

“The influence of customer involvement and engagement on co-creation of services, satisfaction, and loyalty: The case of Software as a Service”

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THE INFLUENCE OF CUSTOMER INVOLVEMENT AND ENGAGEMENT ON CO-CREATION OF SERVICES, SATISFACTION, AND LOYALTY: THE CASE OF SOFTWARE AS A SERVICE

Abstract

Software as a digital product has been shown to improve companies' performance and efficiency. One product that is now at the core of many businesses is Software as a Service (SaaS). By utilizing cloud computing platforms, SaaS is a method of providing applications as a service. SaaS applications have unique characteristics that can be customized to meet customers' needs. Hence, SaaS has become suitable for companies of all types and sizes, including small- and medium-sized enterprises. The purpose of this study is to examine the effect of customer involvement on the development of SaaS applications and the impact of customer engagement on the co-creation of services, satisfaction, and loyalty, with the co-creation level used as a moderating variable. Data were collected from responses to an online questionnaire by 282 users of a SaaS application in Indonesia who were the decision-makers of the selected SaaS provider. The data were then analyzed using structural equation modeling. The results show that customer involvement in developing SaaS applications significantly positively affects the co-creation of services, satisfaction, and loyalty (t-value > 1.645). Moreover, the level of co-creation was proven to strengthen the impact of customer involvement on the co-creation of services with an interaction Standardize Loading Factor (SLF) path of 1.36. Hence, the findings indicate that higher customer involvement promotes collaborative activities with service providers, and the optimum level of co-creation raises customer satisfaction.

Keywords involvement, interaction, absorption, level of co-creation, MSME, service provider, SaaS

JEL Classification M31, M15

INTRODUCTION

Improving the information and communications technology industry's competitiveness has recently been gaining importance. Digital-based enterprises are increasingly encouraged to grow and develop due to technological advancements. Various software and operating systems produced locally are increasingly common and have been proven to increase companies' performance and efficiency. Software as a Service (SaaS) is one product at the core of many companies.

SaaS provides high-visibility solutions for enterprise management performance while managing powerful business intelligence insights (Campbell, 2017; Athey & Luca, 2019). SaaS applications enable services to be customized to make them unique. All aspects of these applications, including their interface design, business processes, and databases, can be differentiated by tailoring them specifically to the needs



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of each client (Ali et al., 2019). In the last five years, the SaaS industry in Indonesia has proliferated. Due to Indonesia's increased internet penetration and improved information technology infrastructure, internet-based application solutions such as SaaS are increasingly in demand, especially among micro-, small- and medium-sized enterprises (MSMEs).

With the role of SaaS applications being to provide services to users, the influence of the SaaS customer involvement process can be assessed based on its direct or indirect relationship with the value of creating joint services (co-creation of services). Furthermore, the mediating effect of customer engagement affects the indirect link between customer involvement and the co-creation of services.

1. LITERATURE REVIEW AND HYPOTHESES

In the B2B context, customer involvement plays an important role. Customer involvement is the enthusiasm for and high rate of customer involvement in local activities, such as exchanging information, responding to inquiries, making recommendations, and sharing experiences (Madupu & Cooley, 2010). Customer involvement describes how customers perceive themselves as relevant to their own interests in using products and services (Cheung & To, 2011). When the services they receive are significant to the customer, they are willing to share their experiences with others.

According to Samala and Katkam (2020), highly involved customers are more engaged, eager to discuss their experiences with products and services, and glad to offer creative suggestions for enhancing those they use. Andrade and Dimanche (2014) mentioned that customer involvement is critical and influences co-creation services. Customers who are profoundly and proactively involved in developing and delivering service specifications create value for co-creating services (Cheung & To, 2021b). According to Tseng and Chiang (2016), customer involvement is an essential factor that also influences the success of service development. When customers are actively involved, shared value is created through the advice they provide regarding developing and improving services through different channels (Cheung & To, 2021a).

