Brand Engagement appear as the two most influential constructs in explaining consumer loyalty and emotional attachment to brands, while other variables make additional contributions that enrich understanding of the dynamics of consumer behavior in the digital ecosystem (Algharabat et al., 2020; Farhat et al., 2021; Gligor & Bozkurt, 2021).

### Hypothesis Test

Hypothesis testing was performed to evaluate whether the relationships between constructs in structural models are statistically significant. The determination of the acceptance of the hypothesis was based on a t-statistical value of  $\geq 1.96$  and a p-value of  $\leq 0.05$  for the two-tailed test. Here are the results and interpretations of each hypothesis:

Table 9. Hypothesis Testing

| Hypothesis | Variable Influence                                                              | Path Coefficients | T Statistics | P Value | Information           |
|------------|---------------------------------------------------------------------------------|-------------------|--------------|---------|-----------------------|
| H1         | <i>Brand Interactivity</i> has a positive effect on <i>CBE's Social Media</i>   | -0.189            | 3.918        | 0.000   | Negative, Significant |
| H2         | <i>Brand Involvement</i> has a positive effect on <i>CBE's Social Media</i>     | -0.236            | 4.775        | 0.000   | Negative, Significant |
| H3         | <i>CBE's Social Media</i> Has a Positive Effect on <i>Self-Brand Connection</i> | 0.715             | 19.286       | 0.000   | Positive, Significant |
| H4         | <i>CBE's Social Media</i> has a positive effect on <i>Brand Trust</i>           | 0.064             | 1.664        | 0.097   | Insignificant         |
| H5         | <i>CBE's Social Media</i> has a Positive Effect on <i>Brand Loyalty</i>         | 0.391             | 5.389        | 0.000   | Positive, Significant |
| H6         | <i>Self-Brand Connection</i> has a positive effect on <i>Brand Loyalty</i>      | 0.578             | 13.497       | 0.000   | Signifikan            |
| H7         | <i>Brand Trust</i> has a positive effect on <i>Brand Loyalty</i>                | 0.109             | 2.279        | 0.023   | Positive, Significant |

Source: Processed Author Data (2025)

### Discussions

#### H1: Brand Interactivity has a positive effect on Social Media Customer Brand Engagement (CBE)

The hypothesis test for H1 yielded a statistically significant but negative relationship between brand interactivity and social media customer brand engagement, with a path coefficient of  $-0.189$  and a p-value of  $0.000$ . This result contradicts the initial hypothesis of a positive effect, indicating that higher perceived brand interactivity does not lead to increased engagement. This counterintuitive finding is supported by recent studies; Kumar et al. (2025) suggest that excessive brand-directed marketing can cause consumer fatigue, while Luo et al. (2025) argue that the quality and authenticity of interactions are more critical than mere frequency.

This phenomenon can be explained by a mismatch between the brand's interactive efforts and user expectations. From a theoretical perspective, overly

frequent or generic interactions can lead to psychological reactance, as explained by social exchange theory, or fail to meet the desire for meaningful connections, as per the parasocial interaction framework. This is particularly relevant in the context of an online education platform, where users prioritize informative content and learning value over superficial interactivity. Consequently, for digital brand managers in the education sector, engagement strategies must shift focus from the quantity of interactions to their substance and relevance, ensuring they support user goals like providing academic answers or personalized feedback to foster genuine, sustained engagement.

### **H2: Brand Involvement has a positive effect on Social Media Customer Brand Engagement (CBE)**

The statistical analysis reveals a significant negative relationship for the H2 hypothesis, with Brand Involvement showing a path coefficient of  $-0.236$  and a p-value of  $0.000$ . This contradicts the theoretical expectation that brand involvement is a fundamental driver of consumer engagement, indicating instead that higher personal brand significance does not automatically lead to greater social media activity and may even correlate with less. This finding suggests a more complex dynamic where deeply involved customers may not concentrate their engagement on social media platforms.

