

Statistical Analysis with Moment Products with a Quantitative Descriptive Approach for Competence in MBKM Implementation

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Abstract: The study used a quantitative descriptive approach. The results showed that the CSI value obtained through the analysis was 75.67% for the level of student satisfaction, 81.75% for the level of satisfaction of lecturers, 75.15% for the level of satisfaction of education personnel. Students consider that in implementing MBKM, the priority is the issue of funds and the completeness of learning instruments. Things that are considered necessary to be maintained because of their satisfactory performance are the study program services in providing human resources for course lecturers, mentors from partners, coordinator lecturers and guardian lecturers who are declared capable, responsive, accommodating, communicative, cooperative, helpful, in administering courses and guiding problem solving. The HR Hospitality of academic staff also supports the satisfaction of the MBKM implementation so as to encourage the high interest of students to take MBKM courses in the internship program. Lecturers, staff and students agreed that the socialization and information about MBKM learning had been carried out properly so that it was considered not a priority, besides the three parties argued that the lecturers were in accordance with their competencies and the work environment and infrastructure were in accordance with the needs.

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1. Introduction

The new paradigm of Kemenristek Dikbud through Merdeka Learning and Merdeka Campus is oriented to improve the quality of student learning. Through the MBKM concept, students are given the right to study off-campus equivalent to 60 credits (for three semesters) outside the study program through Internship programs, Village Projects, Campus Teaching, Student Exchange, Research, Entrepreneurship, Independent Projects and Humanitarian Projects. In connection with the program, the Civil Engineering Undergraduate Study Program, Faculty of Civil Engineering and Planning in 2021 will receive MBKM implementation grants through internship programs, student exchanges and independent studies. The MBKM program scheme is planned for a period of three years to achieve the Key Performance Indicators, in 2021 the civil engineering study program will carry out an Internship program in the construction industry[1].

The scheme for the implementation of the three programs mentioned above is based on the concept that by participating in an Internship in the construction industry, students are given an in-depth study related to the ability to solve real problems in the world of work (company/industry). After having internship experience for 1 semester, students can continue to independent project activities. While the student exchange program is more aimed at gaining superior knowledge at other universities or because the study program has not or does not have competence [2]. The internship program is held in collaboration between the Trisakti University Civil Engineering Study Program and state-owned partners PT Waskita Karya Tbk, PT Angkasa Pura-1, PT Semen Indonesia and PT. Adhi Karya Tbk. For six months following the internship, students are guided by lecturers and supervisors from partners. The objectives of the Internship are 1) to gain theoretical knowledge from the subject lecturers; and 2) get practical knowledge from a mentor from a Partner.

The implementation of the MBKM program at FTSP was the first time, therefore a number of problems were encountered, including: 1) synchronization of the learning system at the university itself with the LMS Spada; 2) curriculum synchronization with supervisor's time management from partner side; 3) the running of the project where student internships are not in accordance with the academic schedule and types of learning in the curriculum. With this issue, it is necessary to evaluate so that the continuation of the acquisition of the MBKM grant scheme for the next two years can be carried out properly.

Internships are practice-based learning in the field or on a project. The advantages and disadvantages of project-based learning have been identified through several previous studies. The advantage of project-based learning is that students can freely explore knowledge, are more open and varied [3]. Through project-based learning one can improve 1) the ability to categorize the importance of the type of work, 2) the ability to solve complex problems, 3) the ability to be active, collaboration, communication skills, 4) resource management skills; 5) references to learning experiences and project organization practices, time and resource management, retrieval of information according to their knowledge, doing work with pleasure.

Other findings from previous research are as follows: 1) Work readiness of students is significantly influenced by positive future orientation and competence of final year students [4]; 2) understanding of knowledge sharing (X) affects the achievement of students who carry out field experience practices [5]; 3) The effectiveness and efficiency of apprenticeship learning is achieved when using Website-based knowledge for students, supervisors, and internship managers [6]; Internship learning significantly affects student competency improvement [7]; 5) Through the internship process, students learn to be independent, communicate and express opinions according to their knowledge with the project owner, self-confidence, emotional/feeling control, improvisation and working in teams [8].