Value co-creation is a joint activity to build value carried out by two parties, namely consumers and companies. It occurs through the integration of existing resources that are provided by various service systems. Co-creation is a joint solution

to problems involving producers and customers working together collaboratively. Manufacturers utilize their specialized skills, methodologies, and professional judgment, and customers contribute resources such as knowledge to create optimal use value. This strikes the best balance between the desired value and the sacrifices that must be made (Pralhad & Ramaswamy, 2004; Vargo et al., 2008; Aarikka-Stenroos & Jaakkola, 2012). Co-creation of services is recognized as a derivative of co-creation and can be described as a collaborative activity between service providers and clients. It entails customers collaborating with service providers to earn profits from consumers (Oertzen et al., 2018).

Customer engagement is defined in the literature as a psychological process that becomes a model for the formation of customer loyalty and is usually experienced by new customers of a service. This model represents a defense mechanism for customer loyalty involving repeat purchases (Bowden, 2009). So et al. (2014) referred to customer engagement as a personal relationship between customers and brands. It is manifested cognitively and affectively and characterized by behavior outside of purchasing a product in goods or services. Customer engagement has been defined as a five-factor construct that includes enthusiasm, attention, absorption, involvement, and identification. The level of excitement and deep individual interest in the focus of interaction, such as with a brand, is shown by enthusiasm. At the same time, attention defines the consumer's interest in the brand. The interaction dimension refers to a client's online and offline interaction with a brand or other consumers outside the purchase transaction. Finally, a pleasurable condition known as absorption occurs when a customer is entirely focused, happy, and totally

engrossed in the role of a brand consumer. When combined, the five underlying elements constitute client involvement's psychological and behavioral facets.

Identification, interaction, and absorption are the three characteristics of client engagement in this study. This is because identification and interaction represent customers' behavioral and psychological conditions, while absorption represents emotion and the affective concentration customers feel when they are interested in a brand. The latter was also chosen for this study because it represents customers' affective concentration when involved in a brand (Cheung & To, 2021b). Customer involvement is crucial to customer engagement (Fang et al., 2020). Customers with a strong sense of belonging to the service provider have a close relationship between their self-concept and the service they receive. Customers with a high level of involvement have extensive contact with service providers. This engagement takes place through exchanging information and sharing experiences gained through various communication channels (So et al., 2014). Furthermore, high-involvement customers interact extensively with service providers to develop absorption. Customers will be more comfortable and readily build service co-creation with the service provider company if they are intensely involved and have a strong sense of ownership (Cheung & To, 2021b).

Services such as SaaS are integrated sets of products and services whose primary goal is to benefit users and create value (Boehm & Thomas, 2013). Customers are more likely to have a sense of ownership and enjoy their experience when they participate in co-creation throughout product development and as their involvement rises. SaaS services, for instance, are vulnerable to failure due to their intangible character since customer pleasure depends on the effectiveness and uniqueness of service delivery (Patterson et al., 2006).

Two stages of co-creation are based on their intensity: high-level and low-level co-creation. At a high level of co-creation, customers put in the substantial effort and exchange detailed information for co-created services. At this co-creation stage, the client takes over the responsibilities typically carried out by service personnel. Customers typically

expect personalized results because of this prolonged participation (Folkes & Pattrick, 2003). A high level of co-creation allows customers to customize the services that they use; they are willing to submit comprehensive personal information, can select from a wide range of add-on services, and are happy to invest a great deal of time and energy in aiding SaaS developers in the creation of new services.

In contrast, at a low level of co-creation, clients need to supply a small amount of information about themselves or their businesses, and there are few choices for personalization (Heidenreich et al., 2015). According to Grönroos (2012), the development of shared value occurs when a customer's level of participation with a business rises. Therefore, customers who actively participate in co-creation are expected to moderate the link between customer involvement and the co-creation of services.

