CHAPTER III

A N A L Y S I S M E T H O D O L O G Y

3.1 Research Type

This research is using Quantitative analysis method with descriptive-causal apparoach. According to Alliaga and Gunderson (2002), quantitative research is explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics). According to Sugiyono (2012: 59) a causal relationship is a “cause and affect” type of relationship, in which for both groups of variables there is the one being affected (dependent variable) and the one affecting (independent variable).

To get a comprehensive picture and information about the influence of the development of information technology and internal control, a research method and design is needed that can describe the complex dynamics that occur between the variables to be studied. Therefore this research belongs to the type of quantitative research. Quantitative research is carried out on inferential research (in the framework of testing hypotheses) and relying on detailed conclusions on the probability of rejecting the null hypothesis. With quantitative research, the significance of group differences or the significance of the relationships between the variables studied can be obtained (Azwar, 2011).

3.2 Population & Sampling

3.2.1 Population

According to Sugiyono (2013: 115) said population is a region generalization consisting of objects or subjects that have quality and certain characteristics determined by researchers to be studied and then conclusions drawn.

The population used in this research will be the Start Up companies client of PT Metacific Consultant, Indonesia as of 2015 to 2018 with the total of 282 companies. In which case, the target sampling for this study is based on each company's response, meaning each company will be represented by one person as a respondent.

3.2.2 Samples

Sample measurement is a step to determine the amount of sample required to take in a study. In addition to the statement above, it is also noted that the selected sample must show all characteristics of the population so that it is reflected in the selected sample, in other words the sample must be able to describe the actual or represent a certain population in several different conditions.

To calculate the required participant of population needed, this research will use the Slovin Formula, namely:

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

n : total number of samples

N : total of population

e : margin of error

If a sample is taken from a population, a formula must be used to take into account confidence levels and margins of error. When taking statistical samples, the

knowledge about the population varies, sometimes it's a lot, others it's a little to nothing. In other word, we may know the bimodal distribution, normal distribution, but nothing about the behavior and other tendency the population might have. Slovin's formula is used when nothing about the behavior of a population is known at at all.

With that being said, the samples required to do this research will be formulated as shown below:

$$n = \frac{282}{282\ \ (0{,}05^2) + 1} = 165,39$$

As formulated by the Slowin Formula, the total of samples required for this research is 165 samples.

3.2.2.1 Sample Characteristics

The subjects used in this research are the accounting employee of Start Up Businesses operating in Jakarta, Indonesia, in which uses Computerized Accounting Information System to operate, with the criteria as such:

- Have at least 10 accounting staffs.

- Have been working with computerized accounting system for 5-10 years.

3.2.2.2 Sampling Method

Participant selection will be conducted using Random Sampling where the researcher selects participants according to the characteristics of the subject that has been determined. According to Lavrakas (2006), random sampling refers to a variety of selection techniques in which sample members are selected by chance, but with a known probability of selection. Most social science, business, and agricultural surveys rely on random sampling techniques for the selection of survey participants or sample units, where the sample units may be persons, establishments, land points, or other units for analysis. Random sampling is a critical element to the overall survey research

design. The reason this particular method is choosen is because there are specific criterias required by the respondents in order to conduct this research and get the responses needed.

In addition to use Random sampling, this study also uses Snowball Sampling which is a type of purposive sampling used to find the most suitable participants to examine the complexity of a topic or event, in this type of sampling, participants will be asked to identify or provide recommendations for other companies that according to the criteria in the study (Creswell, 2012). Snowball sampling is used in addition of random sampling in the case of the lack of respondents, with the hope that by getting recommendations, the proper amount of respondents to conduct this research can be achieved.

3.3 Variables, Operationalization & Measurement.

3.3.1 Variables

3.3.1.1 Independent Variables

1. Internal Control as X_1

According to AICPA, Internal Control is a process that is influenced by the board of commissioners, management personnel, and other business units, which are designed to obtain adequate confidence in achieving goals in the following matters: effectiveness and efficiency of operations, reliability of financial reporting, compliance with laws and applicable regulations. Internal accounting controls are designed in such a way as to maintain the wealth of the organization, examine the accuracy and reliability of accounting data, encourage operational efficiency, encourage compliance with management policies.