The weakness of project-based learning lies in the suitability of learning topics and student needs, the availability of learning facilities and materials which are often not in accordance with the syllabus set by the relevant educational institution [9]. Another weakness is that in project-based learning,

students need time to solve problems, require a lot of money, the time division of lecturers and field supervisors, students often find it difficult to capture the overall learning topic [10].

From the explanation above, the synchronization of management and substance between two parties (educational institutions and cooperation partners) is one of the problems in the implementation of project-based learning, in addition to the issue of substance. With the use of an online learning system (Learning Management System) the possibility of an information system being an obstacle, where field instructors are more comfortable with traditional classes [11].

The world of education as a service provider requires measuring the perception of stakeholder satisfaction (students, lecturers, education staff and partners from the Business World and the Industrial World) so that the level of success in education can be recognized [12]. Likewise in the implementation of the internship learning program. Service quality is the quality of activities carried out to meet consumer/customer expectations as an effort to defend themselves among competitors and achieve sustainable excellence. Measurement of service quality through the Service Quality Model (Servqual) can be measured from 5 dimensions, namely: 1) Physical evidence (Tangible), (2) Reliability, (3) Responsiveness, (4) Assurance, (5) Empathy (Empathy) [13]. The Importance Performance Analysis (IPA) method is used to measure the relationship between consumer perceptions and priorities for improving the quality of products/services which are mapped through quadrant analysis so that the gap between performance and expectations is known from the indicators set. In this study, the science method was used to map the priority level and performance of study programs in evaluating MBKM learning with the Internship program.

1. Research Methods

2.1 Data Collection Technique

The data in this study were collected using the following methods library research and field research. This literature study is a library research by studying and citing literature and theories related to this research. Data collection is done through a questionnaire/questionnaire where the questionnaire is a data collection technique that is done by giving a set of written questions to be answered by the respondents. This questionnaire was distributed directly to respondents, using the Google Form application.

2.2 Data Analysis

2.2.1 Data Validity Test

The data validity test aims to determine the extent of the validity of the data obtained from distributing questionnaires. To measure the validity of this test, the author uses the SPSS application by looking at the results from the Corrected Item-Total Correlation table. In this study, the instrument was arranged based on validity by developing indicators into questions into the instrument. The test criteria are if and or sig. < 0.05 which means the question is valid, otherwise if and/or the value of sig. > 0.05 means the question is not valid [14].

The method of testing the validity is by calculating the correlation between the scores of each question and the total score using the Product Moment correlation formula, as follows [15]:

$$r_{xy} = \frac{n \sum_{i=1}^n x_i y_i - \sum_{i=1}^n x_i \sum_{i=1}^n y_i}{\sqrt{n \sum_{i=1}^n x_i^2 - (\sum_{i=1}^n x_i)^2} \sqrt{n \sum_{i=1}^n y_i^2 - (\sum_{i=1}^n y_i)^2}}$$

2.2.2 Data Reliability Test

A questionnaire is said to be reliable or reliable if a person's answer to a question is constant or stable from time to time [16]. Reliability is a term used to indicate the extent to which a measurement result is relatively consistent if the measurement is repeated two or more times. Reliability is an index that

shows the extent to which a measuring instrument can be trusted or reliable [17]. In this study, the reliability test used the Cronbach's alpha method because the questions used a scale measurement. Here's the formula:

$$r_{11} = \left(\frac{k}{k-1} \right) \left(1 - \frac{\sum \sigma_b^2}{\sigma_1^2} \right)$$

Basis for making reliability test decisions:

- Cronbrach's alpha > 0,7 → Cronbrach's alpha acceptable (construct reliable)
- Cronbrach's alpha < 0,7 → Cronbrach's alpha poor acceptable (construct unreliable)

