Model of developing key performance indicator to increase the quality of education during the Covid-19 pandemic

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Abstract. Indonesia is one of the countries whose people are most affected by the 2019 corona virus (COVID-19). When the corona virus spreads faster, the Indonesian government imposed large-scale social restrictions in big cities to villages in Indonesia. With the changing situation in carrying out work activities during this pandemic, it will certainly affect the quality of organization in companies and the quality of education in schools and colleges. In order to identify all processes in teaching and learning activities that are running well or not, schools need to monitor and measure employee performance. Key performance indicators (KPIs) are generally used as benchmarks to determine how well a company's performance can be represented by employee performance. In this study, the key performance indicator preparation process was carried out through the stages of designing a questionnaire, distributing questionnaires to employees in educational institutions, conducting factor analysis and then developing a KPI model. The output is in the form of a KPI model that can be used as a reference in the formation of KPIs in educational institutions, namely $Y = 5,360 + 1,380 X_1 - 1,068 X_3$.

1. Introduction
The spread of severe acute respiratory syndrome coronavirus disease 2019 (COVID-19) has already taken on pandemic proportions, affecting over 100 countries in a matter of weeks [1]. Indonesia has become one of the countries affected by coronavirus disease 2019 (COVID-19). As of 10 May 2020, the Government of the Republic of Indonesia has reported 14,032 persons with confirmed COVID-19. There have been 973 deaths related to COVID-19 reported and 2,698 patients have recovered from the disease. As the virus spreads faster, the Indonesian government imposes large-scale social restrictions on major cities in Indonesia. The Indonesian government is currently intensifying social distancing activities. Where residents are asked to always maintain a distance of 1-2 meters when interacting with the surrounding community to avoid the spread of the Covid-19 virus. As a result, schools, universities, agencies that are still under the auspices of the government are closed with operational activities and replaced with activities at home or the new term is work from home [2]. With the changing situation of doing work activities during this pandemic, it will certainly affect the quality of the organization in a company and the quality of education for schools and universities. Schools need
to monitor and measure the performance of employees, this is done as a support so that all processes and outputs in teaching and learning activities are running well. To be correct in determining performance benchmarks, then what we need to consider is vision.

SMK 3 Perguruan "Cikini" college has a vision "to be a superior vocational high school in personality, education, training and skills at the National and International level". to achieve the target, understanding the importance of the Performance Management System needs to be done. Performance Management System is a process that is used to identify, measure, evaluate, design improvements and at the same time give awards to employees who have good performance. One of the Performance Management System tools commonly used is the KPI (Key Performance Indicator). Implementation of performance measurements using key performance indicators can be combined with a knowledge management system so that company performance can be monitored in real time [3]. Therefore, in order to be able to maintain the quality of education in this pandemic, performance measurement is one of the reasons that needs to be done. In this case, it will be explained as follows: what factors do schools need to build key performance indicators?, How to build a KPI model that is in accordance with school condition?.

2. Methodology
2.1. Research Design
In this study performance measurement will be carried out by the Balanced Scorecard method. The Balanced Scorecard is used to measure school performance in achieving its vision and mission and the extent to which this school has reached its goal [4]. Performance measurement has a main goal which is to motivate teachers and staff in achieving school goals and in complying with predetermined standards of behavior, so as to produce the desired actions and results. The Balanced Scorecard concept developed by Kaplan and Norton (2000) is one of the methods of performance measurement by including four aspects / perspectives in it, namely: Financial perspective, Customer perspective, Internal business perspective and Learning and growth perspective [5]. After searching for literature related to the four balanced scorecard perspectives, indicators are obtained that describe each perspective in the balanced scorecard. The indicators are used as a basis for designing the questionnaire.

The questionnaire was distributed to employees / staff / teachers at the school where the results would be analyzed using the factor analysis methodology. Factor analysis is one of the multivariate statistical methods that are generally used to find relationships between variables that are independent of each other. After the analysis, get the factors that affect employee performance at school. After knowing these factors, the KPI development model can be formed using regression analysis. All analysis processes in this research will use software called SPSS. The research design used is illustrated in Figure 1.
2.2. Factors and Indicators of Balanced Scorecard

There are several indicators for each balanced scorecard perspective as follows:

| Topics | Factors                  | Indicator                      | Source                                                                 |
|--------|--------------------------|--------------------------------|------------------------------------------------------------------------|
| Model Of Developing Key Performance Indicator to Increase The Quality of Education During The Covid-19 Pandemic | Financial Perspective | Productive Strategy, Growth Strategy | Farid, D. and Mirfakhredini, H., 2008 [6]                             |
| Customer Perspective | Developing Services, Increasing Customer, Managing Brand | Teaching and learning excellence, Curriculum program excellence | Tohidi, H., Jafari, A. and Afshar, A.A., 2010 [8] |
| Internal Perspective | | | Pineno, C.J., 2007 [9] |