This phenomenon can be explained by the concept of engagement diversity, where highly involved users distribute their interactions across various channels. Their commitment may manifest through sustained platform usage or direct service interactions rather than public social media participation. In the specific context of an educational brand, involved users often enter a mature, goal-oriented relationship where they prioritize functional utility and learning outcomes over expressive social media activity, viewing their engagement as instrumental rather than emotional.

Consequently, these insights challenge the linear assumption that brand involvement universally boosts all engagement forms, highlighting instead that it may redirect interactions toward more private and functional channels. This necessitates that companies adopt a multi-channel perspective for their engagement strategies, recognizing and valuing diverse forms of customer engagement beyond public social media metrics. Future research should therefore explore how service types and user motivations shape this nuanced relationship.

### **H3: Social Media Customer Brand Engagement has a positive effect on Self-Brand Connection**

The H3 hypothesis test reveals a statistically significant and very strong positive relationship, with Social Media Customer Brand Engagement (CBE) showing a path coefficient of  $0.715$  and a p-value of  $0.000$ . This robust empirical evidence confirms that heightened engagement on social media platforms directly

fosters a deeper self-brand connection, allowing customers to internalize the brand's values and perceive it as an extension of their personal identity. This process is well-explained by identity-based brand relationship models, particularly self-expansion theory, which posits that individuals seek relationships that enrich their self-concept.

The cognitive, affective, and behavioral dimensions of engagement collectively facilitate this process, enabling consumers to integrate brand meanings into their identity. Recent studies support this mechanism, showing that interactive engagement in digital brand communities creates psychological ownership and enhances self-brand overlap. For brand managers, especially in the online education sector where personal development is key, this means that user engagement is not about superficial metrics but about creating identity-relevant experiences that resonate with users' personal goals and values.

Therefore, actionable strategies should focus on authentic brand storytelling, content aligned with user aspirations, and fostering two-way interactions that make users feel recognized. Building communities that offer social identity benefits is also crucial. Ultimately, this support for H3 confirms that quality social media engagement is a foundational element for creating strong self-brand connections, which are vital for achieving long-term brand loyalty and competitive advantage.

#### **H4: Social Media Customer Brand Engagement has a positive effect on Brand Trust**

The analysis for hypothesis H4 reveals that while Social Media Customer Brand Engagement shows a positive relationship with brand trust, this connection is not statistically significant, as indicated by a t-statistic of 1.664 and a p-value of 0.097. This implies that high levels of engagement on social media do not automatically translate into perceptions of brand reliability and trustworthiness. Instead, trust appears to be built more on direct user experiences, such as the quality of customer service, the consistency of brand promises, and the tangible benefits received from the product or service.

This is particularly relevant for online education platforms, where users prioritize functional aspects like material accuracy and learning outcomes. Consequently, while social media engagement is valuable for visibility and emotional connection, it must be supported by solid real-world performance and a positive user experience to foster genuine trust. These findings underscore that a comprehensive strategy is essential, where efforts to drive online engagement are consistently matched by a commitment to delivering high-quality service and a reliable brand experience.

#### **H5: Social Media Customer Brand Engagement has a Positive Effect on Brand Loyalty**

The H5 hypothesis test confirms a statistically significant positive relationship, demonstrating that Social Media Customer Brand Engagement strongly influences brand loyalty with a path coefficient of 0.391 and a p-value of 0.000. This finding validates that higher levels of cognitive, affective, and behavioral engagement on social media lead to a greater likelihood of loyal behaviors, such as repeat purchases and recommendations. For online education platforms, this means social media serves as a vital channel for fostering personal connections and maintaining continuous interaction, which directly strengthens user commitment.

Conceptually, this result affirms that active engagement deepens the emotional bond between consumers and the brand, enhancing the perceived value users associate with it. The practical implication is clear: brand managers must invest in consistent and targeted social media strategies that feature responsive interactions and engaging content to encourage active participation. Ultimately, these findings provide strong empirical evidence that social media engagement is a crucial driver for cultivating long-term brand loyalty, especially within competitive digital service ecosystems.

