

CHAPTER III

RESEARCH METHODOLOGY

The purpose of this study is to examine the influence of student engagement and teachers' performance to student satisfaction.

A. Population and Sampling Techniques

1. Population

The study will be conducted in Bandung and it will focus on public high schools. According to Gravetter and Wallnau (2007), population is a set of all the individuals of interest in a particular study and a sample is a set of individuals selected from a population, usually intended to represent the population in a research study.

No	School name	Grade X		
		Boys	Girls	Total
1.	SMA Negeri 1 Bandung	161	199	360
2.	SMA Negeri 2 Bandung	169	178	347
3.	SMA Negeri 3 Bandung	132	192	324
4.	SMA Negeri 4 Bandung	140	227	367
5.	SMA Negeri 5 Bandung	157	184	341
6.	SMA Negeri 6 Bandung	159	197	356
7.	SMA Negeri 7 Bandung	126	194	320
8.	SMA Negeri 8 Bandung	166	238	404
9.	SMA Negeri 9 Bandung	165	205	370
10.	SMA Negeri 10 Bandung	169	227	396
11.	SMA Negeri 11 Bandung	202	230	432
12.	SMA Negeri 12 Bandung	148	176	324
13.	SMA Negeri 13 Bandung	122	171	293
14.	SMA Negeri 14 Bandung	163	195	358
15.	SMA Negeri 15 Bandung	132	172	304
16.	SMA Negeri 16 Bandung	188	249	437
17.	SMA Negeri 17 Bandung	140	211	351
18.	SMA Negeri 18 Bandung	185	210	395

19.	SMA Negeri 19 Bandung	145	171	316
20.	SMA Negeri 20 Bandung	172	179	351
21.	SMA Negeri 21 Bandung	168	156	324
22.	SMA Negeri 22 Bandung	177	197	374
23.	SMA Negeri 23 Bandung	179	186	365
24.	SMA Negeri 24 Bandung	155	205	360
25.	SMA Negeri 25 Bandung	196	200	396
26.	SMA Negeri 26 Bandung	121	159	280
27.	SMA Negeri 27 Bandung	170	163	333
	Total	4307	5271	9578

Table 3.1 Population (all SMAN in Bandung)

2. Sampling

There are two categories of sampling: random sampling and non-random sampling. Random sampling is the process of selecting sample that would be representative of the population of interest (Norazman et al, 2007). In contrast, non-random sampling does not provide an equal chance for every member of the population to be selected as sample in a research. Random sampling has been selected to conduct the survey of this research because in random sampling, every member of the population has an equal probability to be chosen to participate in the research. Another reason is that the results of the research would yield a representative sample.

In addition, the formula by Sugiyono (2006) will be used to calculate the sample in the study as below:

$$n = \frac{N}{N(d^2) + 1}$$

n= Total sampling

N=Total Population

d²= Precision (defined 10% with a 90% confidence level)

Schools for sampling

No	School name	Total No. of Students
1	SMAN 1	78
2	SMAN 5	77
3	SMAN 8	80
4	SMAN 9	79
5	SMAN 24	80
	TOTAL	394

Table 3.2 Sampling (5 SMAN in Bandung)

The unit of analysis in this study will include feedback from high school students.

The following methods and techniques will be applied in data collection: Questionnaires will be organized which will focus on getting the whole information about teachers competency in integrating ICTs in education at high school level in Bandung.

B. Research design

The research design is a case study to be conducted in public schools in Bandung (City). The researcher will visit public schools in this region and observe, give questionnaires and interview teachers, students and Principals about the influence of student engagement and teachers' performance to student satisfaction in their schools. The aim is to find out whether there is an influence of student engagement and teachers' performance to student satisfaction in their schools. The study will be conducted in a quantitative methodology which will mainly focus on interviews and questionnaires. Teachers' performance will also include the use of ICT in the process of learning.