Value co-creation and consumer satisfaction are positively related (Vega-Vazquez et al., 2013). In fact, client involvement in service co-creation is done to guarantee customer satisfaction (Vargo et al., 2008). A set of expectations is the basis for customer satisfaction. Customer expectations are pre-existing judgments about the quality of goods and services developed through prior experiences, clients' personal experiences, the experiences of others in their social network, or the actions of advertising organizations. Assouad and Overby (2019) provided support for this claim. Businesses must understand clients' expectations to satisfy them whenever possible (Kotler & Armstrong, 2014). The degree to which an encounter meets the customer's expectations, how well it is perceived to have been performed, and how much it contradicts the customer's views all contribute to satisfaction. Co-creation will be viewed as a worthwhile experience when it is aligned with client requirements and in line with the quality offered, raising customer satisfaction (Franke & Schreier, 2020).

According to Grisseemann and Stokburger-Sauer (2012), customer loyalty is a deeply held commitment to repurchasing a preferred product or service consistently in the future. It is made up of psychological and behavioral attitudes that are related to the way customers act toward things

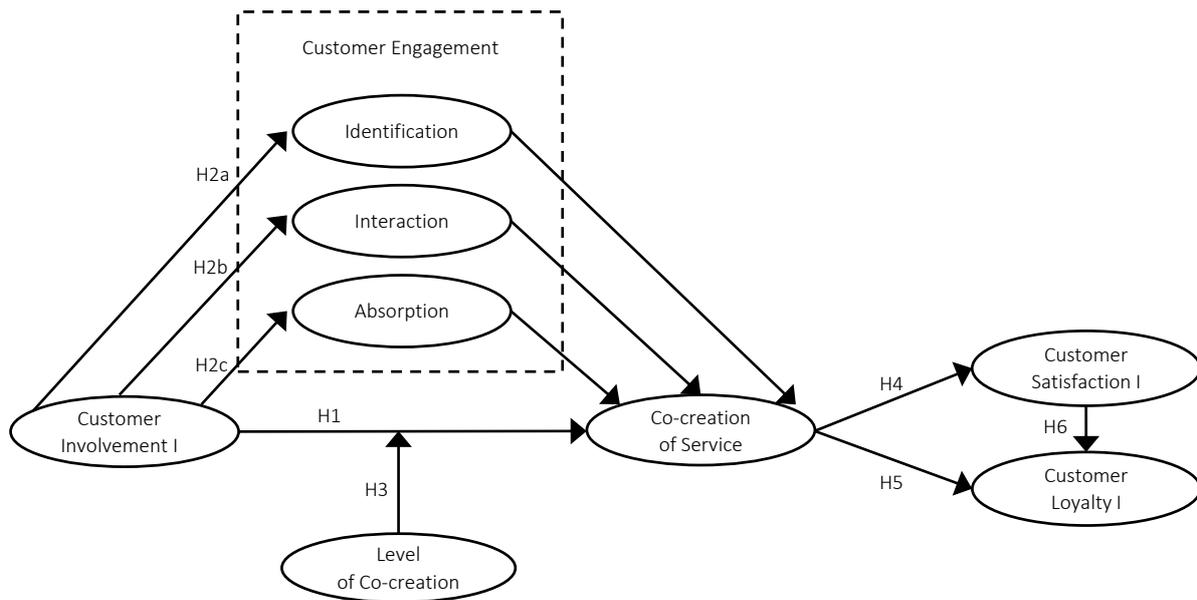


Figure 1. Research model

that they are interested in. By extension, loyalty as an attitude denotes the tendency to act in ways that will earn one’s trust. A sequence of cognitive and emotional states can produce attitude components, which may lead to a commitment to repeatedly buy something or utilize a service (Wolter et al., 2017; Ahrhold et al., 2019).

Increased benefits for both sides will arise from the partnership model’s co-creation of services with service providers and customers, impacting loyalty. An organization benefits from value co-creation since it increases the number of repeat consumers. Innovative offerings draw in new customers, and returning clients develop a sense of loyalty to the provider (Coelho & Henseler, 2012; Zhang et al., 2011). It is reasonable to believe that customers are more likely to make further purchases from the same firm and refer that company to others when they can co-design a SaaS product.

