

EVALUATING THE IMPACT OF *MERDEKA BELAJAR KAMPUS MERDEKA* (MBKM) PROGRAM ON ENGINEERING GRADUATE LEARNING OUTCOMES USING SEM-PLS

Wawan Gunawan^{1a*}, Farid Ma'ruf², E. Syarifudin³, Rijal Firdaos⁴

¹Graduate Program, Program Studies Islamic Education Management, Faculty Science Education and Teaching

²University Sultan Maulana Hasanudin State Islamic University, Banten

^aE-mail: gunawanwg1969@gmail.com

(*) Corresponding Author

233625204.wawan@uinbanten.ac.id

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ABSTRACT

The quality of higher education graduates is primarily assessed through Graduate Learning Outcomes (CPL), which are aligned with the Indonesian National Qualification Framework (KKNI). To enhance educational quality, the Indonesian government implemented the *Merdeka Belajar Kampus Merdeka* (MBKM) program, which encompasses eight distinct activities. This study focuses on four specific MBKM activities internships, humanitarian projects, entrepreneurship, and student exchanges and investigates their influence on the CPL of engineering students. This research employs a quantitative descriptive design to analyze the impact of the aforementioned activities on CPL within engineering faculties in Banten Province. Data were collected from 50 respondents and analyzed using the Structural Equation Modeling-Partial Least Squares (SEM-PLS) approach. The results demonstrate a robust model with an R^2 value of 0.948. This indicates that internships, humanitarian projects, entrepreneurship, and student exchanges collectively exert a significant influence on CPL, accounting for 94.8% of the variance. The remaining 1.6% of the variance is attributed to external factors beyond the scope of this study. The findings underscore the pivotal role of MBKM activities in shaping professional competencies among engineering graduates. The high predictive power of the model confirms that integrating experiential learning, specifically through these four pillars, is essential for achieving institutional learning outcomes. Future research should explore additional variables to account for the residual variance and further optimize the MBKM implementation framework.

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INTRODUCTION

Universities, as higher education institutions, are required to continuously innovate and improve the quality of their graduates to compete globally. Graduate quality is measured through Graduate Learning Outcomes (CPL), which have been formulated in the Indonesian National Qualifications Framework (KKNI). As a strategic initiative, the Indonesian government launched the Independent Learning and Independent Campus (MBKM) policy to improve the quality of higher education by providing space for student self-development outside of regular lecture activities. Achieving maximum CPL is a primary learning objective because it is crucial to ensure graduate competencies remain relevant to the demands and dynamics of the professional world. This program facilitates student self-development outside of regular lecture activities, such as internships, research, and entrepreneurship. This program encourages students to engage in various activities such as internships, humanitarian projects, entrepreneurship, and research. The MBKM policy provides flexibility in the number of new student admissions and the addition of study programs at certain campuses. The Ministry of Education and Culture explains that "the meaning of Independent Campus is a more independent university." "This Independent Campus is part of a series of Ministry of Education and Culture policies with the main theme of Independent Learning (Kusumawardani et al., 2024). The Independent Campus itself aims to create a learning culture that is innovative, non-limiting, and tailored to the needs of each university." This information was conveyed by the Minister of Education and Culture on January 24, 2020, at the launch of the Independent Campus policy (Direktorat Dikti, 2020). As for further details regarding the implementation of MBKM, Regulation of the Minister of Education and Culture Number 3 of 2020 Article 15 paragraph 1 explains that learning activities can be carried out both within the Study Program environment and outside the campus, which are summarized in 8 forms of activities. Details of the eight activities are shown in the following figure.