Moreover, the overall structure for a quantitative design is based in the scientific method. It uses deductive reasoning, where the researcher forms a hypothesis, collects data in an investigation of the problem, and then uses the data

from the investigation, after analysis is made and conclusions are shared, to prove the hypotheses not false or false. With this stance, the basic procedure of a quantitative design is: making observations about something that is unknown, unexplained, or new by investigating the current theory surrounding the research problem or issue; hypothesizing an explanation for those observations; making a prediction of outcomes based on hypotheses by formulating a plan to test the prediction; collecting and processing data; and verifying the research findings by making final conclusions and presenting the findings in an appropriate form.

C. Operational Definition

1. Student satisfaction (Y)

Student satisfaction is being presented as an important quality factor in educational settings. A key element in defining quality is the capacity to show that the outcome from the process (teaching) is meeting user/client needs. Dill, D (2007) has described the application of a customer satisfaction model to student evaluation of teacher performance. He has established a link between student evaluation and student satisfaction. According to Sean B. Eom, (2011), student satisfaction can be defined as the following: student satisfaction refers to the student's perception or attitude towards the learning activities. Where the student is happy with his/her studies or adopts an aggressive learning attitude, student is deemed to be satisfied; where the student is unhappy or adopts negative or passive attitude, student is deemed to be dissatisfied. On the same hand Student's satisfaction is defined by Wiers-Jenssen, Stensaker, B. (2007) as students' assessments of the services provided by Schools, universities and colleges. In this research student satisfaction means a fulfillment felt by students after following a certain program (Including integration of ICT in learning) and this fulfillment is connected to their expectations, beliefs and perceptions they had before joining the program/learning.

Student Satisfaction indicators

1. Academic advising
2. Social activities
3. Learning experience
4. Student support service
5. Library
6. Course content
7. Quality of instructions
8. Adaptability

2. Student Engagement (X₁)

Researchers have recently used the term *engagement* to refer to the extent to which students identify with and value schooling outcomes, and participate in academic and non-academic school activities. Its definition usually comprises a *psychological* component pertaining to students' sense of belonging at school and acceptance of school values, and a *behavioural* component pertaining to participation in school activities (Harris, 2008). The psychological component emphasises students' sense of belonging or attachment to school, which has to do with feelings of being accepted and valued by their peers, and by others at their school. Another aspect of the psychological component concerns whether or not students value school success – do they believe that education will benefit them personally and economically (Chen, Gonyea and Kuh, 2008). Students who do not feel they belong at school, or reject school values, are often referred to in the literature as *alienated* or *disaffected*. The participation component of engagement is characterised by factors such as school and class attendance, being prepared for class, completing homework, attending lessons, and being involved in extra-curricular sports or hobby clubs.

Stovall (2009) suggests that engagement is defined by a combination of students' time on task and their willingness to participate in activities. Krause and Coates (2008) say that engagement is the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes. Additionally, Chen, Gonyea and Kuh (2008) say that engagement is the

degree to which learners are engaged with their educational activities and that engagement is positively linked to a host of desired outcomes, including high grades, student satisfaction, and perseverance. Other studies define engagement in terms of interest, effort, motivation, time-on-task and suggest that there is a causal relationship between engaged time, that is, the period of time in which students are completely focused on and participating in the learning task, and academic achievement (Bulger, et al., 2008).

In this research student engagement has come to refer to how involved or interested students appear to be in their learning and how connected they are to their classes, their institutions, and each other. The following are the indicators of student engagement: thoughts, level of responsibility, participation, motivation, interest, collaboration, and test readiness.