2. Individual Morality as X_2

Liyanarachchi (2009) also explained that the level of individual moral reasoning will influence their ethical behavior. People who have a low level of moral reasoning behave differently from people who have a high level of moral literacy when they face ethical dilemmas. The higher the level of one's moral circulation, the more likely the individual is to do 'the right thing'. Individuals will take action because they are afraid of the laws / regulations that exist if they are at the lowest (pre-conventional) stage. In addition, individuals at this moral level will also view their personal interests as the main thing in carrying out an action.

3. Ethical Value as X_3

According to Johannes Brinkman (2002), ethics is the discipline that exhibits the matters related to evil and good, wrong and right, and vice and virtue. Therefore, ethics are used to examine moral principles, human behavior, and their efforts to distinguish between good and bad. The development of ethical codes within organizations can secure the fidelity of business transactions and financial processes, which in turn, affect employee performance, relationship, and credibility of the company.

3.3.1.2 Dependant Variable

1. Accounting Fraud as Y

Accounting Fraud is a false statement arising from improper treatment, this is often referred to as misuse or embezzlement relating to the theft of an entity's assets resulting in financial statements not being presented in accordance with generally accepted accounting principles. (IAI, 2001).

3.3.2 Operationalization and Measurement

Table 3.1 Independent Variable Indicators

Variable	Dimension	Indicator	Scale
Internal Control Internal control is a process - affected by an entity's board of directors, management, and other personnel designed to provide reasonable assurance regarding achieving objectives in a company. (Dull et al, 2012)	Control Environment	a. Organization structure, task, responsibility and accessibility. b. Management Competency. c. Performance Accountability.	Interval
	Communication and Information	a. Effectivity. b. Frequency c. Accuracy	Interval
	Monitoring	a. Activity assessment b. Internal audit functions. c. Internal control structure	Interval

Variable	Dimension	Indicator	Scale
Individual Morality Morality has a meaning that is basically the same as "moral", we speak "morality of an act" means that the moral aspect is a good or bad deed. (Bertens, 1993).	Moral Reasoning	a. Rationalism b. Individual Reasoning	Interval
	Moral Education	a. Moral Knowledge b. General Moral Implementation	Interval
	Moral Perception	a. Moral Judgements b. Criticalism c. Positive Perceptions	Interval

Variable	Dimension	Indicator	Scale
Ethical Value Ethics is the discipline that exhibits the matters related to evil and good, wrong and right, and vice and virtue. Therefore, ethics are used to examine moral principles, human behavior, and their efforts to distinguish between good and bad. (Brinkman, 2002)	Subjective Norms	a. Perception of Norms b. Normative Induced Behavior	Interval
	Professionalism	a. Profession Ethics b. Professional Attitude in Workplace c. Integrity	Interval
	Behavioral Control	a. Atittude b. Ettiquete c. Individual Judgements	Interval

Table 3.2 Dependent Variable Indicator Table

Variable	Dimension	Indicator	Scale
Accounting Fraud Accounting Fraud is a misstatements arising from improper treatment, this is often referred to as misuse or embezzlement relating to the theft of an entity's assets resulting in financial statements	Intentions	a. Individual Intentions b. Action Reasoning c. Bad Moral / Ethical Value	Interval
	Crime Motives	a. Financial Issue b. Ambitions c. Personal Reasons	Interval
	Individual Reasoning	a. Jealousy b. Envy c. Hate / Dislike	Interval

not being presented in accordance with generally accepted accounting principles. (IAI, 2001)			

3.4 Data Collection Method

3.4.1 Data Sources

This research is based on using primary data, described by Umi Narimawati (2008; 98) in his book "Qualitative and Quantitative Research Methodology: Theory and Application" that: "Primary data is data originating from the original or first source. This data is not available in compiled form or in the form of files. This data must be searched through the resource person or in the technical terms of the respondent, that is, the person we made as the object of research or the person we made as a means of obtaining information or data.

