
**OPTIMIZATION THE BEST TEACHER SELECTION BASED
ON THE COMPOSITE PERFORMANCE INDEX (CPI)
AT SMKN 1 SETIA JANJI**

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Abstract: Teachers are a key element in the success of education, but the selection of the best teachers at SMKN 1 Setia Janji has so far been subjective. This can lead to less than optimal results and does not reflect teacher performance comprehensively. This study aims to optimize the selection of the best teachers by implementing the Composite Performance Index (CPI) method as an assessment system based on a composite performance index. This method allows the integration of various assessment indicators, such as academic performance, discipline, innovation in teaching, and student responses to teacher teaching methods. This study uses a quantitative approach with data collection through documents, surveys, and interviews. Furthermore, the data is analyzed using the CPI calculation to produce a performance index for each teacher. The results of the study indicate that the CPI method is able to provide more objective, transparent, and accountable results in determining the best teachers. By eliminating subjectivity in the assessment, this method can also increase teacher motivation and strengthen a work culture based on achievement in schools. From the evaluation results, it was found that the CPI not only increases accuracy in the selection of the best teachers, but also provides a fairer and more comprehensive assessment standard. The findings of this study contribute to the development of a more effective teacher performance evaluation system, especially in the SMKN 1 Setia Janji environment.

Keyword: best teacher selection; composite performance index (CPI); decision support system.

Abstrak: Guru merupakan elemen kunci dalam keberhasilan pendidikan, namun pemilihan guru terbaik di SMKN 1 Setia Janji selama ini masih bersifat subjektif. Hal ini dapat menyebabkan hasil yang kurang optimal dan tidak mencerminkan kinerja guru secara komprehensif. Penelitian ini bertujuan untuk mengoptimalkan pemilihan guru terbaik dengan menerapkan metode **Composite Performance Index (CPI)** sebagai sistem penilaian berbasis indeks kinerja komposit. Metode ini memungkinkan integrasi berbagai indikator penilaian, seperti kinerja akademik, kedisiplinan, inovasi dalam pengajaran, serta tanggapan siswa terhadap metode pengajaran guru. Penelitian ini menggunakan pendekatan kuantitatif dengan pengumpulan data melalui dokumen, survei, dan wawancara. Selanjutnya, data dianalisis menggunakan perhitungan CPI untuk menghasilkan indeks kinerja setiap guru. Hasil penelitian menunjukkan bahwa metode CPI mampu memberikan hasil yang lebih objektif, transparan, dan akuntabel dalam menentukan guru terbaik. Dengan menghilangkan subjektivitas dalam penilaian, metode ini juga dapat meningkatkan motivasi guru dan memperkuat budaya kerja berbasis prestasi di sekolah. Dari hasil evaluasi, ditemukan bahwa CPI tidak hanya meningkatkan akurasi dalam seleksi guru terbaik, tetapi juga memberikan standar penilaian yang lebih adil dan menyeluruh. Temuan penelitian ini berkontribusi dalam pengembangan sistem evaluasi kinerja guru yang lebih efektif, khususnya di lingkungan SMKN 1 Setia Janji

Kata kunci: pemilihan guru terbaik; composite performance index (CPI); sistem pendukung keputusan.

INTRODUCTION

Teachers are key elements in the education system and play a strategic role in shaping young generations who are both qualified and of strong character. The success of an educational institution is inseparable from the contributions of teachers in educating, guiding, and innovating in learning. Therefore, appreciating teachers, such as through the selection of the best teachers, is an important step to enhance their motivation and improve their performance quality (Syakdia Apria Ningsih, 2024).

However, the process of selecting the best teachers in many educational institutions often faces various challenges, one of which is subjectivity in evaluation. This can affect the transparency and fairness of decision-making outcomes. Selection results based on suboptimal assessments may create disparities among teachers, leading to less-than-optimal performance, which in turn affects the quality of teaching.