3. Teachers' Performance (X_2)

Despite the great relevance of individual performance and the widespread use of job performance as an outcome measure in empirical research, relatively little effort has been spent on clarifying the performance concept. However, during the past 10 to 15 years, one can witness an increasing interest in developing a definition of performance and specifying the performance concept. Authors agree that when conceptualizing performance one has to differentiate between an action (i.e., behavioral) aspect and an outcome aspect of performance (Hanushek and Rivkin, 2006). Performance is what the organization hires one to do, and do well (Murray, J., 2009). Thus, performance is not defined by the action itself but by judgemental and evaluative processes. Moreover, only actions which can be scaled, i.e., measured, are considered to constitute performance. Performance is a multi-dimensional concept. On the most basic level, (Lavy, V. 2009) distinguish between task and contextual performance. Task performance refers to an individual's proficiency with which he or she performs activities which contribute to the organization's 'technical core'. This contribution can be both direct (e.g., in the case of production workers), or indirect (e.g., in the case of managers or staff personnel). Contextual performance refers to activities which do not contribute to the technical core but which support the organizational, social, and

psychological environment in which organizational goals are pursued. Contextual performance includes not only behaviors such as helping coworkers or being a reliable member of the organization, but also making suggestions about how to improve work procedures.

In this research, teachers' performance means teaching activities which contribute to student satisfaction including integration of ICT in learning and these activities should have performative aspects of teaching, leading, testing, accountability, and policymaking. Teachers do not just become reliable members of school but also participate in the improvement of student satisfaction in ICT.

Teaching is a complex activity. Competent teachers apply broad, deep, and integrated sets of knowledge and skills as they plan, implement and revise instructions. Technology proficiency (including technical skills and instructional applications) is but one dimension of teacher competence.

	Definition	Dimension	Indicators & Items
Student satisfaction	Dill, D (2007) has described the application of a customer satisfaction model to student evaluation of teacher performance. He has established a link between student evaluation and student satisfaction. Student' satisfaction is defined by Sean B. Eom, (2011) as students' assessments of the services provided by Schools, universities and colleges.	Student as a customer is the one who can tell how far he or she is satisfied not teachers.	<p>Academic</p> <ul style="list-style-type: none"> ➤ Academic advising & instructions ➤ Learning experience ➤ Course content: items 1-8 <p>Social</p> <ul style="list-style-type: none"> ➤ Social activities ➤ Student support service ➤ Attitude: items 9-11 <p>Library</p> <ul style="list-style-type: none"> ➤ Library equipment ➤ Quality of instructions ➤ Adaptability: items 12-14 <p>ICT</p> <ul style="list-style-type: none"> ➤ ICT's facilities items: 15-18 <p>Adaptability</p> <ul style="list-style-type: none"> ➤ Respect: items 19-21

	Douglas, J., McClelland, R., Davies, J. (2007) argued that satisfaction is an emotional factor. Thus, satisfaction can be considered as a reflection of life experience: it is a subjective view based on personal experience, individual beliefs and relationships.		
Student engagement	Stovall (2009) suggests that engagement is defined by a combination of students' time on task and their willingness to participate in activities. Krause and Coates (2008) say that engagement is the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes.	It covers student willingness to do school work. It cover the efforts that students devote for their work All activities including high grades, student satisfaction, and	Affective (Student perception) <ul style="list-style-type: none"> ➤ Belonging/identification with school ➤ School connectedness: items 22-23 Cognitive <ul style="list-style-type: none"> ➤ Self-regulation ➤ Relevance of school to future aspirations ➤ Value of learning (goal setting): items 24-26 Behavioral <ul style="list-style-type: none"> ➤ Attendance (absences, skips) ➤ Participation (Classroom & extracurricular) ➤ Behavioral incidences (office referrals, suspensions): items 27-28 Academic