3.4.2 Data Collection Techniques

3.4.2.1 Survey Method (Questionaire)

In this study researcher used a survey method to obtain information from the resource persons by distributing closed questionnaires, namely questionnaires that had been provided with answers. This is done with the aim of making it easier for the speakers to provide answers and opinions and the minimum time of research that requires this study to be carried out briefly but still analyze in detail.

In measuring the answers to the questionnaires submitted to respondents, the scale used is the Likert scale. Likert scale is used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena. With a Likert scale,

the variables to be measured are translated into variable indicators. Then the indicator is used as a starting point for compiling instrument items which can be in the form of statements or questions.

Sugiyono (2013: 133), states that the answer to each instrument item using a Likert scale has gradations from all positive to very negative. For the requirements of quantitative analysis, those reviews will scored as explained below:

Table 3.3 Likert Scale Scoring

Details	Score
Strongly Agree/Very Positive/Always/Very Good	5
Agree/Positive/Often/Good	4
Not Sure/Neutral	3
Disagree/Negative/Sometimes/Bad	2
Strongly Disagree/Very Negative/Never/Very Bad	1

Instrument of research used using the Likert Scale can be written as checklist/multiple choices.

3.5 Analysis Method

Data analysis is simplification of data into forms that are more easily interpreted. The data collected from the results of the study will be compared to the data found in the field with the library data, then analyze it to draw conclusions.

According to Xia and Gong (2015), data analysis is a process of inspecting, cleansing, transforming, and modeling data with the goal of discovering useful information, informing conclusions, and supporting decision-making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, while being used in different business, science, and social science domains. Judd, *et al* (1989) also concluded that analysis refers to breaking a whole into its separate components for individual examination. Data analysis is a process for obtaining raw data and converting it into information useful for decision-making by

users. Data are collected and analyzed to answer questions, test hypotheses or disprove theories.

Data analysis is the simplification of data into one of the most readable and interpreted forms. The hypothesis formulated in this study is to determine the effect of Internal Control and Accounting Information System Development on Accounting Fraud. After the data is collected, the researcher performs data processing to facilitate analysis. This data analysis can provide results that are useful in solving research problems.

The analysis of this study will be using Statistical Package for the Social Science (SPSS) by IBM.

3.5.1 Instrument Test

3.5.1.1 Validity Test

Validity test is done to find out whether the measuring instrument has the accuracy in making measurements, or in other words whether the measuring instrument can really measure what is to be measured (Suharsimi Arikunto, 2010). The way to find out the validity of a measuring instrument is to correlate the scores obtained on each item with a total score. Total score is the value obtained from the sum of all item scores. The correlation between item scores with total scores must be significant based on certain statistical measures. If the score of all items compiled based on the concept correlates with the total score, it can be concluded that the measuring instrument has validity or in other words if there is a positive correlation between the scores of each item with a total score, then the relationship is consistent or in line with the theoretical concept.

The validity test in this study used item analysis, namely correcting the score of each item with a total score which is the sum of each item score. If there are items that do not meet the requirements, the item will not be further investigated. The

requirement according to Sugiyono (2012: 178) that must be fulfilled is that it must have the following criteria:

a. If ≥ 0.3, then the question items from the questionnaire are valid

b. If ≤ 0.3, then the question items from the questionnaire are invalid

Validity Instrument Test can be calculated using the correlation formula, which is based on Pearson Product Moment. However, the validity test in this study will be calculated through the SPSS.

Table 3.4 Validity Test: Internal Control

Variable	Item	r count	r table 0,142 (n=188)	
Internal Control (X_1)	X_1.1	0,435	0,142	Valid
	X_1.2	0,368	0,142	Valid
	X_1.3	0,385	0,142	Valid
	X_1.4	0,753	0,142	Valid
	X_1.5	0,632	0,142	Valid
	X_1.6	0,583	0,142	Valid
	X_1.7	0,603	0,142	Valid
	X_1.8	0,586	0,142	Valid
	X_1.9	0,552	0,142	Valid