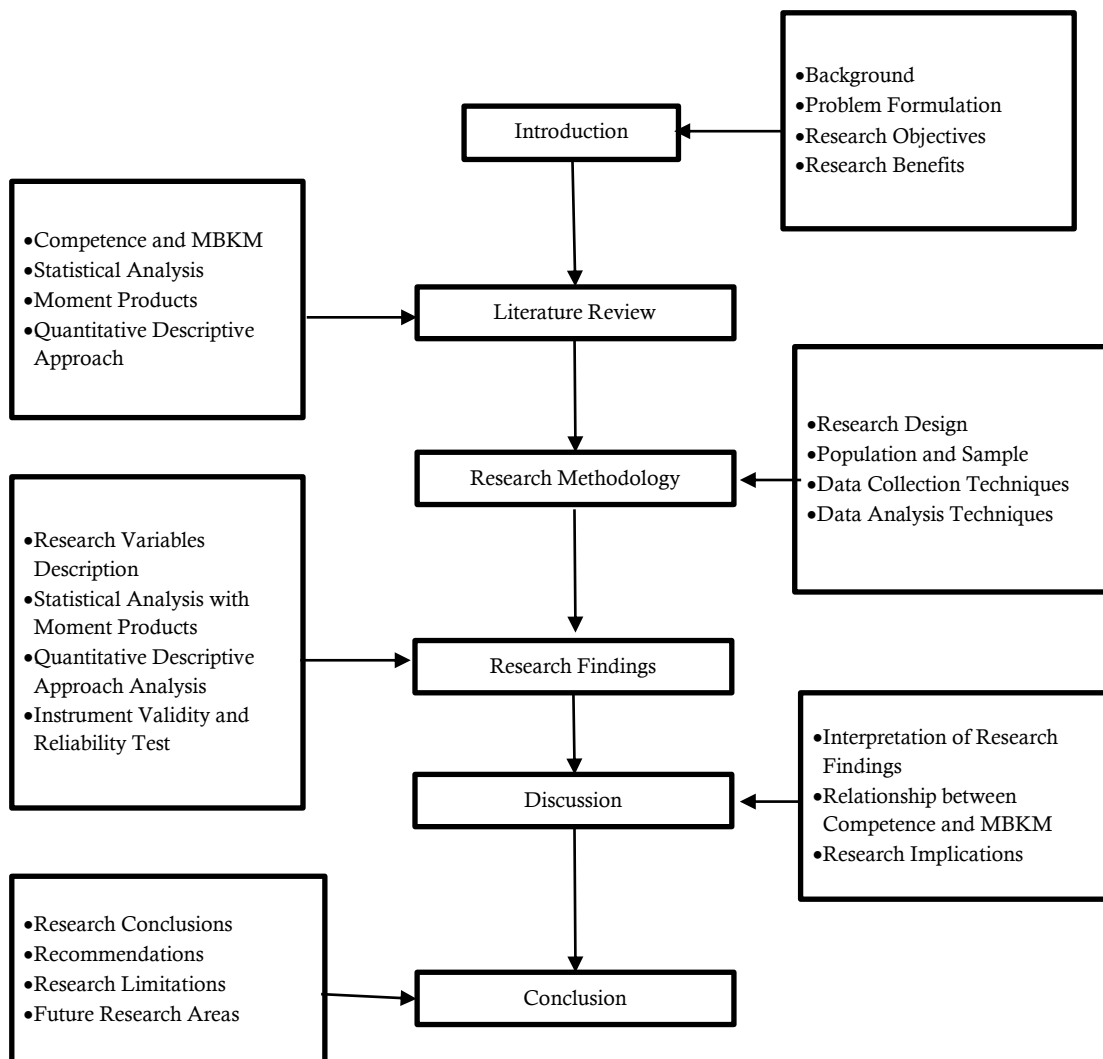


Figure 1. Research flowchart

3. Results and Discussion

3.1 Student

Validity testing was conducted using IBM SPSS software version 22 based on survey results from 73 samples. In order to determine item validity, r-count values were compared to r-table values, with an item considered valid if the former was greater than the latter. With a significance level of 5% and degrees of freedom of $df=71$ ($73-2$), it was determined that all items were valid as the r-count for each item was found to be greater than the r-table value of 0.2303. The results of the validity test are presented below.

