

## Enhancing Community Service through the Integration of the Student's Role as an Agent of Change and Reuse Intention KKN Caption Design

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### Articel info

**Abstract.** *Improving public satisfaction and reuse intention in social life requires new innovations, namely KKN. The KKN Blue Ocean Innovation integrated capstone design model integrates education, development, service, and community empowerment outside the campus environment. The proposed model, based on the stimuli-organism-response theory and the KKN framework, which integrates the four aforementioned student roles (catalyst, process helper, solution giver, and source linker) to study the intention reuse KKN. Valuable insights for implementing KKN to be accepted by the community are to prioritize community satisfaction as the object of study in integrating more innovative KKN concepts. Partial least squares structural equation modeling (PL-SEM) with a survey of 50 community members and students who have interacted and experienced community service (KKN) was used. Results: This study found that the solution giver dimension dominated the role of students as agents of change compared to the catalyst (C); process helper (PH); solution giver (SG); and sources linker (SL), which were 16%, 20%, 50%, and 14%, respectively. SL dominated the role of students as agents of change. The mediation analysis explains that community satisfaction mediates the relationship between the four dimensions and KKN reuse intention. The role of student agents of change includes raising community awareness and enthusiasm to change and develop SL for the better. The direct and indirect influence of the agent of change dimension on public satisfaction and reuse intention is a novelty of this study.*

**Abstrak.** *Untuk meningkatkan kepuasan masyarakat dan niat untuk memanfaatkan kembali dalam kehidupan sosial, diperlukan inovasi baru, yaitu KKN. Model desain capstone terintegrasi KKN Blue Ocean Innovation menggabungkan pendidikan, pengembangan, pelayanan, dan pemberdayaan masyarakat di luar lingkungan kampus. Model yang diusulkan, berdasarkan teori stimulus-organisme-respons dan kerangka kerja KKN, mengintegrasikan empat peran mahasiswa katalis, pembantu proses, pemberi solusi, dan penghubung sumber untuk mempelajari niat penggunaan kembali KKN.*

*Wawasan berharga menerapkan KKN agar diterima oleh masyarakat yang memprioritaskan kepuasan masyarakat sebagai objek studi dalam mengintegrasikan konsep-konsep KKN yang lebih inovatif. Model Partial least squares structural equation modeling (PL-SEM) untuk mensurvei 50 mahasiswa dan masyarakat yang telah berinteraksi dalam kegiatan pengabdian masyarakat (KKN). Studi ini menemukan bahwa dimensi pemberi solusi mendominasi peran mahasiswa sebagai agen perubahan dibandingkan dengan katalis (C); pembantu proses (PH); pemberi solusi (SG); dan penghubung sumber (SL), yang masing-masing sebesar 16%, 20%, 50%, dan 14%. SL mendominasi peran mahasiswa sebagai agen perubahan. Analisis mediasi menunjukkan bahwa kepuasan masyarakat yang berperan sebagai variabel mediasi dalam hubungan antara keempat dimensi tersebut, dan niat untuk menggunakan kembali KKN. Peran mahasiswa sebagai agen perubahan mencakup upaya meningkatkan kesadaran dan antusiasme masyarakat untuk melakukan perubahan serta mengembangkan SL menjadi lebih baik. Pengaruh langsung dan tidak langsung dari dimensi agen perubahan terhadap kepuasan masyarakat dan niat untuk menggunakan kembali merupakan hal baru dalam studi ini.*

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**Keywords:**

*Agent of Change;  
Caption Design;  
Empowering Community;  
Kuliah Kerja Nyata*