Table 3.5 Validity Test: Individual Morality

Variable	Item	r count	r table 0,142 (n=188)	
Individual Morality (X_2)	X_2.1	0,441	0,142	Valid
	X_2.2	0,332	0,142	Valid
	X_2.3	0,560	0,142	Valid
	X_2.4	0,714	0,142	Valid
	X_2.5	0,682	0,142	Valid
	X_2.6	0,640	0,142	Valid
	X_2.7	0,390	0,142	Valid

Table 3.6 Validity Test: Ethical Value

Variable	Item	r count	r table 0,142 (n=188)	
Ethical Value (X_3)	X_3.1	0,467	0,142	Valid
	X_3.2	0,612	0,142	Valid
	X_3.3	0,437	0,142	Valid
	X_3.4	0,607	0,142	Valid
	X_3.5	0,633	0,142	Valid
	X_3.6	0,525	0,142	Valid
	X_3.7	0,442	0,142	Valid
	X_3.8	0,501	0,142	Valid

Table 3.7 Validity Test: Accounting Fraud

Variable	Item	r count	r table 0,142 (n=188)	
Accounting Fraud (Y)	Y.1	0,376	0,142	Valid
	Y.2	0,496	0,142	Valid
	Y.3	0,516	0,142	Valid
	Y.4	0,703	0,142	Valid
	Y.5	0,375	0,142	Valid
	Y.6	0,583	0,142	Valid
	Y.7	0,269	0,142	Valid
	Y.8	0,657	0,142	Valid
	Y.9	0,492	0,142	Valid

The validity of an item is approved as valid if the value of Rcount > Rtable, based on the tables above, with the Rtable of 0,142 (significant rate of 5% with n =188), it is easily concluded that all the datas are considered valid and usable as a research data.

3.5.1.2 Reliability Test

Reliability is an index that shows the extent to which a measuring instrument is reliable or reliable, which shows the extent to which measurement results remain

consistent (Djamaludin Ancok, 1989). Reliability to determine the extent to which the measuring instrument used has a level of accuracy, trust, constancy or stability.

Reliability testing is done to determine how far the measurement really goes against the same symptoms using the same measuring device, and whether it will provide the same result. This research uses the Cronbach Alpha Coefficient with SPSS facility to see the reliability of each construct. A construct or variable is said to be reliable if the Cronbach Alpha Value is greater than 0.6, which is formulated as:

$$\mathrm{A} = \frac{K_r}{a1 + (K-1)r}$$

A = Reliability Coefficient
K = Total of Reliable Items
r = Average Correlations
1 = Constant Value

Table 3.8 Reliability Test

No.	Variable	*Cronbach Alpha*	Criteria	Status
1	Internal Control	0,704	0,6	Reliable
2	Individual Morality	0,601	0,6	Reliable
3	Ethical Value	0,632	0,6	Reliable
4	Accounting Fraud	0,626	0,6	Reliable

A variable is considered reliable if the *Cronbach Alpha* values more than 0,6, which in this research has proven to be true. All 4 variables scores more than 0,6 making every single one of the construct deemed reliable.

3.5.2 Classical Assumptions

3.5.3.1 Multicolinearity Test

Multicollinearity test aims to test in the regression model found a correlation between independent variables (Ghozali, 2001). A good regression model should not have a correlation between independent variables. If the independent variables correlate with each other, then this variable is not orthogonal. Orthogonal variables are independent variables whose correlation value between independent variables is zero (Santoso, 2000). Multicollinearity is a state of very high intercorrelations or inter-associations among the independent variables. It is therefore a type of disturbance in the data, and if present in the data the statistical inferences made about the data may not be reliable.

There are a few specific reasons why multicollinearity occurs, such as inaccurate use of dummy variables, the inclusion of a variable which is computed from other variables in the data set, repetition of the same kind of variable, the variables are highly correlated to each other (Statistic Solutions, 2018).

3.5.3.2 Normality Test

The normality test aims to test whether in the regression model, the dependent variable, the independent variable or both have a normal distribution or not. A good regression model is to have normal data distribution or the distribution of statistical data on the diagonal axis of the normal distribution graph (Ghozali, 2001).