Figure 1. Research Design
2.3. Factor Hypothesis
After conducting a literature study on previous research, the formulation of the hypothesis proposed in this study are:
Hypothesis 1: Financial Perspective have effect on employee performance
Hypothesis 2: Customer Perspective have effect on employee performance
Hypothesis 3: Internal Perspective have effect on employee performance
Hypothesis 4: Learning and Growth Perspective have effect on employee performance

3. Results and Discussion
3.1. Confirmatory Factor Analysis
The research method used is confirmatory factor analysis and regression analysis.

| Table 2. Case Processing Summary |
|----------------------------------|
| N   | % |
| Cases |   |
| Valid | 50 | 100.0 |
| Excluded^ | 0 | .0 |
| Total | 50 | 100.0 |

The table above provides information about the number of samples or respondents (N) analyzed in the SPSS program as many as 50 people. There is no data that is blank or unfilled in data filling, so the valid amount is 100%.

| Table 3. Reliability Test Result |
|----------------------------------|
| Cronbach’s Alpha | N of Items |
| .811 | 13 |

The table above shows that there are 13 items in the form of questions on the questionnaire, with a Cronbach's Alpha score of 0.811. Because the Cronbach's Alpha value is 0.811> 0.60, as a basis for decision making in the reliability test, it can be concluded that all items are reliable or consistent.

| Table 4. Item-Total Statistics |
|----------------------------------|
| Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item Total Correlation | Cronbach’s Alpha if Item Deleted |
| FP1 | 51.26 | 22.360 | .357 | .805 |
| FP2 | 51.08 | 22.483 | .337 | .807 |
| CP1 | 51.42 | 19.636 | .558 | .788 |
| CP2 | 51.16 | 22.056 | .439 | .799 |
The table above provides an overview of the statistical values for all question items. Note that in the column "Cronbach's Alpha if Deleted Item" in the table, the Cronbach's Alpha value for all item items is > 0.60, so it can be concluded that all question items are reliable.

If Cronbach's Alpha value > r table, the questionnaire is declared reliable. Based on the "Reliability Statistics" output above, it is known that the Cronbach's Alpha value is 0.811. The value will then be compared with the value of r table with a value of N=50 (look for the distribution of the value of r table at a significance of 5%), then the r value of the table is 0.279. Cronbach's Alpha value 0.811 > 0.279 (r table) then as the basis for decision making above, it can be concluded that the questionnaire was declared reliable or reliable as a data collection tool in the study.

### Table 5. KMO and Bartlett’s results

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy |
|------------------------------------------------|
| Bartlett’s Test of Sphericity                      |
| Bartlett’s Test of Sphericity of df                |
| Bartlett’s Test of Sphericity of Sig.              |

The Bartlett of Sphericity Test is a statistical test that aims to determine the relationship between variables. The Bartlett's Sphericity test is an assumption that must be met before conducting an analysis using factor analysis, where the data matrix must have sufficient correlation. Another test tool used to measure the level of association between variables and factor analysis is the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO MSA). The KMO value varies from 0 to 1. The desired value must be > 0.50 to be able to perform a factor analysis. Based on the output above, it is known that the KMO MSA value is 0.695 > 0.50 and the Bartlett's test of Sphericity (Sig.) Value is 0.000 < 0.05, so the factor analysis can be continued because it meets the first requirement.

### 3.2 Hypothesis Testing

| Model  | Sum of Squares | df  | Mean Square | F     | Sig.  |
|--------|----------------|-----|-------------|-------|-------|
| Regression | 177.128 | 4   | 44.282 | 12.581 | .000b |
| Residual | 158.392 | 45  | 3.520  |       |       |
| Total   | 335.520 | 49  |         |       |       |

From the output, it can be seen that the calculated F = 12.581 with a significance level / probability of 0.000 < 0.05, then the regression model can be used to predict the participation variable.
Table 7. Coefficients

| Model                                      | Unstandardized Coefficients | Standardized Coefficients | t     | Sig.  |
|--------------------------------------------|----------------------------|---------------------------|-------|-------|
| (Constant)                                 |                            |                           |       |       |
|                                            | B                          | Std. Error                |       |       |
|                                            | 5.360                      | .265                      | 20.202| .000  |
| REGR factor score 1 for analysis 1         | 1.380                      | .268                      | .527  | 5.149 | .000  |
| REGR factor score 2 for analysis 1         | -.480                      | .268                      | -.183 | -1.790| .080  |
| REGR factor score 3 for analysis 1         | -1.068                     | .268                      | -.408 | -3.984| .000  |
| REGR factor score 4 for analysis 1         | -.584                      | .268                      | -.223 | -2.177| .035  |