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## Introduction

KKN PPM is a government program that integrates students with the community. Its main program is community empowerment. Community service programs have positive impacts in economic, socio-cultural, and environmental impacts, whereas negative impacts should be minimized (Baswarani et al., 2024). Community empowerment including: First, in economic and socio-cultural fields, such as this study (Misidawati et al., 2024), which proposes a community service program focused on developing the local economy, optimizing village natural resources, and raising awareness of the importance of education and health. Sukartiko et al. (Sukartiko et al., 2024), aims, to maximize these impacts by standardizing efforts, to build sustainable community empowerment through business and product development, market expansion, and halal certification. Nurhaida et al. (Nurhaida et al., 2025), developed Curug Luhur, Sukabumi by strengthening local capacity in participatory spatial planning, business model development, and digital destination branding as sustainable rural tourism destination, standardization efforts for kalasan fried chicken industry cluster through (Sukartiko et al., 2024). Integrated management in agriculture (Umar et al., 2024) and functional sorghum production in,Langung Village, West Aceh (Andriani et al., 2025). Mosaic tables and chair designs based on durian leather and wood waste (Puspitorini & Muslimin, 2025).

Second, community character building and technology through community service training are essential to mitigate negative impacts on business activities that promote local wisdom, such as material flow cost accounting for micro, small, and medium enterprise entrepreneurs (Anis & Anis, 2023),

management business retail through Vendor management inventory (Puspitorini, 2025), and empowering women's groups for agriculture on limited area in Sidoarjo based on IoT aeroponic automation (Nurherdiana et al., 2025). Pamungkas, et al. (Pamungkas et al., 2025) enhancing kampung durian community based on artificial intelligence training in Pakis Village, Jember. Bamboo laminate technology as part of disaster conservation and mitigation (Krisdiyanto et al., 2024). Solar-powered automatic irrigation for chili farming on a rainfed rice (Ardiansyah & Agustina, 2023). House workshop development based IT (Sirmayanti, 2025), Leanviro for monitoring environment (Koerniawan et al., 2025; Maryani & Hasanah, 2025), and SIAPDes taxion software for transparency (Koerniawan et al., 2025). Conversely, empowerment in the field of education is also being implemented. Pasongli et al. (Pasongli et al., 2024), conducted an education literacy and technology program for the youth of Mira village. Integration of education and empowering communities (Saleh et al., 2025), (Apriadi et al., 2022), (Suhardi et al., 2025), digital system logistics for smart education (Zuo et al., 2024), logistics management training using social media for marketing (Jokhu et al., 2023), and integrating technology and thinking skill (Ni, 2023) are all examples of such integration.

The Community Service Program (KKN) is an academic activity conducted outside of the campus community. It is mandatory for students and involves community development, education, and community service. Innovation is necessary to integrate government programs, higher education missions, and community initiatives. This also reflects the integration of the three pillars of higher education: research and, community service. The program is based on the following principles: first, the principles of Pancasila and the UUD 1945; second, Law No. 20 of 2003 concerning national education, article 20 paragraph 2: Higher education institutions are obliged to organize education, research, and community service; third, Law No. 12 of 2012 concerning higher education, article 24 paragraph 2: Higher education institutions are obliged to organize education, research, and community service; and finally, the Statute of Higher Education.