Client satisfaction and customer loyalty are positively correlated, according to Naumann and Bowden (2015). Because satisfied customers are more likely to stay loyal to a business and utilize its services again, they also tend to have pleasant experiences with its transactional activities. According to Evanschitzky et al. (2012), loyalty refers to a customer’s emotional and psychological state, which describes the emotive nature of his or her interaction with a business. Dependability and relationship management with

service providers are specific preconditions for business-to-business client loyalty (Riedl et al., 2013; Zhang & Huo, 2013). According to Johnston et al. (2012), customers who sense the value of the services they receive are more likely to return and more prone to spread positive word of mouth and suggest the services they use to others. Customer retention is ‘very profitable’ and useful in acquiring new customers, as satisfied consumers are more likely to use services more frequently and suggest them to others (Lovelock & Wirtz, 2011; Howat & Crilley, 2007; Biscaia et al., 2017).

This study aims to evaluate the effect of customer involvement on the development of SaaS applications. It also seeks to examine the impact of customer engagement on the co-creation of services, satisfaction, and loyalty, as well as the co-creation level used as a moderating variable.

Therefore, this study formulated the hypotheses as follows:

- H1: Customer involvement has a positive effect on the co-creation of services.*
- H2a: Identification indirectly affects customer involvement and the co-creation of services.*
- H2b: Interaction indirectly affects customer involvement and the co-creation of services.*

- H2c: Absorption indirectly affects customer involvement and the co-creation of services.
- H3: The level of co-creation moderates the positive effect between customer involvement and the co-creation of services.
- H4: Co-creation of services has a positive effect on customer satisfaction.
- H5: Co-creation of services has a positive effect on customer loyalty.
- H6: Customer satisfaction has a positive effect on customer loyalty.

Figure 1 shows the conceptual model of this study.

2. METHODOLOGY

This study has six variables: customer involvement, customer engagement and co-creation of service, level of co-creation, satisfaction, and loyalty. Each variable is measured by several items adapted from previous research. The items in this questionnaire are measured using a six-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (6).

Data were collected by conducting direct surveys using Google Forms questionnaires. The respondents in this study were SaaS users who were the decision-makers of the selected SaaS provider in Indonesia and had used SaaS within the last six months. Over 300 questionnaires were distributed, but only 282 responses were used for further testing. The accepted data went through preliminary processing to ensure that no data were missing and to define any incorrect or incomplete entries from the respondents.

This study used Amos 22.0 software to assess the model's viability and the validity of its hypotheses using the structural equation modeling (SEM) approach. The two testing phases in SEM are goodness-of-fit and structural model testing. Commonly used measures used in the goodness-of-fit test include the two ratios to degrees of freedom, root mean square error of approximation (RMSEA), non-normed fit index, normed fit index (NFI), and comparative fit in-

dex. In addition, the test compares the observed covariance matrix with the estimated covariance matrix (CFI).

3. RESULTS AND DISCUSSION

The results of profiling the 282 respondents to the Google Forms-based questionnaire are listed in Table 1. Most respondents (n = 122, 43.3%) were frequent users of SaaS apps and used the application for work or their daily activities for 1-3 years. The distribution of the length of SaaS application usage is consistent with the target respondent group of experienced SaaS users. Most respondents who participated were aged 18-25 years (n = 132, 46.8%), while 108 respondents (38.3%) were from the 26-33 age group. The remaining respondents were under 18 years or over 33 years. This aligns with this study's initial target population and illustrates that the digital economy is rooted in Millennials aged 20-30 years.

Table 1. Respondent characteristics

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	159	56.4
	Female	123	43.6
Age	18-25	135	47.8
	26-33	108	38.3
	>33	39	13.9
Education	High School	33	11.7
	Bachelor's Degree	229	81.2
	Master's Degree and above	20	7.1
Period time of using SaaS	< 1 Year	48	17
	1-3 Years	122	43.3
	> 3 Years	112	39.7
Industry	FnB	87	30.9
	Retail	60	21.3
	Fashion	47	16.7
	Agency	22	7.8
	IT	17	6.0
	Other	49	17.3

The demographic data were dominated by three industrial sectors, led by the food and beverage industry (30.9% of respondents) and followed by retail (21.3%) and fashion (16.7%). Considering that SME business owners dominate the usual usage of the SaaS application, the data were consistent with the initial target population.