	<p>Additionally, Chen, Gonyea and Kuh (2008) say that engagement is the degree to which learners are engaged with their educational activities and that engagement is positively linked to a host of desired outcomes, including high grades, student satisfaction, and perseverance.</p>	perseverance	<ul style="list-style-type: none"> ➤ Time on task ➤ Homework completion rate ➤ Class grades: items 29-32
Teachers' Performance	<p>Performance is what the organization hires one to do, and do well (Hanushek and Rivkin, 2006). Thus, performance is not defined by the action itself but by judgemental and evaluative processes. Moreover, only actions which can be scaled, i.e., measured, are considered to constitute performance. Performance is a multi-dimensional concept. On the most basic level, Lavy, V. (2009), distinguish</p>	It covers knowledge, skills, attitudes, values, motivations and beliefs	<p>Contextual</p> <ul style="list-style-type: none"> ➤ Interesting work ➤ Class discussions ➤ Allotted time ➤ Time to help: items 33-40 <p>Techno-oriented</p> <ul style="list-style-type: none"> ➤ The use of ICT ➤ Time for practice ➤ Preparedness of the teacher: items 41-44

	<p>between task and contextual performance.</p> <p>Murray, J., (2009). Holds that performance is not defined by the action itself but by judgemental and evaluative processes.</p> <p>Moreover, only actions which can be scaled, i.e., measured, are considered to constitute performance</p>		
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Table 3.3 Operational definition (s)

D. Research Instrument

In view of the objective and purpose of the study, questionnaires with students will be organised. Close-ended questions will be formulated for each variable (Student engagement, Teachers' performance and Student satisfaction) in order to get into the depth of each variable.

The research instruments used in data collection are questionnaires. In this sense, questionnaires are a number of written questions used to obtain information from respondents in terms of statements about personal or things that are known (Arikunto, 2010). Therefore, the questionnaires of the research instrument are given to respondents (students and teachers). Based on the reason above, the research instrument (questionnaires) will be used in the preparation of models of Likert Scale. According to Riduwan and Kuncoro (2007), Likert Scale is used to measure the attitudes, opinions and perceptions about a person or group social events or symptoms. By using a Likert Scale, the variables to be measured are

translated into dimensions, the dimensions are translated into sub-variables and sub-variables are translated into indicators. With measurable indicators can be used as a starting point to make the item instrument in the form of questions or statements that need to be answered by the respondents. Therefore, instrument is used to obtain information from subjects in this study is a questionnaire with answer choices by using a form of Likert Scale with five weighted options.

- To know the level of the Influences of Students' engagement (X_1) in the day-to-day school operations, the Likert Scale questionnaire will be applied as below:

Alternative Answers	Question Scores
Very High	1
High	2
High Enough	3
Low	4
Very Low	5

Student engagement

- To know teachers' performance for student satisfaction (X_2)

Alternative Answers	Question Scores
Always	1
Often	2
Sometimes	3
Rarely	4
Never	5

3.4 Teachers' performance

Alternative Answers	Question Scores
Always	1
Often	2
Sometimes	3
Rarely	4
Never	5

1. Instrument Development Process

Upon completion of data collection tool, then the next step is to test the form of a questionnaire-instrument or questionnaires disseminated throughout respondents to students in the targeted public senior High schools in Bandung city. In a test an instrument is used statistical analysis. Statistical test aims to test the validity and reliability so that it can be justified scientifically. The test validity and reliability are illustrated in the following following:

2. Test Validity of Data

Test Validity describes how the questionnaire will gauge intended variables, so the validity of test is the more appropriate tool of the planned target. Validity value is essential to the value of the correlation function to calculate the used items. The technique used in the total item correlation is consistency between the scores of items that can be seen overall magnitude of correlation coefficient between each item with an overall score, which is the basis of the Pearson Product Moment Correlation.

Related to the validity testing of the instrument according to Riduwan and Kuncoro (2008), it is explained that validity is a measure of the degree of reliability or correctness of a measuring instrument. A good questionnaire should be able to measure with a clear framework of the research to be measured. Validity means the extent to which the precision and accuracy of a measuring instrument in doing the measuring function. Test of validity means testing the

procedures to see whether in the form of questionnaires as a measuring instrument can measure carefully or not.