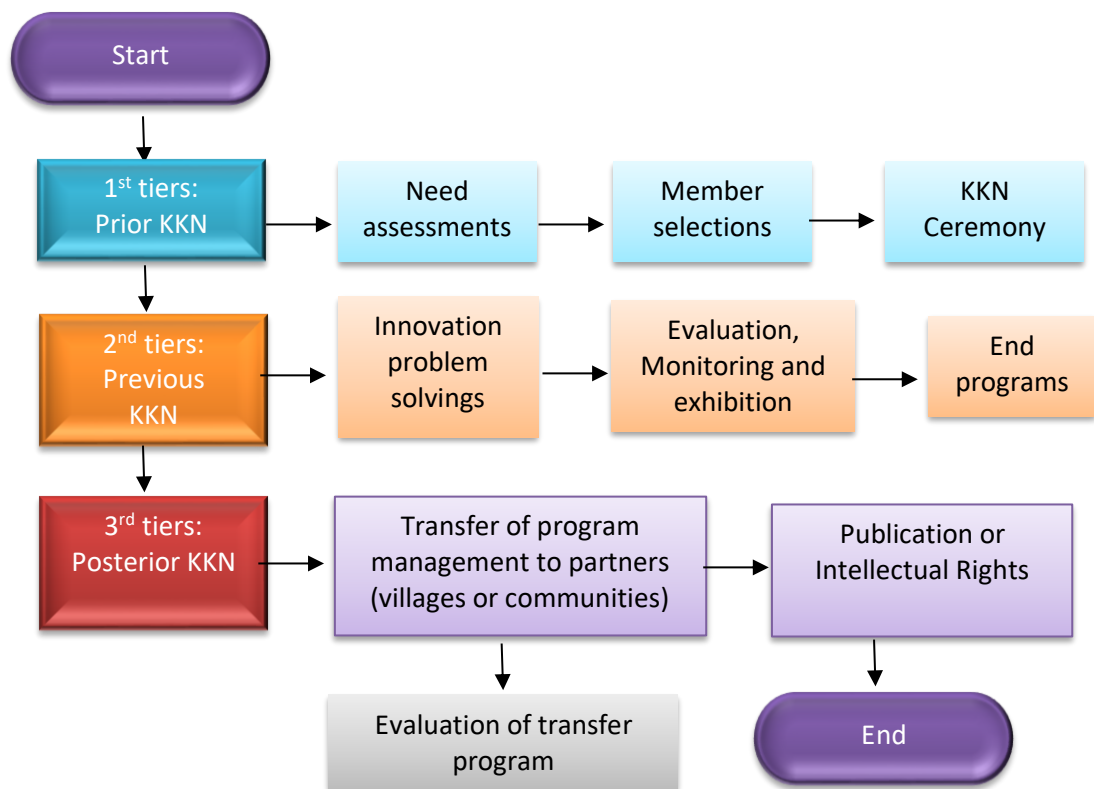
Meanwhile, the primary objectives of KKN are: (1). To grow and increase empathy and concern in students; (2). To improve students' soft skills, such as communication ability, working together, and living together. (3). Apply science and technology in a teamwork and interdisciplinary manner; (4). To improve RBE models for students and to instill a research spirit that is exploratory and analytical; (5). To cultivate leadership, innovation, motivation, and problem-solving skills (in making appropriate decisions and policies to prevent mismanagement); (6). Instilling personality values, namely (a) nationalism and the spirit of Pancasila, (b) tenacity, work ethic, and responsibility, and (c) independence, leadership, and entrepreneurship; (7). To encourage a learning society among students and increase national competitiveness through local potential. To address these objectives, examine the effects of the student's role as an agent of change on community service satisfaction and reuse intention KKN caption design integration were examined. KKN now emphasizes the role of student students as catalysts, process helpers, solution providers, and resource linkers, not just as agents of development. This is crucial for students who will act as resource linkers, not just as agents, ensuring that community needs are met with the necessary resources when they are no longer available (Arisandi et al., 2021). Similarly, the study on the re-use intention of logistics service quality model across multiple retailers, explains the, variables of price, product quality, and service reliability as important factors besides delivery speed and response to complaints (Puspitorini et al., 2025).

This study assessed the roles of students as catalysts, process helpers, solution givers, and source linkers in the implementation of KKN PPM in 2018 with a focus on local wisdom to promote sustainability in community empowerment. The study (Puspitorini & Arisandi, 2023) found an innovation concept for KKN based on integrated capstone design (ICD), which refers to the four aforementioned student roles (catalyst, process helper, solution giver, and sources linker). The study will serve as a model for a more innovative PPM initiative of the KKN. This model is known as the KKN Blue Ocean Innovation Integrated Capstone Design (KKN Blue Ocean ICD). The model was copyrighted by the Directorate General of Intellectual Property (registration number: 000514480) on September 15, 2023. It is used to solve unstructured problems (complex engineering problems) and is designed to be an extensive design is open and designed experience for students. It wins new markets with head-to-head strategies. It starts with BoK system design engineering (problem-solving approach) and ends with engineering economic analysis

(cost-effective trade-offs for customer problems). The gap in this program relates to exploring the relationship between the dimensions of change agents, such as catalyst, process helper, solution giver, and source linker, in the community environment. Customer Service Satisfaction (CSS) and Reuse Intention (RI) for empowering KKN programs. This program's valuable insights for implementing KKN to be accepted by the community are to prioritize community satisfaction as the object of study in integrating more innovative KKN concepts. The manuscript structure is as follows: Introduction, Method, Results and Discussion, and Conclusions.