Normality testing in this study is used by looking at a normal probability plot that compares the cumulative distribution of actual data with the cumulative distribution of normal data. While the basic decision making for normality test data is (Ghozali, 2001): a) If the data spreads around the diagonal line and follows the direction of the diagonal line or the histogram graph shows a normal distribution, then

the regression model meets the assumption of normality. b) If the data spread far from the diagonal and / or do not follow the diagonal line direction or the histogram graph does not show a normal distribution, then the regression model does not meet the assumption of normality.

3.5.3.3 Heteroscedasticity Test

Heteroscedasticity test aims to test whether in the regression model variance occurs from one observation to another. The way to detect it is to see whether there is a certain pattern on the Scatterplot chart between SRESID and ZPRED, where the Y axis is Y that has been predicted, and the x axis is residual (Y prediction - Y actually) that has been standardized (Ghozali, 2001).

The existence of heteroscedasticity is a major concern in the application of regression analysis, including the analysis of variance, as it can invalidate statistical tests of significance that assume that the modelling errors are uncorrelated and uniform—hence that their variances do not vary with the effects being modeled. For instance, while the ordinary least squares estimator is still unbiased in the presence of heteroscedasticity, it is inefficient because the true variance and covariance are underestimated. Similarly, in testing for differences between sub-populations using a location test, some standard tests assume that variances within groups are equal.

3.5.4 Data Analysis

3.5.4.1 Coefficient of Determination

The coefficient of determination (R^2) essentially measures how far the model's ability to explain the variation of the independent variable. The coefficient of determination is between zero and one. The small value of R^2 means that the ability of independent variables to explain variations in the dependent variable is very limited. Values close to one mean that the independent variables provide almost all the information needed to predict variations in the dependent variable (Ghozali, 2001).

3.5.4.2 Multiple Linear Regression

In this research, multiple linear regression will be calculated using the SPSS application. Multiple linear regression is the most common form of linear regression analysis. As a predictive analysis, the multiple linear regression is used to explain the relationship between one continuous dependent variable and two or more independent variables. The independent variables can be continuous or categorical (dummy coded as appropriate) (Statistic Solutions, 2018).

Multiple linear regression (MLR) is a statistical technique that uses several explanatory variables to predict the outcome of a response variable. The goal of multiple linear regression (MLR) is to model the relationship between the explanatory and response variables. (Investopedia, 2018).

3.5.5 Hypotheses Test

Based on the Research Framework, the hypotheses of this research will be tested for the validity and reliability along with the concluded result as follows,

1. Internal Control and Accounting Fraud.

• Ho : $\beta xy = 0$, meaning there is no effect of Internal Control on the prevention of Accounting Fraud.

• H_a : $\beta xy \neq 0$, meaning there is an effect of Internal Control on the prevention of Accounting Fraud.

2. Individual Morality and Accounting Fraud.

• Ho : $\beta xy = 0$, meaning there is no effect of Individual Morality on the prevention of Accounting Fraud.

• H_a : $\beta xy \neq 0$, meaning there is an effect of Individual Morality on the prevention of Accounting Fraud.

3. Ethical Value and Accounting Fraud.

• Ho : $\beta xy = 0$, meaning there is no effect of Ethical Value on the prevention of Accounting Fraud.

• H_a : $\beta xy \neq 0$, meaning there is an effect of Ethical Value on the prevention of Accounting Fraud.

3.5.5.1 The *t* test

To test whether or not a statement is reliable or not the $\boldsymbol{t}$ test basically shows how far the effect of one independent variable individually in explaining variations in the independent variable (Ghozali, 2001).

The $\boldsymbol{t}$ test functions as:

- To estimate the average interval.
- To test hypotheses about the average of a sample.
- To know the acceptance limit of a hypothesis.
- To test whether or not a statement is reliable or not

The criteria for acceptance or rejection of Hypothesis zero (H0) goes as follows:

H0 is accepted if: $T_{table} < T_{count} \leq T_{table}$ or $T_{count} < 0{,}05$

H0 is rejected if: $T_{count} > T_{table} \leq T_{table}$ or $T_{count} > 0{,}05$

If Ho is accepted, then this means that the influence of the independent variables partially on the dependent variable is considered not significant and vice versa, if Ho is rejected, then this means that the influence of independent variables on the dependent variable is considered significant.