In the Coefficients table, in column B Constant (Y) is 5.360, while the first factor is 1.380, the second factor is – 0.480, the third factor is -1.068, and the fourth factor is – 0.584. The result of regression analysis using 4 factors shows that the significance value of each factor is 0.000, 0.080, 0.000, and 0.035. The significance value can be used as a KPI Development Model if it has a significance value below 0.5%.

- Hypothesis Testing 1
  In the first test, it states that the financial perspective has an effect on employee performance. Obtained a significance value of 0.000, which means that the significant value is below 0.5%. Thus hypothesis 1 can be accepted.

- Hypothesis Testing 2
  In the second test it was stated that the customer perspective had an effect on employee performance. Obtained a significance value of 0.080, which means that the significant value is above 0.5%. Therefore, hypothesis 2 cannot be accepted or rejected.

- Hypothesis Testing 3
  In the third test it is stated that the internal perspective affects employee performance. Obtained a significance value of 0.000, which means that the significant value is below 0.5%. Thus hypothesis 3 can be accepted.

- Hypothesis Testing 4
  In the fourth test it was stated that the learning and growth perspective had an effect on employee performance. Obtained the significance value is 0.035, which means that the significant value is above 0.5%. Therefore, hypothesis 4 cannot be accepted or rejected.

After testing the four factors, there are two factors that can be said to be reliable, namely: factor (x1) with a significant value of 0.000 and has a value of 1.380. factor (x3) with a significant value of 0.000 and has a value of -1.068.

The following is a table of test results from the factors:

Table 8. Factor Hypothesis Test Results

| Factor Hypothesis                              | Conclusion     |
|------------------------------------------------|----------------|
| Hypothesis 1 Financial Perspective have effect on employee performance | Accepted       |
| Hypothesis 2 Customer Perspective have effect on employee performance | Not accepted   |
| Hypothesis 3 Internal Perspective have effect on employee performance | Accepted       |
| Hypothesis 4 Learning and Growth Perspective have effect on employee performance | Not accepted   |

3.3. Models that can be used for developing key performance indicator from these values a model can be built as follows

$$Y = 5.360 + 1.380 \times X1 - 1.068 \times X3$$ (2)
Where:
\[ Y = \text{Employee Performance} \]
\[ X_1 = \text{Financial Perspective} \]
\[ X_3 = \text{Internal Perspective} \]

3.4. Managerial Implications

The managerial implications that can be applied to the Key Performance Indicators Development Model to Improve the Quality of Education during the Covid-19 Pandemic are: The first factor is management from a financial perspective and the third factor from an internal perspective can affect employee performance. There are two categories of stressors for employees, namely on the job and off the job. This is reinforced by a statement according to Handoko, Tani related to the factors causing stress "On The Job" are; Excessive workload, time pressure or pressure, poor supervision, interpersonal / group conflicts, uncomfortable work climate, career development. While the factors that cause stress "Off The Job" are; Financial worries, family problems, physical problems, marital problems, changes in the place of residence [10]. To be able to produce positive employee performance, there are several things that need to be considered and aligned with organizational strategy. Five basic principles are involved in the formation of the BSC as part of the strategic core of the organization: (1) Translating strategy into operational terms. (2) Aligning the organization with the strategy. (3) Making strategy a part of everyone's daily work. (4) Making strategy an ongoing process. (5) Mobilizing change through leadership [11,12].

4. Conclusion

The research stages started from conducting a literature study to find the factors that were thought to have an effect on employee performance. After knowing the factors and indicators with the help of journals, 13 statements were formed which were processed into a questionnaire. The questionnaire was distributed to respondents at SMK 3 Perguruan "Cikini". After obtaining the results of the questionnaire, the data is then processed using IBM SPSS Statistics 22. Based on the results of the research conducted, a hypothesis is obtained in accordance with: there are factors that affect employee performance. There are two factors that affect employee performance: a financial perspective and an internal perspective. These factors are then formulated as a model for developing key performance indicators. The model is

\[ Y = 5,360 + 1,380 X_1 - 1,068 X_3 \]

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