## Method

In this section, the implementation method consists of three tiers: (1) prior KKN, (2) previous KKN, and (3) posterior KKN. The first program is a standard program with needs assessments, participant selection considering innovation and skills, and the KKN ceremony. Next, students perform KKN as agents of change in the community with standardized catalysts, process helpers, solution givers, and source linkers. This role will be evaluated through transfer program evaluation and, posterior KKN. This evaluation evaluates whether the program can be used in the future and further improved. Decision making at KKN Blue Ocean Innovation ICD revolves around local wisdom, as illustrated in Figure 1.



**Figure 1.** Decision making at KKN Blue Ocean Innovation ICD revolves around local wisdom

1<sup>st</sup> tier: Define stimulus-organism-responses.

The stimulus represents the student's role as an agent of change, consisting of four key performance indicators (KPIs): catalyst (C), process helper (PH), solution giver (SG), and source linker (SL). The organism is community service satisfaction (CSS), with the following KPIs: increasing community knowledge (CSS<sub>1</sub>-KM); standardization effort (CSS<sub>2</sub>-SE), and responses. Reuse Intention of KKN Caption Design Integration, with additional key performance indicators KPIs: publication (RI<sub>1</sub>-P) and intellectual property rights (RI<sub>2</sub>-IPR). Community service satisfaction is the response of the community's perceived performance, reflecting their expectations and desires.

2<sup>nd</sup> tiers: Hypotheses are proposed

Figure 2 illustrates the conceptual framework of the intention to reuse KKN caption design integration in the stimulus-organism-response (SOR). Model SOR model to explain how environmental stimuli influence future emotions and behavior. It is a theoretical framework that explains the relationship between external and internal stimuli and responses and, the resulting outcomes. These results are both psychological and behavioral in nature. (Lin et al., 2023). The stimulus dimensions C, PH, SG, and SL can significantly affect CSS in the response dimension. The organism includes community service satisfaction and the intention to reuse the KKN caption integration design. All the connections hypothesized above are depicted in Fig. 2.

H<sub>1</sub>: C positively influences CSS

H<sub>2</sub>: PH positively influences CSS

H<sub>3</sub>: SG positively influences CSS

H<sub>4</sub>: SL positively influences CSS

H<sub>4</sub>: SL positively influences CSS

H<sub>5</sub>: positively affects RI KKN caption design integration

H<sub>M1</sub>: CSS is a significant mediator within the C and RI-KKN CAD relationship

H<sub>M2</sub>: CSS is a significant mediator of the relationship between PH and RI-KKN caption design integration relationship

H<sub>M3</sub>: CSS is a significant mediator within SG and RI-KKN caption design integration relationship.

H<sub>M4</sub>: CSS is a significant mediator of the relationship between SL and RI-KKN caption design integration relationship

3<sup>rd</sup>: Structural equation modeling implementation

The analysis employed SEM with Smart PLS 4.1.1. According to (Hair et al., 2021), the implementation of SEM is divided into two: covariance-based SEM (CB-SEM) and partial least squares SEM (PLS-SEM, also known as PLS path modeling). Path models are diagrams accustomed to visually display the hypotheses and relationships between the examined variables. PLS-SEM is rapidly evolving as a statistical modeling technique and is the best choice for evaluating complex frameworks that involve moderation effects. The key characteristics of PLS-SEM include the following: (1) The sample data are flexible; small samples achieve a higher statistical level, whereas large samples increase the precision of the PLS-SEM estimates. The cited 10-time rule indicates that the sample size should be equal to ten times the number of independent variables. Contrarily, the inverse square root method, which considers the probability ratio of a path coefficient and standard error, was used. The power level is 80%, and the significance levels are 1%, 5%, and 10%. The minimum sample size ( $n_{min}$ ) is determined by the statistical power and effect size rule. (2) The model estimation aims to maximize the amount of unexplained variance in the dependent measure ( $R^2$ ). (3) The model evaluation evaluates the overall model.