Table 1. Questionnaire validity test results for students

No	Variable	Indicator	Satisfaction		Hope	
			r count	Status	r count	Status
1	Tangibles Aspek Aspect (Educational Facilities and Infrastructure) Related to MBKM	B1	0.972	Valid	0.917	Valid
2		B2	0.970	Valid	0.910	Valid
3		C1	0.902	Valid	0.784	Valid
4		C2	0.806	Valid	0.738	Valid
5	Reliability Aspect (Reliability of lecturers, Academic Staff)	C3	0.872	Valid	0.866	Valid
6		C4	0.897	Valid	0.889	Valid
7		C5	0.837	Valid	0.806	Valid
8		C6	0.912	Valid	0.882	Valid
9		C7	0.919	Valid	0.850	Valid
10		D1	0.928	Valid	0.909	Valid
11		D2	0.946	Valid	0.934	Valid
12	Responsiveness Aspek (Responsive Attitude)	D3	0.923	Valid	0.942	Valid
13		E1	0.948	Valid	0.889	Valid
14		E2	0.939	Valid	0.943	Valid
15		E3	0.916	Valid	0.908	Valid
16		E4	0.868	Valid	0.768	Valid
17	Assurance Aspect (Treatment of students)	E5	0.916	Valid	0.895	Valid
18		F1	0.944	Valid	0.899	Valid
19		F2	0.918	Valid	0.877	Valid
20		F3	0.928	Valid	0.923	Valid
21		F4	0.947	Valid	0.941	Valid
22		F5	0.901	Valid	0.915	Valid
23		F6	0.956	Valid	0.912	Valid
24	Empathy Aspect (Understanding the Student's Interests)	F7	0.923	Valid	0.913	Valid
25		G1	0.929	Valid	0.880	Valid
26		G2	0.971	Valid	0.947	Valid
27		G3	0.969	Valid	0.912	Valid
28	Information System Aspect (Student Information System)	G4	0.915	Valid	0.900	Valid

To determine the reliability of the items, Cronbach's alpha (α) value was examined in the SPSS output. A value of 0.70 or higher indicates that the item is reliable. The following results represent the output of the reliability test, using IBM SPSS version 22 software.

Table 2. Questionnaire reliability test results for students

No	Variable	Satisfaction		Hope		N of Items
		<i>Cronbach's Alpha</i>	Status	<i>Cronbach's Alpha</i>	Status	
1	Tangibles Aspect (Educational Facilities and Infrastructure) Related to MBKM Activities	0.8008	reliable	0.9395	reliable	2
2	Reliability Aspect (Reliability of lecturers, Academic Staff)	0.9252	reliable	0.9496	reliable	7
3	Responsiveness Aspect	0.9199	reliable	0.9242	reliable	3
4	Assurance Aspect (Treatment of students)	0.9262	reliable	0.9514	reliable	5
5	Empathy Aspect (Understanding the Student's Interests)	0.9658	reliable	0.9740	reliable	7
6	Information System Aspect (Student Information System)	0.9293	reliable	0.9604	reliable	4

Based on the table data above, it can be determined that the variables in this questionnaire have a Cronbach's Alpha value of 0.70, indicating that all variables are reliable. With policy formulation being prioritized in quadrant 1, which denotes statements that are highly valued by students but are not aligned with expectations in reality, effective policies are needed to bridge the gap between student expectations and the actual performance of civil engineering study programs [18].

According to student assessments, the C3 indicator, which pertains to the provision of teaching materials for completing lecture material, falls short of expectations due to limitations in the scope of project work and the preparedness of partners to carry out the internship curriculum. The limited scope of project work is attributed to task givers who divide the work into smaller, more specific packages, resulting in MBKM's contractor partners only completing a portion of the project work in order to remain price competitive. Additionally, the scope of work does not include five objects that must be studied, namely building structure, water, transportation, geotechnical, and construction management [19].

The limited preparedness of partners to implement the internship curriculum can be attributed to some project documents being confidential and in the interest of the company, which makes it difficult for apprentice supervisors to share the required information. As for the E5 indicator, which relates to funds that are disbursed to MBKM participating students who represent Usakti in academic activities, it is reported that the indicator falls short of expectations because some activities cannot be identified, and the procedure for the type 3 self-management procurement system is not prepared. The pandemic conditions have led to unidentified activities, and as a result, students must provide their own personal protective equipment, rapid antigen tests, and accommodation during internships since MBKM partners do not offer such provisions [20].