Therefore, a system is needed to eliminate such subjectivity and provide more objective, transparent, and accountable results. One possible solution is the implementation of the Composite Performance Index (CPI) method within a decision support system. CPI is a method that combines various performance indicators into a single composite index, providing a more comprehensive and fair assessment of teacher performance. (Mishra, 2023).

The CPI method has been widely used in various fields to assess performance, including in the education sector. The application of CPI in selecting the best teachers in vocational schools is expected to provide solutions to existing challenges, by ensuring that the assessment is carried out objectively and comprehensively based on valid and relevant data. In addition, this method can also support more transparent and accountable decision-making (Usfinit et al., 2024). This study aims to optimize the selection of the best teachers in Vocational High Schools based on the Composite Performance Index (CPI).

Previous research entitled "Application of the Composite Performance Index Method for Recipients of Direct Cash Assistance at the Aek Bambam Village Office" stated that with CPI an

application was created that made it easier for Aek Bambam village staff to make decisions about recipients of direct cash assistance (Efendi et al., 2023). Further research entitled "Decision Support System for Student Achievement Assessment Using the Composite Performance Index Method at SMK 1 Sigli Based on the Web" stated that the results of the CPI method research obtained results that were in accordance with the recommendations of the manual process according to the system output.

This shows that the CPI method has good performance in producing a decision needed in its case study. Departing from previous research which stated that the CPI method has a fairly good success rate in producing the required decisions, this is what underlies this research to use the CPI method as a solution technique.

However, the innovation created from this research towards previous research is by integrating various relevant performance indicators, this research is expected to produce an effective, objective, and practically applicable assessment model in the SMK environment. The CPI method used is better than the previous technique which only uses the perception of the leader's point of view. The CPI method is also superior compared to other DSS methods such as SAW where the SAW method only adds up the indicator weights directly without considering the comparison between criteria, while CPI is more complex because it considers the proportionality of the fixed contribution of each indicator to the final result. (Loa et al., 2020)

Based on this, the CPI method is the most appropriate method in this research so that this research is also expected to contribute to improving the quality of education by improving teacher performance (Apriani et al., 2021).

METHOD

The method used in this study focuses on the application of the Composite Performance Index (CPI) to determine the best teachers in Vocational High Schools (SMK). CPI is a composite performance measurement-based approach that combines various performance indicators in one aggregate index (Robertus Siahaan, 2022). There was stages of this research it can show in bagan. The stages

taken in this research consist of several steps, including the picture:

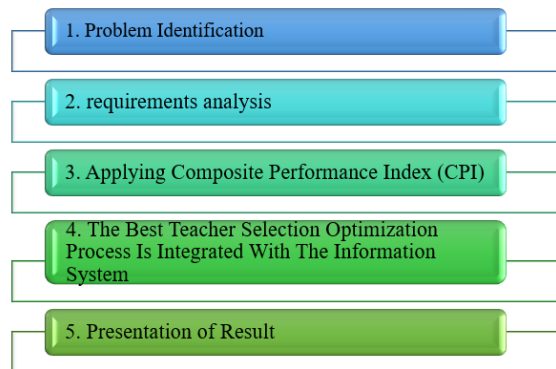


Image 1. Research Stage Visualization

Composite Performance Index (CPI) or Combined Performance Index, which is used to determine the ranking or assessment of various alternatives (i) with various criteria (j) is a decision-making method based on performance indexes that are usually used in management with conditions of non-uniform criteria, namely there is a positive trend or benefit criteria and a negative trend or cost criteria. The calculation technique for the CPI Method is as follows (Robertus Siahaan, 2022; Simangunsong et al., 2022).