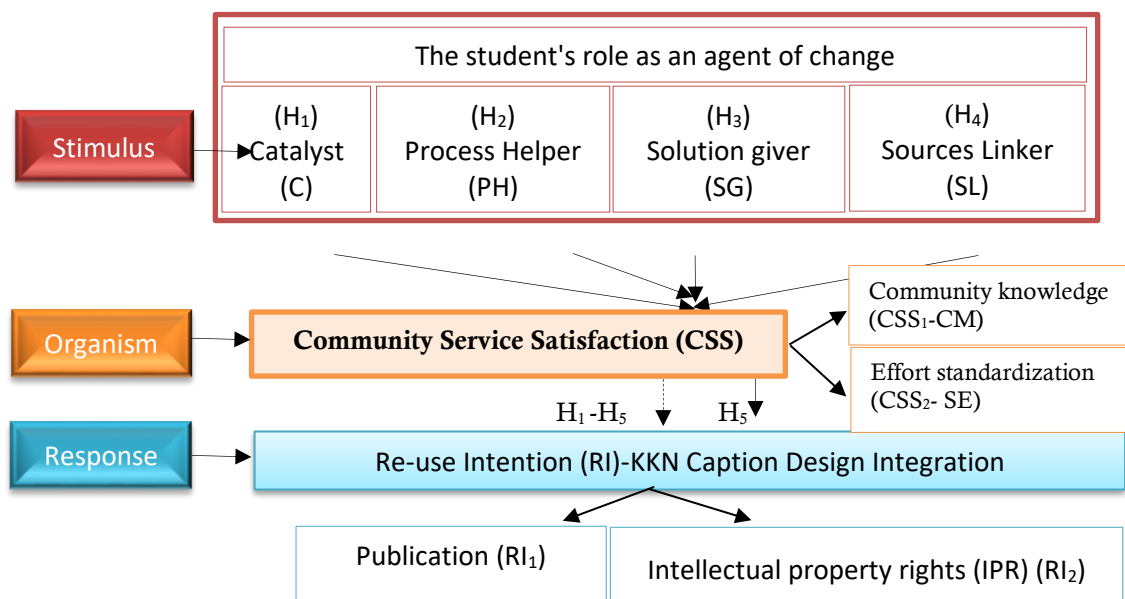


Figure 2. Conceptual framework of reuse intention KKN caption design integration

## Results and Discussion

### Community Engagement

Jembul Village has been designated as a laboratory for social science research Since 2018. The location was chosen because of its ability to maintain local wisdom, such as a strong sense of family, security, calm, and mutual cooperation in the developed of the village. Additionally, the natural potential of the coffee plants stretching along the road to the Kabejan waterfall, the hills, agriculture, plantations, and the concrete roads contribute to the village's development. This study aims to evaluate post-KKN program transfers and improve the Jembul community's empowerment sustainability. For this study, respondents were asked to complete a questionnaire about the KKN PPM program, which focuses on processing porang tubers into chips porang from a multidisciplinary perspective that benefits the community and students as agents of change. Respondents included community members and students from the faculties of Engineering (Industry, THP, Civil, and Informatics); Economics (Management and Accounting); Islamic Religion, FKIP (Indonesian, English, and Mathematics), and FISIP (Communication Science and Government). Figure 3 shows the assessment by study. This was done by implementing and posterior KKN PPM.



**Figure 3.** Overview of Jembul Village and respondents (Community and Students)

The external assessment model involves the following:

- (i) Reliability of individual item (indicator reliability)

The measurement model is the first step in the SEM-PLS analysis. We evaluated external models related to the unidirectional predictive relationship between each latent construct and the observed indicator. Data collection involved students and community members, with a sample of 50 respondents. The significance level was set at 5%, and the minimum path coefficient  $P_{min}$  of 0.4

$$n_{min} > \left( \frac{2.486}{P_{min}} \right)^2 \quad (1)$$

$$n_{min} > \left( \frac{2.486}{0.4} \right)^2 = 38.65 \approx 39 \text{ samples}$$

- (ii) Reliability of each latent variable;

Validity and reliability tests demonstrate high-quality research when the collected data are accurate and consistent. These values were obtained from hypothetically defined questionnaire items containing constructs.