Procurement of facilities and infrastructure supporting MBKM internships following the type 3 government procurement system self-managed government needs to form parties with special authorities such as Budget Authorization, Budget User Authorization, Commitment Making Officer, procurement officer and Treasurer so that it takes time for the MBKM team in the study program to understand and carry out their duties and authorities in accordance with applicable regulations. The procurement system based on the value of the work requires accurate tax calculations according to the type of tax imposed and is equipped with supporting documents for the procurement of complex goods and services so that it needs to be explored with LKPP and intensive coordination requires time to adjust the MBKM implementation team in the study program. The meaning of the F2 indicator

regarding socialization related to the amount of regular tuition fees and remedial courses related to MBKM has not met expectations because of the difference in the remaining credits of students who are selected to join this program and the differences in the LMS and SIS systems used in regular lectures [21].

The difference in student credits is caused by the fact that most of the students participating in this program are in semester 7 who are taking their Final Project and have above average grades. Some students have various remaining credits of less than 20 credits while internship recognition is counted as 20 credits so that each student has unequal credits remaining and there are several courses that have been taken by students in the last semester period.

1. Lecturer

Based on the survey results on 16 samples, validity test was conducted using IBM SPSS software version 22. An item is said to be valid if the value of r-count is greater than r-table ($r_count > r_table$). At the significance level =0.05 and with degrees of freedom $df=16-2=14$, it can be concluded that all items are declared valid. This is because the value of r-count for all items is greater than the value of $r_table = 0.4973$. Here are the results of the validity test.

Table 3. The results of the validity of the questionnaire for lecturers

No	Variable	Indicator	Satisfaction		Hope	
			r count	Status	r count	Status
1	B. Competency Development	B1	0.940	Valid	0.940	Valid
2		B2	0.894	Valid	0.908	Valid
3		B3	0.956	Valid	0.965	Valid
4	C. Learning	C1	0.913	Valid	0.906	Valid
5		C2	0.956	Valid	0.940	Valid
6		C3	0.969	Valid	0.823	Valid
7		D1	0.944	Valid	0.890	Valid
8	D. Research And Community Service	D2	0.944	Valid	0.928	Valid
9		D3	0.973	Valid	0.873	Valid
10		D4	0.932	Valid	0.858	Valid
11		D5	0.916	Valid	0.875	Valid
12		E1	0.974	Valid	0.952	Valid
13	E. Motivation and Job Appraisal	E2	0.984	Valid	0.926	Valid
14		E3	0.951	Valid	0.964	Valid
15		F1	0.855	Valid	0.972	Valid
16	F. Facility	F2	0.967	Valid	0.944	Valid
17		F3	0.950	Valid	0.905	Valid
18		F4	0.927	Valid	0.930	Valid

Furthermore, to see the reliability of the item, it can be seen from the value of Cronbach's alpha (α) on the SPSS output. If the Cronbach Alpha value 0.70, then the item is declared reliable. The following is the output of the reliability test using IBM SPSS version 22 software.

Table 4. Test results Reliability of the questionnaire for Lecturers

No	Variable	Satisfaction		Hope		N of Items
		Cronbach's Alpha	Status	Cronbach's Alpha	Status	
1	B. Competency Development	0.9215	reliable	0.9294	reliable	3
2	C. Learning	0.9395	reliable	0.8638	reliable	3
3	D. Research And Community Service	0.9654	reliable	0.9301	reliable	5
4	E. Motivation and Job Evaluation	0.9665	reliable	0.9417	reliable	3
5	F. Facility	0.9440	reliable	0.9541	reliable	4

From the data table above, it is known that the Cronbach's Alpha value for the variables in this questionnaire has a value of 0.70. Thus, all variables in this questionnaire are declared Reliable. Policy formulation is prioritized in quadrant 1, which means that it contains statements that are considered important by lecturers, but in reality these statements are not in line with expectations. Effective policies are useful for overcoming the gap between lecturers' expectations and the performance of civil engineering study programs [22].

The D3 indicator regarding the implementation of MBKM in the Civil Engineering Study Program has a positive impact on the implementation of Community Service (PKM) in Higher Education that has not been as expected because the MBKM internship program that is currently being implemented is the first batch so that it has not undergone a comprehensive evaluation and produced lesson learned outcomes. This research is expected to produce effective policies so that they can bridge the transfer of technology between MBKM partners and universities so that they can become research objects and be applied to future PKM programs. Thus in the future, a comprehensive evaluation is needed and produces learning outcomes [23].