1. Identify the criteria for positive (+) and negative (-) trends.
2. For the positive trend criteria, the minimum value for each criterion is transformed to hundredths while the other values are transformed proportionally higher.

$$r_{ij} = \frac{(x_{ij} * 100)}{x_{ij}(\min)} \quad (1)$$

For the negative trend criterion, the minimum value for each criterion is transformed to hundredths while the other values are transformed proportionally lower.

$$r_{ij} = \frac{(x_{ij}(\min) * 100)}{x_{ij}} \quad (2)$$

Description of formula (1) and (2):

x_{ij} : value of alternatif i in criterion -j

$x_{ij}(\min)$: Minimum value on the jth criterion

r_{ij} : Normalized value for the i-th alternative on the j-th criterion

The calculation of the alternative index is obtained from the result of multiplying the criteria value by the criteria weight (Pemasangan et al., 2024).

$$i_i = \sum_{j=1}^n (r_{ij} * w_j)$$

The combined index value is obtained by adding the multiplication of the criteria value with the criteria weight.

RESULT AND DISCUSSION

The data used as input material in this research is teacher data at Setia Janji 1 Vocational School which was taken based on criteria including:

Table 1. Data Criteria

No	Criteria Code	Name of Criteria
1	C1	Academic performance
2	C2	Discipline
3	C3	Innovation
4	C4	Teaching Feedback

Table 2. Bobot Criteria

No	Name of Criteria	Bobot Criteria
1	Academic performance	0,30
2	Discipline	0,25
3	Innovation	0,25
4	Teaching Feedback	0,20

From the data in table 2, there are several criteria that will be used to select the best teacher, namely Academic Performance with a weight of 30%, Discipline with a weight of 25%, Innovation with a weight of 25% and Teaching Feedback to students of 20%. The alternative data for teachers as many as 40 include:

Table 3. Data Alternative

No	Nama Guru	Status
1.	Agus Husni	PNS
2.	Andry	PNS
3.	Bima Reza	School honorarium

No	Nama Guru	Status
4.	Dani Mauliana	Provincial honorarium
5.	Dede Ilhamsyah	PPPK
6.	Dimas Kurniawan	Provincial honorarium
7.	Efendi	GTY/PTY
8.	Fauziah Nur Br Sitorus	School honorarium
9.	Hadisutono	PNS
10.	Hanifah Indriyani Sipahutar	PNS
11.	Hasnah	PNS
12.	Herianto	Provincial honorarium
13.	Indra Sugianto	PNS
14.	Johan Nasution	PNS
15.	Khairani	PPPK
16.	Khairul	Provincial honorarium
17.	Linda Chairani Nst	PNS
18.	Maharani	Provincial honorarium
19.	Malik	Provincial honorarium
20.	Martha Desni M. Pasaribu	PNS
21.	Mauliana	Provincial honorarium
22.	Muliadi	PNS
23.	Puspitasari Hasibuan	School honorarium
24.	Putri Ayuni Aulia Nst	School honorarium
25.	Rapita Putri	PNS
26.	Rusdi Wibowo	PNS
27.	Saiful Bahri	Provincial honorarium
28.	Septiando Azmi Fattah	Provincial honorarium
29.	Setia Wiranata	Provincial honorarium
30.	Setiawan	PNS
31.	Sri Dharmayanti	School honorarium
32.	Sri Gantini	PPPK
33.	Suparman	PPPK
34.	Suprahastris	Provincial

No	Nama Guru	Status
		honorarium
35.	Supriyadi	PNS
36.	Suriati Sitorus	PNS
37.	Syahrial Rambe	PPPK
38.	Yasrul Huda	PPPK
39.	Yuli Hermawani	PNS
40.	Zahrul Aswad Siagian	Provincial honorarium
41.	Zulkarnain Lubis	PNS

The following are the values from the calculation results using the Composite Performance Index (CPI) method which are summarized in the top 10, namely:

Table 4. Result of Process CPI

Rank	Code	Name	Total
1	A013	Indra Sugianto	665
2	A022	Muliadi	615
3	A030	Setiawan	485
4	A005	Dede Ilhamsyah	440
5	A025	Rapita Putri	410
6	A010	Hanifah Indriyani Sipahutar	390
7	A039	Yuli Hermawani	360
8	A020	Martha Desni M. Pasaribu	360
9	A026	Rusdi Wibowo	360
10	A017	Linda Chairani Nasution	350