- (iii) Internal consistency (Cronbach's alpha and CR)

Reliability is measured using the correlation of observed item variables with a range of 0-1, while 0.6-0.7 is still acceptable, but 0.90+ is clearly undesirable.

- (iv) Construct validity (loading and cross-loading);

- (v) Convergent validity (average variance extracted, AVE), and

Convergent validity measures the strength of the relationship between constructs and latent variables and is, assessed as follows:

- (a) Standardized loading factor

A standardized loading factor greater than 0.7 is ideal for measuring the construct. A loading factor value greater than 0.5 is also acceptable. Conversely, a loading factor value <0.5 indicates outliers that should be excluded.

- (b) CR value greater than 0.7 is considered acceptable, whereas a value greater than 0.8 is considered highly satisfactory by the following equation:

$$CR = \frac{(\sum \lambda)^2}{(\sum \lambda)^2 + (\sum \epsilon_i)} \quad (2)$$

## (c) Average Variance extracted (AVE).

The AVE value indicates the amount of variance or variable, diversity that a, latent construct can have. This variance is linearly correlated with the variables' representation of in relation to the latent constructs.

$$AVE = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \epsilon_i} \quad (3)$$

Meanwhile, the AVE value:

$$AVE_{\xi_j} = \frac{1}{K_j} \sum_{k=1}^{K_j} \lambda_{jk}^2, \text{ and } AVE_{\xi_j} > \max r_{ij}^2, \forall i \neq j \quad (4)$$

## (vi) Discriminant validity (Fornell-Larcker criterion, cross-loading, and HTMT criterion).

Table 1 shows that consistency reliability can be used to confirm construct reliability, which is evaluated by calculating Cronbach's alpha and composite reliability (rho-a and rho-c). The recommended range for the rho-c is 0.70–0.90. The rho-a value for each variable falls within the lower and upper limits of Cronbach's alpha and rho-c, indicating high consistency between constructs. Conversely, the cutoff value for the AVE exceeds 0.5, indicating that each variable is unidimensional. The reliability and validity constructs in this study have Cronbach's alpha and composite reliability values within that range, indicating high internal consistency among the constructs. Similarly, the average variance extracted (AVE) value shows adequate convergent validity, confirming the unidimensionality of each variable. Thus, this study found sufficient reliability in the constructs (latent variables).

Table 1. Reliability and validity of the construct

Variables	Mean	Standard deviation	Cronbach's Alpha	Composite reliability		Average variance extracted (AVE)	Value	
				(Rho-a)	(Rho-c)		R <sup>2</sup>	R <sup>2</sup> Adjusted
C	2.660	1.000	0.839	0.845	0.903	0.757	-	-
CSS	2.660	1.000	0.828	0.829	0.921	0.854	0.634	0.601
PH	2.693	1.000	0.801	0.809	0.883	0.716	-	-
RI	2.660	1.000	0.784	0.786	0.794	0.659	0.589	0.580
SG	2.687	1.000	0.851	0.897	0.907	0.766	-	-
SL	2.653	1.000	0.757	0.773	0.861	0.675	-	-

The Fornell-Larcker criterion and cross-loadings were determined next to measure discriminant validity from the heterotrait-monotrait ratio (HTMT) matrix. The HTMT is a measure of the similarity between latent variables with thresholds, of 0.85 and 0.9 (Lin et al., 2023). The HTMT matrix correlation is used to evaluate constructs that do not have a high correlation between latent variables. This indicates that the measurement results are more accurate and reliable, confirming a higher level of discriminant validity. Meanwhile, the Fornell-Larcker criterion compares the, correlation of latent constructs with the AVE value. This should have a greater value than the correlation with other latent constructs. The cutoff factor loadings are higher than 0.7. This value must exceed the values of all the other loadings.