Figure 1. Eight Activities in the MBKM Program

Source: (Kusumawardani et al., 2024)

As for Learning Outcomes (description of learning outcomes), with competencies as an integrated component in it or part of the learning outcomes (CP). Regarding this, Regulation of the Minister of Education and Culture Number 3 of 2020 concerning National Standards for Higher Education (SN-DIKTI) Article 5 paragraph (1) provides an understanding of Graduate Competency Standards (SKL). SKL is stated as the minimum criteria for qualifying graduate abilities which include attitudes, knowledge, and skills, and its formulation is stated in Graduate Learning Outcomes (CP) (Junidi, 2020). Therefore, achieving maximum CP is the main learning objective in higher education. CP plays an important role because the nature of learning at this level is to improve student competencies so that they are relevant and useful after graduation. Improving CP

is a major task carried out by universities in Indonesia, considering that one of their main responsibilities is to ensure that their graduates have CP that is in accordance with the competency demands of the world of work (Hastuti et al., 2022).

Previous Research Findings on MBKM Implementation Several previous studies have shown that the implementation of MBKM as a collaborative learning method has proven effective in developing student competencies and skills in various fields. This program is designed to strengthen both hard and soft skills, thus enabling students to become more independent, adaptive, and possess superior character. In addition, previous studies have shown that MBKM can improve the quality of lecturers through off-campus teaching experiences and knowledge exchange with industry practitioners. However, other studies have also noted various obstacles, such as increased lecturer workloads for student supervision and program administration, which have the potential to impact performance if not managed properly. Based on several research results on the implementation of MBKM, the results obtained include the opinion of Achmad Mudrikah et al., who stated that the implementation of the MBKM program as a collaborative learning method in higher education has proven effective in developing student competencies and skills in various fields. In accordance with its objectives, MBKM is designed to strengthen students' hard and soft skills to be more independent, adaptive, and become a progressive, superior, and character-based generation. Furthermore, this program also improves the quality of lecturers through off-campus learning activities and knowledge exchange with industry practitioners, ultimately enriching the course material for students (Mudrikah et al., 2022). It should be noted that the obstacles that arise in the MBKM Program are heterogeneous, influenced by the specific learning activities carried out by each Higher Education Institution, study program, lecturer, and student. Therefore, a comprehensive identification of these obstacles is crucial as a basis for evaluation to improve the implementation of the MBKM program (Bhakti et al., 2022).

Although various benefits of MBKM have been identified, research that thoroughly analyzes the direct and indirect impacts of MBKM program implementation on Graduate Learning Outcomes (CPL) remains relatively limited. There is a research gap in understanding the dynamics in the field, particularly regarding how specific activities, such as internships, humanitarian projects, entrepreneurship, and student exchanges, concurrently influence graduate competency achievement. Therefore, further studies are needed to fill this information gap to provide a comprehensive evaluation basis for improving the quality of MBKM policy implementation in the future. The implementation of MBKM has the potential to create a dilemma for lecturers, who are faced with the expectation of high-quality service to students amidst limited time and resources (Usanto, 2022).

METHOD

This study applies a quantitative approach, using a questionnaire as its primary instrument. Data analysis was performed using the Structural Equation Modeling Partial Least Square (SEM-PLS) method. SEM-PLS was chosen because this research addresses the field of educational management with a limited sample size and the possibility of non-normal data distribution; therefore, using a regression equation under the Best Linear Unbiased Estimate (BLUE) assumption was avoided. In addition, SEM-PLS is considered appropriate due to its capacity to predict and explain latent variables in the context of theory testing, as well as to examine the simultaneous effects of multiple variables on the dependent variable. The research process comprises three key stages. The first stage is identification, which involves conducting a literature review and field observations, followed by problem formulation, goal setting, selection of analytical methods, and preparation of research instruments. The second stage centers on data collection and processing. Data collection was conducted by obtaining primary data through the distribution of questionnaires, beginning with at least 30 respondents for instrument development, and then expanding to 50 active lecturers from engineering faculties in Banten who participate in the MBKM program, with a minimum sample ratio of 10:1 for the most questions (Jhantasana, 2023). With the largest number of question indicators, namely 4, the minimum sample size recommended for this study is 40 respondents, following the 10:1 ratio guideline. The study successfully gathered questionnaire data from 50 active lecturers in the engineering faculty in the Province of Banten who are involved in the MBKM program at their respective institutions (Yamin, 2023). Secondary data were obtained from sources such as institutional campus records, prior scientific publications, and online resources. The final stage is data processing, which is conducted after all respondent data have been collected and compiled, including work location and