Kriteria

Pencarian... Refresh + Tambah					
No	Kode	Nama Kriteria	Atribut	Bobot	Aksi
1	C01	Kinerja Akademik	benefit	0.3	 
2	C02	Kedisiplinan	benefit	0.25	 
3	C03	Inovasi	benefit	0.25	 
4	C04	Feedback Pengajaran	benefit	0.2	 

Image 2. Criteria Menu

Kriteria				
Kode	Nama	Bobot	Min	
C01	Kinerja Akademik	0.3	1	
C02	Kedisiplinan	0.25	1	
C03	Inovasi	0.25	1	
C04	Feedback Pengajaran	0.2	1	

Normalisasi				
Kode	C01	C02	C03	C04
A001	300	100	100	300
A002	300	100	100	100
A003	100	100	100	100
A004	300	300	300	300
A005	300	500	500	500
A006	100	300	300	300
A007	100	300	100	100
A008	100	300	100	300
A009	300	300	300	100

Image 3. Calculation proces by CPI

Perangkingan				
Rank	Kode	Nama	Total	
1	A013	Indra Sugianto	665	
2	A022	Muliadi	615	
3	A030	Setiawan	485	
4	A005	Dede Ilhamsyah	440	
5	A025	Rapita Putri	410	
6	A010	Hanifah Indriyani Sipahutar	390	
7	A039	Yuli Hermawani	360	
8	A020	Martha Desni M. Pasaribu	360	
9	A026	Rusdi Wibowo	360	
10	A017	Linda Chairani Nasution	350	

Image 4. Calculation Results

From the results of the evaluation conducted by the research team to determine the functionality and usefulness of the system with

CPI at SMKN 1 Setia Janji, the results obtained were: **With the Composite Performance Index obtained:** 1). The decision results are more objective and transparent, 2). The assessment is more comprehensive because various indicators are combined into one composite index so that the results are fairer and more comprehensive, 3). The process of selecting the best teachers is more efficient, 4), support for a work culture based on achievement because schools can apply clear assessment standards in improving the quality of education. The values produced by the Composite performance index are far superior and have a positive impact on teachers and schools.

While the previous value where Without using the Composite Performance Index the assessment system was still subjective so that it had an impact on the lack of transparency and accountability and the decision making was not systematic because the assessment was still manual and caused a lack of teacher motivation which had an impact on the quality of education which was less than optimal.

So that this research runs well as expected and brings positive effectiveness. The results of the testing tests that have been presented in black box testing on table 5.

Table 5. Black Box Testing System

No	Tested Features	Input	Expected Process	Expected Output	Result (Pass/Fail)
1	Teacher Data Input	Teacher name, academic performance grades, discipline, innovation, and feedback	The system accepts input without error	Teacher data is stored correctly	☐ Pass
2	Validation Input	Empty or invalid data (e.g. negative numbers)	The system displays an error message	Error displayed, data not saved	☐ Pass
3	CPI Calculation	Teacher data with various criteria values	The system calculates the CPI index value according to the formula	CPI value according to manual calculation	☐ Pass
4	Teacher Ranking	CPI scores from several teachers	The system sorts the values from highest to lowest.	List of best teachers based on CPI	☐ Pass
5	Result View	Ranking results	The system displays results in a clear and easy-to-read format.	The best teachers are displayed with their CPI scores.	☐ Pass

CONCLUSION

Based on the analysis results, the CPI method has proven effective in combining various assessment criteria into one composite index that provides objective, measurable, and easy-to-understand results. The results showed that teachers with the highest index scores were successfully identified as the best teachers, reflecting a good balance of performance across all criteria, especially in aspects of teaching innovation and student response. By implementing this method, schools can focus more on developing important aspects that affect teaching quality. For sustainability, it is recommended that schools routinely evaluate assessment criteria and weights to remain relevant to educational needs and consider adopting the CPI method in other evaluations, such as learning programs and student competencies.

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