The model exhibits discriminant validity, as evidenced by the higher AVE square root values on the diagonal compared to the off-diagonal constructs (Table 2). The HTMT values were manually distinguished between pairs of latent variables. Those pairs were discriminant valid and those pairs were not. Furthermore, these values indicate distinct constructs that do not overlap with the measured underlying construct. This confirms a higher level of discriminant validity. The construct measures in the model are more closely related to their respective variables than to other variables, indicating a high level of discriminant validity. The absence of multicollinearity between variables was determined using the recommended VIF value, with a threshold of 5.0. The collinearity statistics (VIP) values for the outer and inner models have met the required standards, indicating that the factors are independent of each and have validity and reliability.

Table 2. The heterotrait-monotrait ratio (HTMT) matrix

	C	CSS	PH	RI	SG	SL
C	-					
CSS	0.704	-				
PH	0.831	0.742	-			
RI	0.868	0.890	0.823	-		
SG	0.900	0.704	0.855	0.797	-	
SL	0.861	0.874	0.730	0.825	0.875	-

## Hypothesis testing

As shown in Fig. 2, the proposed model showed substantial explanatory power for CS (0.634) and logistics RI (0.589). PLS-SEM algorithm setting by initial weight; maximal number of iterations; stop criterion, weighted scheme is 1; 3000;  $10^{-7}$ ; path. The algorithm stopping criterion at the eight iteration is presented by changing 16 items. CSS is a significant mediator within the chance agents's RI relationship. Figure 3 illustrates a path model between CSS and re-use intention KKN ICD, where the explanatory power values indicate R2 values of 0.634 and 0.589. The testing used a significance level or p-value of  $\alpha \leq 5\%$  or 1%. Table 3 explains the direct hypotheses C, PH, SG, and SL, p-value, and T-test. CSS plays a significant and positive mediating role in the relationships among C, PH, SG, and SL.

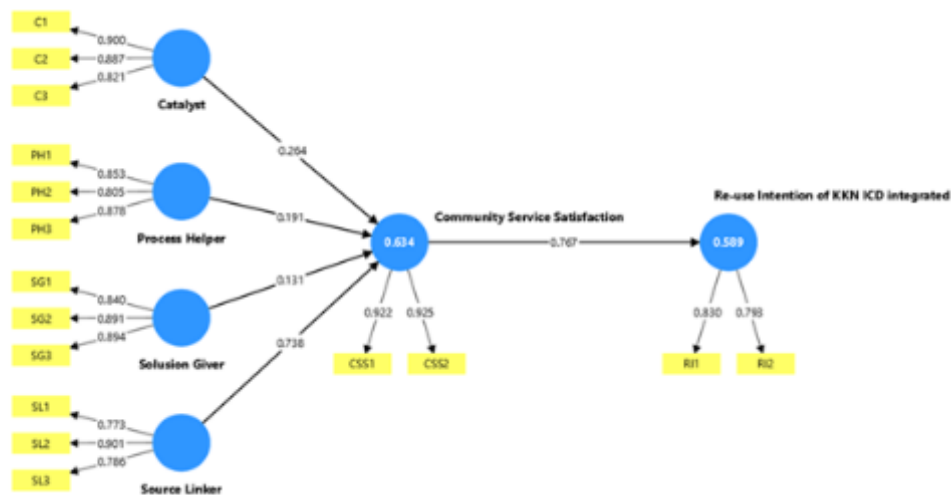


Figure 4. Path model of re-use intention KKN caption design integration

All latent variables (i.e., constructs) are significantly related to the CSS. This is proven by the p-value and T-statistic for each construct, where the p-value is  $\leq 5\%$  or 1% with a value greater than 1.96 and less than 0.05. The results show that H1-H5 indicate that R2 is 0.635, meaning that C, PH, SG, and SL explain 63.4% of the variance in CS. Meanwhile, the mediation hypotheses (HM1-HM4) with bootstrapping applied to the indirect effect have proven that CSS mediates the relationship between C, PH, SG, SL, and re-use intention KKN ICD, and explains 58.9% of the variance in RI KKN ICD.