Table 2. Goodness of fit

Goodness of Fit Index	Cut off Value	Results	Model Evaluation
Goodness of Fit Index (GFI)	> 0.9	0.73	Marginal Fit
Root Mean Square Error of Approximation (RMSEA)	< 0.08	0.072	Good fit
Non-Normed Fit Index (NNFI)	> 0.9	0.91	Good fit
Normed Fit Index (NFI)	> 0.9	0.91	Good fit
Incremental Fit Index (IFI)	> 0.9	0.93	Good fit
Comparative Fit Index (CFI)	> 0.9	0.93	Good fit

Byrne (2010) showed the recommended values for a well-fit structural equation model test to be $p \geq 0.05$, $GFI \geq 0.90$, $NNFI$, NFI , IFI , and $CFI \geq 0.90$, and $RMSEA \leq 0.08$. The results following the completion of the test are shown in Table 2.

Various types of the fit index can be used to measure the degree of conformity so that a model is acceptable. Based on the results, four of the five criteria met the recommended value; thus, the model was feasible for research.

Consumer engagement factors in the dimensions of identification, interaction, absorption, and the degree of co-creation were thought to operate as mediators in the relationship between customer involvement and the co-creation of services. The causal relationship in the created research model was determined through causal relationship analysis. In this study, the hypotheses were measured with a 95% confidence level and a significance level of 0.05. Based on the t-value distribution table, the minimum limit of 0.05 significance was 1.645. Therefore, the latent variable could be positively and significant-

ly affected by other latent variables if it had a t-value of 1.645. On the other hand, if the t-value is less than 1.645, the relationship is insignificant (Wijanto, 2015).

Results of the experiment comparing customer involvement and service co-creation show a t-value of 14.92 with estimates of 1.01. The results indicate that H1 is accepted. Customer involvement positively affects the co-creation of services, indicating that if customer engagement reflects the relevance of SaaS application services, it will promote collaborative activities between service providers and customers related to them. The relationship between these variables is in line with Cheung and To (2021b), who highlighted the connection between customer engagement and the co-creation of services and claimed that customer involvement determines the psychological condition of customers in terms of the significance and relevance of the target company's services to them. The customers' values, needs, and interests determine the level of customer involvement with the company's services (Zaichkowsky, 1985).

Table 3. Path coefficient direct effect

Hypothesis	Path	T-value	Estimate	Conclusion
H1	Customer involvement → Co-creation of service	14.92	1.01	H1 is accepted
H4	Co-creation of service → Satisfaction	12.10	0.92	H4 is accepted
H5	Co-creation of service → Loyalty	0.023	-0.29	H5 is rejected
H6	Satisfaction → Loyalty	4.15	1.27	H6 is accepted

Table 4. Standardized direct effect, indirect effect, and total effects

Hypothesis	Path	Standard Coefficient			Conclusion
		Direct Effect	Indirect Effect	Total Effect	
H2a	Customer involvement – Identification (CE) – Co-creation of Service	3.96	0.7776	3.1824	H2a is rejected
H2b	Customer involvement – Interaction (CE) – Co-creation of service	3.96	0.6816	3.2784	H2b is rejected
H2c	Customer involvement – Absorption (CE) – Co-creation of service	3.96	1.392	-0.102	H2c is rejected

Table 5. Path coefficient moderated effect

Hypothesis	Path	SLF (un-moderated Path)	SLF (interaction Path)	Effect	Conclusion
H3	Level of co-creation moderated Customer involvement – Co-creation of service	1.01	1.36	Strengthened	H3 is accepted

Customers will value their interaction with a service provider if they feel the assistance is necessary, meaningful, and beneficial to them. Therefore, a significant factor impacting the development of shared services is participation. Customers will invest more time and effort into establishing a shared service if they feel included (Andrades & Dimanche, 2014).