position in the implementation of MBKM. The data analysis procedure includes two main steps; First data processing for testing the instrument's feasibility includes: (a) Validity testing, which aims to assess the appropriateness of each question item in the research questionnaire in relation to the variables being measured; the outcomes are then used to determine the item's validity status. (b) Reliability testing, which is conducted to determine the degree of consistency of the data obtained during the research process.

Second, The Cronbach Alpha coefficient is applied to evaluate the instrument's reliability (Vol et al., 2021). Data Processing: SEM-PLS (Structural Equation Modeling-Partial Least Square) is a statistical analysis approach designed to test models that specify linear relationships among latent variables, meaning abstract variables that cannot be measured directly. Model evaluation comprises two components: a) Outer Model Evaluation (Measurement Model): At this stage, validity and reliability of the measurement indicators are assessed, which is essential. The assessment covers three dimensions: Convergent validity (with a standard factor loading value of >0.7), Discriminant validity (where the cross-loading value must be lower than the factor loading), and Internal Consistency (shown by the composite reliability value and the Cronbach Alpha coefficient, both of which must exceed 0.7 (Ketchen, 2013)). b) Structural Model Evaluation (Inner Model): The main objective of this evaluation is to predict the relationships among latent variables using the relevant theoretical framework. Key indicators include R-square (to describe the explained variance of endogenous variables), the path coefficient statistic value (to test the significance of the relationship), Discontinuity Coefficient (R^2), the magnitude of the path coefficient, T-Statistic, Predictive Relevance (Q^2), and the size of the F-square effect (Mardiana & Faqih, 2019). Analysis and Conclusion Stage: This stage aims to analyze the results of the data processing in order to determine how the variables of internship activities, Humanitarian Projects, Entrepreneurship, and Student Exchange influence CPL. Based on the analysis, conclusions will be formulated to address the research problem's research question.

RESULT AND DISCUSSION

Results

Data from the results of the questionnaire instrument from the instrument trial showed that the variables Internship, Humanitarian Project, Entrepreneurship, Student Exchange (4 statements each), and 6 statements of Graduate Learning Outcomes (CPL) were analyzed for validity and reliability. The passing criteria were a calculated r value greater than the table r value for validity, and a Cronbach Alpha value above 0.6 for reliability. Items that met both criteria were then used in a questionnaire given to respondents whose characteristics had been determined. The data collected from the questionnaire (consisting of 30 items) were then used to form the main SEM-PLS model. Evaluation of the measurement model (*Outer Model*) was carried out based on the model in Figure 1, continued by running the PLS algorithm to assess Convergent Validity, an outer loading analysis was carried out which produced Cronbach Alpha, Composite Reliability, and Average Variance Extracted (AVE) values. To obtain these values, an *outer loading* analysis was carried out to assess *Convergent Validity* (Table 1). Items that had an *outer loading* value below 0.7 were removed (Table 2). The results of the analysis show that the *outer loading* for each latent variable (Internship, Humanitarian Project, Entrepreneurship, Student Exchange, and CPL) has exceeded 0.7, which indicates that the model has met the *Convergent Validity criteria*. The next stage in evaluating the measurement model is to assess *Discriminant Validity* by analyzing the cross-loading value.