Validity is a measurement that indicates the validity of research instrument (Arikunto, 2006). To get data of the research, the instrument should be valid one. A test is be valid if the content of the test is consistent with the stated goal for which the test being administrated.

In order to test the validity of the instrument, the formula of Pearson Product Moment (Akdon & Hadi, 2005) will be used:

$$r = \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \sum Y^2 - (\sum Y)^2\}}}$$

Where:

- r : Correlation Coefficient
- N : Number of Respondents
- $\sum XY$: Number of products X and Y pair scores
- $\sum X$: Total score in distribution X
- $\sum Y$: Total score in distribution Y
- $\sum X^2$: Total score squares in the distribution of X
- $\sum Y^2$: Total score of squares in Y distribution

Then the number of T-test calculations with the formula:

$$t = \frac{r \sqrt{n-2}}{\sqrt{1-r^2}}$$

Where:

- t : Value T-Test Calculation
- r : Coefficient Correlation
- n : Total Respondents

For critical values of the t distribution (Table t), $\alpha = 0.05$, and degrees of freedom ($df = n - 2$), the following formula will be followed:

If $t_{\text{count}} > t_{\text{table}}$ means that the instrument is valid.

If $t_{\text{count}} < t_{\text{table}}$ means that the instrument is invalid. Statistical Package for the Social Sciences (SPSS) version 19, which serves to measure the validity of any item questionnaire will be used as a measure of research.

3. Test Reliability of Data

According to Arikunto (2006), reliability is reliable if the result shows constancy. It means if a test is tested in another time or place the result is still constant.

Reliability test is done to obtain the level of accuracy (reliability) of data collection tool (instrument) which is used. To measure the level of reliability of the instrument, the researcher will conduct an analysis of test instruments using the split second (odd-even) and calculate reliability throughout the test Spearman Brown formula premises, namely:

$$r_{11} = \frac{2r_b}{1 + r_b}$$

Where:

r_{11} = Reliability Internal Whole Instrument

r_b = Product Moment Correlation between the First and Second Hemisphere

For distribution $\alpha = 0.05$, and test two parties with degrees freedom ($Df = n-2$), so that in r_{table} can be Rule-making: If $r_{\text{count}} < r_{\text{critic}}$ means not reliable. Tools Statistical Package for the Social Sciences (SPSS) version 19 will also be used for processing, testing data analysis to know the reliability of the instrument. I will first use spreadsheet on excel then transfer all the data to SPSS 19 for analysis.

4. Measures of Variability

Variability indicates the spread of the scores in a distribution. Range, variance, and standard deviation all indicate the amount of variability in a distribution of scores. This information helps us see how dispersed the responses are to items on an instrument. Variability also plays an important role in many advanced statistical calculations (Creswell, 2012).

5. Results of testing Instrument

Validity is determined by the value of the significance of each item with an item, that is, r_{count} , comparing the correlation value with the critical value of r_{critical} which is 0.631897. When r_{count} is smaller than r_{critical} ($r_{\text{count}} < r_{\text{critical}}$) it is concluded that the item is not valid. On the same hand, if r_{count} is greater than r_{critical} ($r_{\text{count}} > r_{\text{critical}}$) then the item is valid.