The second hypothesis referred to the indirect or mediating effect of customer engagement, which consists of three dimensions (i.e., identification, interaction, and absorption). The results of the estimation test of the indirect influence between customer involvement and the co-creation of services are shown in Table 4. They indicate that identification and interaction have no mediating effect; thus, hypotheses H2a, H2b, and H2c are rejected. These findings only partially concur with previous research, which has shown that customer engagement in interaction and absorption (but not identification) mediate the relationship between customer involvement and service co-creation. This is understandable, given the differences between this study’s research subject and those of earlier studies, as consumer immersion and interactions (H2b) between businesses and other customers in SaaS services are less substantial.

In addition, the insignificant results for identification (H2a) mediation align with Cheung and To’s (2021b) findings, where customers view identity as the physical expression of a service that perfectly fits who they are as a person. Self-identity is utilized to forge social connections, but it is insufficient to produce the customer enjoyment that is fundamentally required to convert customer involvement into more cooperative activities through the co-creation of services.

In contrast to the indirect effect of the mediator by customer engagement, the results show the significant moderating effect of the level of co-creation in the third hypothesis. The interaction path of SLF (1.36) is greater than the unmoderated path (1.01);

thus, the amount of participation, time, and effort invested by customers with service providers related to the SaaS applications used strengthens the existence of collaborative activities between the customers and service providers. The results are consistent with those of other studies. For example, Heidenreich et al. (2015) claimed that when clients actively participate in the service production process, the degree of co-creation boosts the feelings of control during a service interaction. Customers’ high involvement, time commitment, and effort in effectively co-created services with service providers can increase customer satisfaction since these produce benefits for both parties. Customers enable businesses to access fresh sources of competitive advantage, and businesses respond to customers’ requirements by providing services that are specifically catered to them.

It is evident from the test findings that H4 is accepted. The test results between the co-creation of services and satisfaction show a t-value of 12.10 with estimates of 0.92. Co-creation of services positively impacts customer satisfaction, indicating that cooperative efforts between service providers and clients related to SaaS application services will raise the customer’s overall assessment of the SaaS service experience they feel. The correlation between these variables and the association between service co-creation and satisfaction found by Jin and Chen (2021) is consistent. According to Jin and Chen (2021), customer happiness is influenced by encounters involving customer expectations. A set of expectations will result from a cooperative effort between the client and the SaaS service provider. The collaborative process that occurs when users of SaaS services join to share ideas, customize features and decide on the final product will be aligned with customer needs, making it a worthwhile experience, thereby increasing customer satisfaction.

H5 is rejected, as there is no direct effect of co-creation of service on customer loyalty, as the t-value (0.023) is less than 1.65. However, this study con-