Table 1. Sign External Loading

	APPRENTICESHIP	HUMANITARIAN PROJECT	ENTREPRENEURSHIP	STUDENT EXCHANGE	CPL
A1	0.7668146	-	-	-	-
A2	0.8284435	-	-	-	-
A3	0.8327052	-	-	-	-
A4	0.8555191	-	-	-	-
B4	-	0.7185522	-	-	-



	APPRENTICESHIP	HUMANITARIAN PROJECT	ENTREPRENEURSHIP	STUDENT EXCHANGE	CPL
B2	-	0.7396864	-	-	-
B1	-	0.8595958	-	-	-
B3	-	0.8874952	-	-	-
C1	-	-	0.7905553	-	-
C2	-	-	0.7094013	-	-
C3	-	-	0.7751947	-	-
C4	-	-	0.8154716	-	-
D1	-	-	-	0.7258705	-
D2	-	-	-	0.9676129	-
D4	-	-	-	0.9658565	-
F2	-	-	-	-	0.8505807
F3	-	-	-	-	0.7916333
F4	-	-	-	-	0.8996830
F5	-	-	-	-	0.8831230

Source: Processed Main Data, 2025

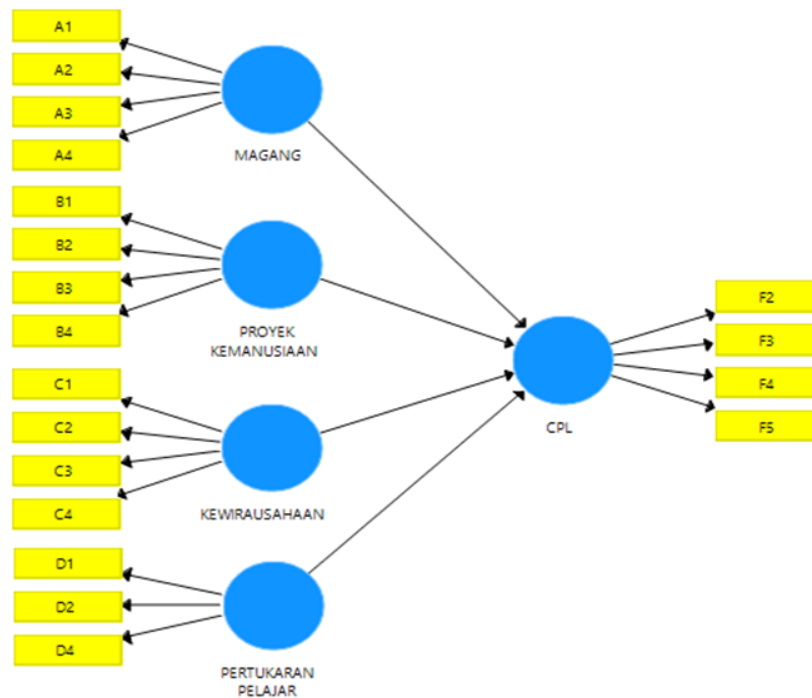
Table 2. Build Validity and Reliability

Variables	Alpha Cronbach	Composite Reliability	TRACK
CPL	0.879	0.917	0.735
Entrepreneurship	0.776	0.856	0.599
Apprenticeship	0.840	0.892	0.675
Student Exchange	0.867	0.921	0.799
Humanitarian Project	0.820	0.879	0.648

The values presented in Table 2. confirm that the main research model has met the required threshold. This is evidenced by the Cronbach Alpha value of more than 0.7 for each latent variable, the Composite Reliability value which is also above 0.7, and the Average Variance Extracted (AVE) value which exceeds 0.5 (as recommended in Management, 2015). Thus, it can be stated that the main model has met the specified requirements.