No. Item	R_{count}	R_{table}	Results	No. Item	R_{count}	R_{table}	Results
1	0.762415	0.631897	Valid	27	0.81374	0.631897	Valid
2	0.8411	0.631897	Valid	28	0.838228	0.631897	Valid
3	0.750867	0.631897	Valid	29	0.625058	0.631897	Invalid
4	0.702089	0.631897	Valid	30	0.821872	0.631897	Valid
5	0.833375	0.631897	Valid	31	0.760073	0.631897	Valid
6	0.678644	0.631897	Valid	32	0.720804	0.631897	Valid
7	0.062952	0.631897	Invalid	33	0.66998	0.631897	Valid
8	0.686331	0.631897	Valid	34	0.653983	0.631897	Valid
9	0.546403	0.631897	Invalid	35	0.653672	0.631897	Valid
10	0.69584	0.631897	Valid	36	0.718939	0.631897	Valid
11	0.634473	0.631897	Valid	37	0.813747	0.631897	Valid
12	0.678263	0.631897	Valid	38	0.770674	0.631897	Valid
13	0.690914	0.631897	Valid	39	0.674743	0.631897	Valid
14	-0.00794	0.631897	Invalid	40	0.178947	0.631897	Invalid
15	0.731306	0.631897	Valid	41	0.729323	0.631897	Valid
16	0.696421	0.631897	Valid	42	0.833123	0.631897	Valid
17	0.696421	0.631897	Valid	43	0.853611	0.631897	Valid
18	0.755364	0.631897	Valid	44	0.719683	0.631897	Valid
19	0.692559	0.631897	Valid	45	0.238035	0.631897	Invalid
20	0.814543	0.631897	Valid	46	0.75188	0.631897	Valid
21	0.776203	0.631897	Valid	47	0.67082	0.631897	Valid
22	0.696589	0.631897	Valid	48	0.674641	0.631897	Valid
23	0.656011	0.631897	Valid	49	0.712919	0.631897	Valid
24	0.72134	0.631897	Valid	50	0.729664	0.631897	Valid
25	0.869898	0.631897	Valid	51	-0.21053	0.631897	Invalid
26	0.797423	0.631897	Valid				

Table 3.4 Test results of instrument

From 51 items (questions) which were given to ten (10) respondents with the intention of testing the instrument (Validity and reliability) seven (7) items did not perform well hence they are invalid and therefore I cannot use them.

Meanwhile, from the calculations, the greatest value of r_{count} on Student Satisfaction (Y) is .833. Then checked with t_{table} where $df = (n-2) = 10-2=8$ at the 5% level is 0.63. This means that the variable Y questionnaire about Student satisfaction is reliable, because $r_{count} > t_{table}$.

Student Satisfaction

1. Validity

Inter-Item Correlation Matrix

	Total
Total	1.000
p1	.762
p2	.841
p3	.751
p4	.702
p5	.833
p6	.679
p7	.063
p8	.686
p9	.546
p10	.696
p11	.634
p12	.678
p13	.691
p14	-.008
p15	.731
p16	.696
p17	.696
p18	.755
p19	.693
p20	.815
p21	.776
p22	.697
p23	.656
p24	.721

Reliability Statistics

Cronbach's Alpha	N of Items
.939	24

According to Cronbach's Alpha these results are reliable since the outcome is 0.939.

Student Engagement

1. Validity

Inter-Item Correlation Matrix

	Total
Total	1.000
p25	.870
p26	.797
p27	.814
p28	.838
p29	.625
p30	.822

p31	.760
p32	.721
p33	.670
p34	.654
p35	.654
p36	.719

2. Reliabilitas

Reliability Statistics

Cronbach's Alpha	N of Items
.918	12

According to Cronbach's Alpha these results are reliable since the outcome is 0.918

Teachers Performance

1. Validity

Inter-Item Correlation Matrix

	Total
Total	1.000
p37	.814
p38	.771
p39	.675
p40	.179

p41	.729
p42	.833
p43	.854
p44	.720
p45	.238
p46	.752
p47	.671
p48	.675
p49	.713
p50	.730
p51	-.211

2. Reliability

Reliability Statistics

Cronbach's Alpha	N of Items
.889	15

According to Cronbach's Alpha these results are reliable since the outcome is 0.889

6. Testing analysis

a. Weighted Means Test Scored

This activity is scoring in every alternative answers given by the respondents in accordance with the predetermined weights. Any statement in the third variable has the answer with 5 criteria which starts from 1, 2, 3, 4, and 5 with provision for declaration of calculation of figures. Percentage of each variable aims to identify trends of general respondents for variables namely Student engagement (X_1), teachers' performance (X_2) and Student satisfaction (Y) and Variable percentage figure is

calculated by using the following formula. General description of each variable is described by an average score that obtained from the following formula:

$$\bar{X} = \frac{X}{N}$$

Description:

X: The average value sought

X: total composite score (frequency multiplied by the weighing for each answer alternative category)

N: Number of respondents

Weighted Means clustering criterion determines Scored (WMS) to the average score of each possible answer. In average score all respondents are represented with weighted means score. The following criteria or table will be used to determine the averages of all items in order to know the category in which they fall:

Results of Average	Criteria/Category	Interpretation
		Variabel X1, X2 dan Y
4,01-5,00	Very good	Always
3,01-4,00	Good	Often
2,01-3,00	Good enough	Sometimes
1,01-2,00	Low	Rarely
0,01-1,00	Very low	Never

Table 3.5 Weighted Means

7. Normality test

The purpose of the normality test is to determine whether the treatment data in this study is using Parametric or nonparametric analysis. In this study normality the following formula will be used:

$$\chi^2 = \sum_{i=1}^k \frac{(f_0 - f_e)^2}{f_e}$$

Description:

χ^2 = Chi-square

f_0 = frequency observations

f_e = frequency expected

To know whether data is normal or not, it can be determined the testing criteria as follows:

If $\chi^2 \geq \chi^2_{table}$, meaning Abnormal Data Distribution

If $\chi^2 < \chi^2_{table}$, meaning that distribution of data is normal.

E. Techniques of Data Collection

These are the tools and approaches used to collect data to answer the research question and hypothesis. More than one technique can be employed; the commonest are questionnaires and interviews. Technique of data collection is the way that can be used by the researcher to collect data (Arikunto, 2006). To collect the data, the researcher will use a questionnaire as an instrument. Questionnaire is a series of questions or exercises of other means of measuring skill, knowledge, intelligence, and capacities of aptitudes or an individual or groups (Arikunto, 2006).

Based on this, data from the field will be collected through questionnaires. The researcher will administer the questionnaires personally. And the researcher will also visit the schools for obtaining the opinions of students

F. Techniques of Data Analysis

The data will be obtained in the field of research study (collected data; internet sources, questionnaire responses, and observations) will be critically tabulated, analyzed, and interpreted by using the statistical techniques like mean

and standard deviation in order to test if those data are valid. Data analyzing technique involves three parts, namely, correlative analysis, comparative analysis, and descriptive analysis (Arikunto, 2010). Correlation methods of analysis aim to describe the correlation between the two variables. Correlation analysis attests the relation between two or more variables, but does not measure the causal relation between them. Correlation analysis may also indicate the intensity of the relationship between variables (KOPPA, 2013). Comparative analysis is the item-by-item comparison of two or more processes, qualifications and sets of data, system, products, comparable alternatives or the likes. Comparative analysis is meant to solve the mistakes made by casual inferences mainly on the basis of only small number of cases. The descriptive analysis is utilized in this research. In fact, the descriptive analysis is used if the researcher wants to know how, how far, and so on about the condition. In this research, the descriptive quantitative technique is used to measure the mean and the level of effectiveness of the influence of student engagement and teachers performance for student satisfaction.

In the implementation of this research data analysis, data processing is done through the help of the computer program Statistical Package for the Social Sciences (SPSS) version 19. The analysis technique used in this study is the correlation analysis (Pearson Product Moment) and multiple correlations. This analysis will be used to test the influence of variables X_1 and X_2 to variable Y . This analysis determines the effect of Influences of Students' engagement (X_1) and Teachers' performance (X_2) for Student satisfaction (Y) in the public senior high schools in Bandung. The formula of Pearson Product Moment (PPM) is shown as below:

$$r = \frac{\sum_{i=1}^n (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^n (X_i - \bar{X})^2} \sqrt{\sum_{i=1}^n (Y_i - \bar{Y})^2}}$$