The F2 indicator regarding the Civil Engineering Study Program has a proper place of worship, library, and polyclinic for the implementation of the MBKM not as expected because during the MBKM internship program the students are on the project and the lecturer in charge of the courses conducts online guidance via LMS, the duration of time is 70 % is used by students to study project base learning and 30% to learn theory so that proper use of places of worship, libraries and polyclinics in universities is not effective in supporting MBKM internship activities in projects. Thus, educational facilities must be adapted to the needs [24-25].

2. Education Personnel

Based on the survey results on 7 samples, validity test was conducted using IBM SPSS software version 22. An item is said to be valid if the value of r-count is greater than r-table ($r_{\text{count}} > r_{\text{table}}$). At the significance level =0.05 and with degrees of freedom $df=7-2=5$, it can be concluded that all items are declared valid. This is because the value of r-count for all items is greater than the value of $r_{\text{table}} = 0.7545$. Here are the results of the validity test.

Table 5. Results of questionnaire validity test for Education Personnel

No	Variable	Indicator	Satisfaction		Hope	
			count	Status	r hitung	Status
1	B. Human Resource Development	B1	0.977	Valid	0.977	Valid
2		B2	0.984	Valid	0.967	Valid
3		C1	0.922	Valid	0.980	Valid
4	C. Facility	C2	0.925	Valid	0.981	Valid
5		C3	0.944	Valid	0.980	Valid
6		C4	0.960	Valid	0.981	Valid

Furthermore, to see the reliability of the item, it can be seen from the value of Cronbach's Alpha (α) on the SPSS output. If the Cronbach Alpha value 0.70, then the item is declared reliable. The following is the output of the reliability test using IBM SPSS version 22 software.

Table 6. Test results Reliability of the questionnaire for Education Personnel

No	Variable	Satisfaction		Hope		N of Items
		Cronbach's Alpha	Status	Cronbach's Alpha	Status	
1	B. Human Resource Development	0.9508	reliabel	0.9351	reliabel	2
2	C. Facility	0.9217	reliabel	0.9867	reliabel	4

From the data table above, it is known that the Cronbach's Alpha value for the variables in this questionnaire has a value of 0.70. Thus, all variables in this questionnaire are declared Reliable. Policy formulation is prioritized in quadrant 1, which means it contains statements that are considered important by education staff, but in reality the statement is not in line with expectations. Effective policies are useful for overcoming the gap between the expectations of education personnel and the performance of civil engineering study programs [26-27].

Indicator C1 on the Civil Engineering Study Program already has a work environment including lecture facilities and infrastructure for the implementation of MBKM that meets Occupational Health and Safety (K3) standards not as expected because during the MBKM internship program students are in the project and education staff manage MBKM internship activities online through LMS, 70% of the time is used by students to study project base learning and 30% to learn theory so that the use of lecture facilities and infrastructure for the implementation of MBKM that meets Occupational Health and Safety (K3) standards in Higher Education is not effective in supporting MBKM internships on the project [28-29].

The C3 indicator on the Civil Engineering Study Program has provided lecture support facilities including adequate information technology to carry out the implementation of MBKM not as expected because the use of LMS is different from SIS requires adjustments and the right equipment so that the staff can manage the internship program more flexibly [30].

4. Conclusion

The MBKM activities carried out by the Civil Engineering Study Program FTSP-Usakti are deemed effective and well-received by students, lecturers, and education staff. Evaluation with supervisors is necessary to ensure the project materials align with intern needs. The Study Program needs to regulate MBKM fees and coordinate with partners, including Industry Partners (35%), National Research Institutes (18%), PTN Partners (23%), professional associations (18%), and overseas universities (6%). Cooperation programs include Internships/Work Practices (59.1%) and Student Exchange Programs

(40.9%). Respondents generally had a positive view of MBKM, with 47% saying it was very well implemented, 23% saying it was good, and 18% saying it was quite good. Partners suggest increasing student participation and are willing to collaborate again in the future. Partner assessments of the program were positive, with 41% rating it very good, 41% good, and 18% sufficient.

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