Table 3. Results T – Statistics

Hypothesis	Original Sample (O)	Mean (M)	Standard Deviation (STDEV)	T Statistics O/STDE	P Values
CPL ENTREPRENEURSHIP→	-0.2663324	-0.2559040	0.0780687	3.4115120	0.0006984
CPL INTERNSHIP→	0.5719807	0.5656178	0.0753240	7.5936025	0.0000000
CPL STUDENT EXCHANGE→	0.1461719	-0.1216094	0.1054252	1.3864985	0.1662126
CPL HUMANITARIAN PROJECT→	0.7702474	0.7506624	0.1247797	6.1728562	0.0000000



Picture 1. SEM Model - PLS

Based on the data in Table 4, it can be interpreted that the internship variable has a high influence on CPL, indicated by an f-square value of 1.084. On the other hand, the Humanitarian Project variable also has a high influence on CPL, with an f-square value of 0.961. The same thing also applies to the entrepreneurship variable on CPL, which has an f-square value of 0.494 and is categorized as high. Meanwhile, the Student Exchange variable shows an interpretation of a low influence on CPL indicated by an f-square value of 0.04.

Table 4. F-Square Value

NO.	Connection	f value ²	Information
1.	Internship vs CPL	1,084	Tall
2.	Humanitarian Project Towards CPL	0.961	Tall
3.	Entrepreneurship towards CPL	0.494	Tall
4.	Student Exchange to CPL	0.040	Low

Testing Hypothesis finished with use method *bootstrap*. Evaluation of the internal model (structural model) produces r-squared values, parameter coefficients, and t-statistics which are then used to test the research hypothesis (Gunawan et al., 2022). To determine the status of the hypothesis (accepted or rejected), this study refers to the significance value between constructs, t-statistics, and p-value. This hypothesis testing process is facilitated by Smart-PLS 4.0 software. Information about these values can be found in the bootstrapping output (Ketchen, 2013). In this study, the criteria for supporting the

hypothesis are t-statistics exceeding 1.96 with a significance level below 0.05 (or 5%), and a positive beta coefficient. Table 5 presents a summary of the results of the hypothesis testing obtained through Smart -PLS.

Table 5. Hypothesis Testing Recapitulation

	Hypothesis	Results	Information
H1	Internships have a positive impact on CPL	Coef. Beta = 0, 572 T-Statistic = 7,594 P Value = 0.00 0	Accepted
H2	Impactful Humanitarian Projects positive for CPL	Coeff. Beta = 0, 770 T-Statistic = 6.173 P value = 0.000	Accepted
H3	Entrepreneurship has a significant impact positive to CPL	Coef. Beta = - 0.2 6 6 T- Statistics = 3.412 P – Mark = 0.0001	Accepted
H4	Influential Student Exchange positive to CPL	Coef. Beta = - 0.146 T- statistic = 1.386 P value = 1,662 people	Rejected

Discussion

Influence Internship vs. CPL

Based on Table 5, the exogenous construct of internship has positive and significant influence on CPL. This is indicated by the path coefficient value $\mu = 0.572$, the t-statistic value of 7.594 (greater than 1.96), and the p-value of 0.000 (smaller than 0.05). Thus, the hypothesis stating that internships have a positive and significant effect on CPL is proven. Specifically, the first hypothesis of this study stating that internships have a significant positive effect on CPL (t-statistic = 7.572, p-value = 0.000) is supported by the data. In conclusion, the exogenous variable of internships has a significant positive effect on CPL in this study.

The results of this study indicate that there is a positive influence between internships and CPL, It means more and more often and for a long time doing internships by student So will increase CPL on campus. The results of this study support the expected achievements of the implementation of the MBKM program and affect CPL. Internship This Can The implementation of cooperation between universities, agencies and companies is carried out continuously and mutually beneficial.

Influence Humanitarian Project to CPL

The exogenous construct of Humanitarian Projects is also proven to have a positive influence on CPL, with a path coefficient of $\mu = 0.770$. The significance of this influence is supported by the t-statistic value of 6.173, which is greater than the threshold of 1.96. Thus, this study confirms that humanitarian projects have a positive and significant effect on CPL. In particular, the second hypothesis of this study, which states that Humanitarian Projects have a significant positive effect on CPL (with a t-statistic value of 6.173 > 1.96 and a p-value of 0.00 < 0.05), is supported by the analysis data. Consequently, it can be stated that the exogenous variable of Humanitarian Projects has a significant positive effect on CPL in the context of this study.