Where:

r : correlation coefficient

X_i : Total score of items

Y_i : Total score total (all items)

n : Number of respondents

\bar{X} : X Average

\bar{Y} : Y Average

Σ : Summation

Correlation with the provisions of PPM is not more than the value of r ($-1 \leq r \leq +1$). If the value of $r = -1$ means a perfect negative correlation, $r = 0$ means no correlation. Meanwhile, $r = 1$ means that the correlation is very strong. Meaning the value will be consulted with a correlation coefficient value interpretation table (Riduwan, 2010).

Interval coefficient	Level of relationship
0,00 – 0,199	Very low
0,20 – 0,399	Low
0,40 – 0,599	Strong enough
0,60 – 0,799	Strong
0,80 – 1,000	Very strong

Table 3.6 Interval coefficient

To measure the size of the influence given by the variable X to variable Y , then, the following formula will be used:

$$KD = r^2 \times 100\%$$

Where:

KD : Determinants coefficient value

r^2 : correlation coefficient value

Meanwhile, to test the significance the following formula will be used:

$$t_{hitung} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

Where:

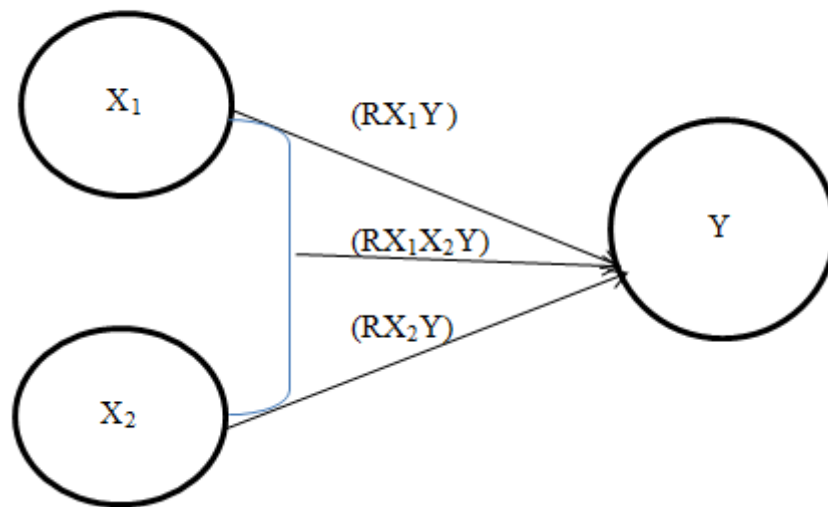
- t_{count} : Value of t
- r : Correlation coefficient value
- n : Number of samples

Distribution (Table t) for $\alpha=0.05$, and degrees of freedom ($df = n-2$), the decision rule: if $t_{count} > t_{table}$, it means that significant and vice versa.

Determination of the effect of variables X_1 and X_2 to variable Y is used with the multiple correlation formula as below:

$$R_{X_1, X_2, Y} = \sqrt{\frac{r_{X_1, Y}^2 + r_{X_2, Y}^2 - 2(r_{X_1, Y})(r_{X_2, Y})(r_{X_1, X_2})}{1 - r_{X_1, X_2}^2}}$$

Further analysis uses simple correlation techniques. Ease of computation used in the form of software of computer program Statistical Package for the Social Sciences (SPSS) version 19.



X_1 = Students' Engagement
 X_2 = Teachers' Performance
 Y = Student Satisfaction
 R = Coefficient Correlation

I will use **SERVQUAL** as a way of trying to measure service quality; researchers have developed a methodology known as **SERVQUAL** – a perceived service quality questionnaire survey methodology. **SERVQUAL** examines five dimensions of service quality:

- Reliability
- Responsiveness
- Assurance;
- Empathy, and
- Tangible (e.g. appearance of physical facilities, equipment, etc.)
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