#### **H6: Self-Brand Connection has a positive effect on Brand Loyalty**

The H6 hypothesis test confirms that Self-Brand Connection is a powerful and statistically significant predictor of brand loyalty, demonstrating the highest path coefficient in the model at 0.578. This compelling evidence shows that when consumers perceive a brand as an expression of their identity, values, and aspirations, they are far more likely to exhibit profound loyalty, including repeat purchases, positive word-of-mouth, and a willingness to forgive service failures. This form of loyalty transcends mere satisfaction, representing a deeper, identity-based attachment that creates a sustainable competitive advantage because it is emotionally rooted and difficult for competitors to disrupt.

This psychological process is particularly potent in the context of online education, where the service is intrinsically linked to personal development and identity transformation. Users don't just consume educational content; they engage in an identity project, seeking to become better versions of themselves. When a platform is seen as supporting this journey and reflecting their core values, the resulting self-brand connection becomes extraordinarily powerful, explaining why it surpasses even trust as the strongest driver of loyalty in this study. Thus, the results of the H6 hypothesis test not only reinforce the relevance of the concept of Self-Brand Connection in the formation of loyalty, but also confirm that in today's digital ecosystem, the most powerful loyalty comes from the emotional connection and identity that users feel towards the brand. This is an important guideline in developing a branding strategy that goes deeper than just surface transactions or interactions.



### **H7: Brand Trust has a positive effect on Brand Loyalty**

The H7 hypothesis test confirms a statistically significant positive relationship between Brand Trust and brand loyalty, with a path coefficient of 0.109 and a p-value of 0.023. This supports the established theory that trust is a foundational element for building loyalty, although its effect is notably weaker than the mechanisms of Self-Brand Connection and Customer Brand Engagement. This suggests that in the context of online education platforms, trust acts as a necessary baseline or enabling condition for loyalty, ensuring users perceive the brand as reliable and competent, rather than being the primary driver itself.

The relatively modest influence of trust indicates a hierarchical structure of loyalty drivers, where identity-based connections are the most powerful, followed by engagement, with trust serving as a fundamental but less dominant factor. This pattern may reflect the study's digitally-native demographic, for whom emotional resonance is paramount. Essentially, trust functions as a necessary prerequisite that reduces perceived risk and provides the security needed for deeper emotional and identity-based bonds to form, without which loyalty would be fragile.

Thus, support for the H7 hypothesis confirms that Brand Trust plays an important supporting element in the customer loyalty ecosystem, and its existence reinforces the positive influence of other variables that are more emotional and interactive. These findings are in line with a variety of previous literature that places trust as a psychological prerequisite in the formation of long-term relationships between customers and brands, including in the digital and online education sectors.

## **CONCLUSION**

The study concluded that building brand loyalty within Indonesian online education platforms is a multifaceted process driven primarily by emotional and relational connections rather than interactive features alone. Findings revealed that brand interactivity and brand involvement negatively influenced social media Customer Brand Engagement (CBE), indicating that users tend to value functional and educational benefits over frequent digital interactions. Nonetheless, CBE emerged as a strong predictor of Self-Brand Connection and Brand Loyalty, although it did not significantly affect Brand Trust. The most substantial contributors to loyalty were found to be a deep Self-Brand Connection and strong Brand Trust, underscoring that user loyalty grows from emotional affinity and perceived reliability. Future research should examine the unexpected negative relationships between interactivity/involvement and CBE through qualitative methods, incorporate moderating factors such as demographics or platform characteristics, and expand the model to include additional antecedents of Brand Trust. Moreover, testing this framework in other cultural or industry settings, such

as fintech or e-commerce, could enhance its generalizability and provide broader insights into loyalty formation in digital services.

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