Table 3. Hypothesis testing

Hypothesis	Relationship	Path Coefficient	t value <sup>a)</sup> (t-statistic)	p-value <sup>b)</sup> (v-value) (b)	R <sup>2</sup>	Decision
H1	C → CSS	0.264	2.330	0.00	0.634	Accepted
H2	PH → CSS	0.191	2.765	0.00		Accepted
H3	SG → CSS	0.131	2.624	0.00		Accepted
H4	SL → CSS	0.738	4.679	0.00		Accepted
H5	CSS → RI	0.767	2.113	0.00	0.589	Accepted
HM1	C → CSS → RI	-	7.117	0.00		Accepted
HM2	PH → CSS → RI	-	6.549	0.00		Accepted
HM3	SG → CSS → RI	-	6.421	0.00		Accepted
HM4	SL → CSS → RI	-	10.463	0.00		Accepted

<sup>a</sup> Significant ( $t > 1.96$ )

<sup>b</sup> Significant ( $p < 0.05$ )

These findings indicate that students have met four standards as agents of change: catalyst 16%; process helper 20%; solution giver 50%; and sources linker, 14%. SL is the dominant role of students as agents of change. The roles of students as agents of change include: (i) catalyst, raising public awareness and enthusiasm to change and develop for the better; (ii) process helper, accompanying the community in the process of self-organization and decision-making; (iii) solution giver; and (iv) sources linker, connecting the community with external resources such as funds, training, technology, or markets. Through mediation analysis, to test hypotheses HM1, HM2, HM3, and HM4 and CSS, and mediate the impact on RI KKN. All mediation relationships have a positive and significant indirect effect on RI, so CSS shows an increase in community satisfaction in continuing and repeating the KKN program based on PPM.

Table 4. KPI for assessing student success as agent of change

Key Performance Indicators	Metrics	Agent of change			
		Catalyst (C)	Process Helper (PH)	Solution Giver (SG)	Sources linker (SL)
Product Diversification	Supply Chain and Distribution			▪	
	Selection suppliers				▪
Community strengthening	Process operation and quality (resources)	▪			
	Improving knowledge and a modern mindset	▪			
	Increasing literacy, profit, and marketing		▪		
Institutional strengthening	Becoming a model village and becoming economically independent	▪			
	Creating the HPP application		▪		
	Forming a village profile and managing marketing institutions and websites		▪		
	Product Marketing models				▪
	Partnering with MSME banks (financing, etc.)				▪
TTG operation	Developing shredding machines, and drying ovens			▪	
Miniplant	Miniplant design			▪	

## Conclusion

The KKN PPM model, which utilizes the role of an agent of change for students, has achieved the target of community empowerment activities based on scientific concepts (including engineering, strategy management, and sociology approaches). SEM can complete the community empowerment model by increasing community satisfaction with sustainable KKN PPM programs, particularly in the solution-giver dimension. Based on this study's findings, SL is the dominant rules of students as agents of change, accounting for 50%, followed by PH (20%), C (16%), and SL (14%). This strategy focuses on improving

student performance while also serving as an agent of development, integrating three principles: (1) community development, (2) community education, and (3) community service.

Even though this community service program has not been widely implemented in KKN, the process of measuring and explaining it to the community has approached the study applied by [27], RI is used to measure consumer behavior in marketing studies. RI is a major approach for benchmarking customer behavior in marketing studies. The same applies to studies that measure satisfaction in logistics, such as satisfaction with logistics service quality in retail (Puspitorini et al., 2025), sustainable consumption in retail stores (Lin; et al., 2022), and consumers' willingness to pay for halal logistics (Ag Majid et al., 2021).

In additional, this success target was met, some limitations and challenges were mainly in the implementation timing and the BoK, which has 14 topics in the field of industrial engineering. Meanwhile, the challenges faced are related to society's mindset toward technology, which may require increasing the value added of the necessary resources. The impact of this program is beneficial to the community, as evidenced by the four key performance indicators (KPIs), namely product diversification, community and institutional strengthening, and the ability to design a miniplant. Additionally, a more sociological approach integrated with governance, linked to the village's resource potential, is necessary.

## Acknowledgment

The author would like to express gratitude to the KKN-PPM students and the Jembul village community for their contributions to the project's evaluation activities.

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