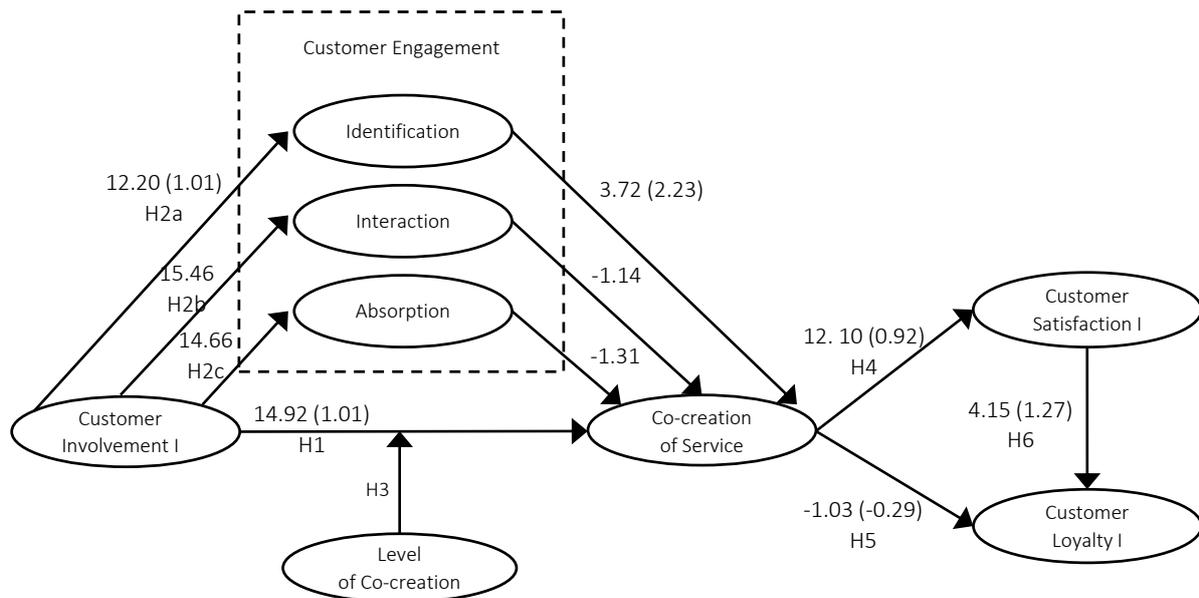


Figure 2. Research model with results

cludes that customer satisfaction positively impacts client loyalty. This implies that the relationship between the co-creation of services and customer loyalty is mediated by consumer happiness, which now assumes a vital role. Table 3 shows a t-value of 4.15 with estimates of 1.27, and thus H6 is accepted. This result demonstrates that positive customer perceptions of the SaaS service experience – characterized by increased satisfaction and fulfilling customer expectations and needs – will increase customers’ favorable behavior toward a brand or company and lead to repeat purchase intentions.

Furthermore, customer loyalty is demonstrated by a customer’s decision to continue utilizing SaaS services from the same provider, suggesting these services to others, and remaining loyal to that provider even when other goods are available. The relationship between these variables is consistent with Jin and Chen’s (2021) results on the connection between loyalty and satisfaction. When customers are satisfied with the services they have received directly, they will be loyal and always act favorably toward the service provider. Figure 2 shows the results of the relationship between variables.

CONCLUSION AND IMPLICATIONS

The use of SaaS in SMEs is supported empirically by this study. The findings revealed that customer involvement had a favorable impact on the co-creation of services, indicating that a SaaS service will encourage cooperative activities between service providers and clients related to SaaS application services the more relevance it has (i.e., the higher customer involvement). Additionally, according to the findings, the degree of co-creation will support existing cooperative actions between clients and service providers. The ideal amount of co-creation will increase customer happiness because it benefits clients and service providers. This encourages client loyalty, which is demonstrated by clients’ continued use of the SaaS services of the same provider.

This study has a significant theoretical contribution because the research subjects are SaaS application users in SMEs, a group rarely studied. The SaaS sector significantly contributes to Indonesia’s expanding economy by offering services that can improve enterprise management efficiency, particularly for owners of small and medium-sized firms. Additionally, the outcomes of the factors examined in this study suggest that SaaS users behave differently from users of other services.

The results have several practical applications that can be used as a reference for marketers in companies developing SaaS. Based on this study, involving customers in the development process to the final product launch, asking directly for critiques and suggestions, and allowing customers to choose and customize SaaS application features are highly recommended. In addition, the use of social media and custom email for each particular customer effectively reminds them of the relevance of the services offered by the service company.

Therefore, SaaS service providers must be clear about what clients will receive and the scope of feature improvements. Customer satisfaction will be maintained when the final product and all feature adjustments are consistent with the initial expectations. SaaS service providers can create value by continuously improving SaaS products by delivering new features and continuous improvements that help to minimize usage constraints. When customers see more new value offered according to their needs, it becomes easier for them to continue using the same company's services and to recommend those services to other companies with which they have a relationship. Marketers can apply these suggestions to gain more sales and encourage customers always to be open to collaborations with service providers to customize features and define the final product of the SaaS application.

In further research, the mediation test with other dimensions of customer engagement, which may include enthusiasm and attention, could be carried out. In addition, testing other variables that are in line with operating conditions and behavior when buying service products such as SaaS could also be explored. Finally, this research model can examine different subjects, such as customization services for other goods and services or co-production activities in service and goods industries.

AUTHOR CONTRIBUTIONS

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Formal analysis: Geraldine Dewarani.

Funding acquisition: Yeshika Alversia.

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Writing – original draft: Geraldine Dewarani.

Writing – review & editing: Yeshika Alversia.

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