From results Study This humanitarian project own influence positive and again big its influence compared to the variables This is supported by factors that influence humanitarian projects, namely the application of science to solve problems in society. Thus, humanitarian projects in Banten Province are quite high to solve problems in society.

Influence Entrepreneurship to CPL

The exogenous construct of Entrepreneurship shows a negative path coefficient of $\mu = -0.266$. However, its influence is significant because the t-statistic value of 3.412 exceeds 1.96. Based on these results, it can be concluded that

entrepreneurship has a negative and significant effect on CPL. The third hypothesis of the study stating that Entrepreneurship has a significant negative effect on CPL (t-statistic = 3.412 > 1.96 and p-value = 0.001 < 0.005) is proven. Thus, the exogenous variable Entrepreneurship has a significant negative effect on CPL in this study.

Based on the results of this study, there is a negative influence in Entrepreneurship on students' CPL. The opposite condition is when entrepreneurial activity increases, graduate learning achievement decreases or vice versa. Currently, lecturers and structural officials on campus still have views related to entrepreneurship, including so that after graduating, students can open their own businesses without having to worry about the connection with CPL.

Influence Student exchange to CPL

The exogenous construct of Student Exchange shows a positive path coefficient of $\mu = 0.146$. However, the influence is not statistically significant because the t-statistic value is 1.386 which is below the critical value of 1.96. Thus, it can be stated that Student Exchange does not have a positive and significant influence on CPL in the context of this study. The fourth hypothesis stating that Student Exchange has a positive influence on CPL (with a t-statistic value of 1.386 < 1.96 and a p-value of 0.00 < 0.005) is not supported by the data and is rejected. Thus, the exogenous variable of Student Exchange is not proven to have a significant positive influence on CPL.

Based on the results of this study, there is no positive influence of Student Exchange on CPL. Currently, the campus is still actively encouraging students to do student exchange. However, exploring experiences at other campuses must be able to encourage graduate learning outcomes to be more noticed.

Based on the results of this study, several suggestions can be conveyed to higher education institutions and subsequent researchers. For universities and the Directorate General of Higher Education, institutions must actively enhance support for internship activities and humanitarian projects given that lecturers and MBKM activists within engineering faculties have experienced the positive impact of these initiatives, necessitating greater convenience and essential facilities. Conversely, entrepreneurship and student exchange programs require a thorough re-evaluation due to their negative direction and insignificant influence on student outcomes in this study. For further research, future investigators are expected to expand the scope by identifying additional variables, applying different analysis methods such as factor analysis or regression, and utilizing a more comprehensive research scale.

CONCLUSION

Based on the discussion results, several conclusions can be drawn regarding the impact of Kampus Merdeka programs on the Graduate Learning Outcomes (CPL) of engineering students in Banten Province. Internship activities have a positive and significant influence on CPL, indicating that the quality of these programs needs to be continuously improved to further benefit engineering students in the region. Similarly, humanitarian projects demonstrate a positive and significant impact, proving appropriate for enhancing learning outcomes while providing valuable support to the surrounding community.

In contrast, while entrepreneurship exhibits a significant influence on CPL, its direction is negative, suggesting that current entrepreneurial activities require re-evaluation to ensure they positively contribute to learning outcomes. Furthermore, student exchange programs do not show a positive and significant effect on CPL and are thus rejected as an influential exogenous variable in this model, signaling a critical need for program evaluation. Overall, the R-square test conducted using Smart-PLS 4.0 yielded a value of 0.948, indicating that internship activities, humanitarian projects, entrepreneurship, and student exchange collectively account for 94.8% of the variance in CPL, with the remaining percentage influenced by variables outside the scope of this study.

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