CHAPTER THREE

RESEARCH FRAMEWORK AND METHODOLOGY

3.0 Introduction

In this Chapter, the methods of data collection were identified to measure the internal auditor's opinion and perception on number of resources, level of competencies and audit report of internal audit of 5S Quality (IAQ) effectiveness towards company operation performance amongst 5S certified company. In order to achieve the objective of this study, questionnaires were distributed to 5S certified companies focusing on internal audit team as to gain insight of the present practices of conducting in their oraganizations. The study will find out how the audit process has been carried out and also gather perceptions from internal auditors about their expectations on IAQ in contribution towards company operational performance.

In this chapter also, the detailed characteristics of the selected population, sampling, types of research design, questions, instrumentation and how it was dispersed were discussed as well as the collection of the data, the method of analysis and the impact of the study towards 5S certified company are elaborated.

3.1 Description of the Research Design

This study was conducted using the descriptive study design. According to Uma Sekaran (2003), descriptive study are undertaken when the characteristics or the phenomena to be tapped in a situation are known to exist, and one wants to be able to describe them better by offering a profile of factors. In other words, descriptive study enables the researcher to

analyze the internal auditor opinion and perception on number of resources, level of competencies and audit report of internal audit of 5S Quality based on the research question tested. It may also be seen as the guide to the researcher in that it depicts and describes the method to be followed in studying the problems.

In this research, the researcher will only concentrate on organizational factors of the opinion and perception on number of resources, level of competencies, audit findings of IAQ and how it contributes to company operational performance. The factor may have contributed to the opinion and perception, agree and disagree of the internal audit of 5S Quality practice.

The research design was a survey questionnaire. The self-administered survey instrument was composed of closed-ended questions. Hence, qualitative and quantitative data was collected with the use of the instrument. This researcher chose to conduct self-administered surveys as opposed to interviewer-administered surveys because as Spunt (1999) suggested, self-administered surveys are more convenient and less expensive to administer, eliminates interviewer bias, gives respondents privacy, and results can be analyzed more quickly. A disadvantage of self-administered surveys is that respondents have the opportunity to scan the questions as they wish (Spunt, 1999). According to Spunt, this creates a potential response bias in that the questions and answers of future questions may negatively impact responses provided on previous ones. Although interviewer-administered surveys have advantages such as control of the atmosphere and sequence of questions, in-person interviews and telephone interviews can be expensive and sometimes difficult to arrange (Spunt, 1999). The study gathered information about specific opinions and perception of internal audit of 5S Quality and their equitability.

This study chose to use the survey with closed-ended questions as the research design because it is the most convenient way to gather information from the selected audience. It is suggested that surveys with diverse type questioning are a more convenient way of gathering information. Hence, this study chose this type survey method as opposed to in depth interviews or focus groups. Interpersonal contact is not a necessity for this research.

Information gathered in the survey should result in clear and concise answers to the questions presented in the survey and provide a true picture of how participants from the 5S certified company feel about the current practice of IAQ. Factors such as precision and confidence, population size, time and cost constraints were taken into consideration in selecting sample size. Using the probability sampling technique (use random sampling), a total of 392 respondents come from private organizations consist of manufacturing and service in order to give better mixture between internal auditor and 5S practices in order to increase the generalization of the result.

3.2 Research Model

The purpose of developing a research model is to show the linkage of relationship between the independent variables and dependent variable. This model has become the foundation on which the entire research was based. Figure 3.1 shows the proposed research model with different kinds of variables and the relationship of each variable.

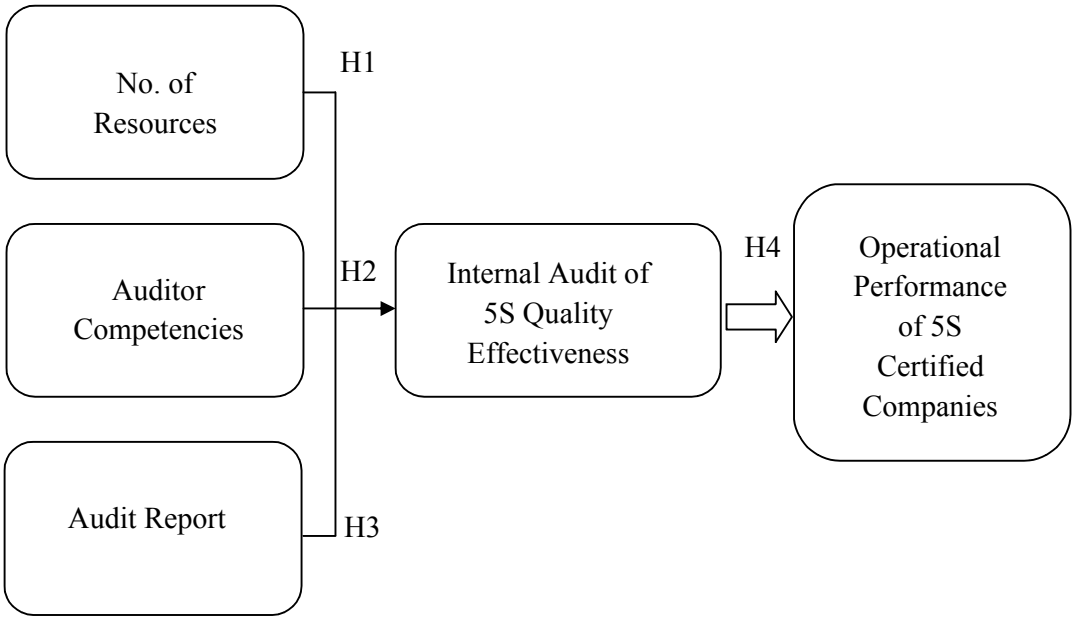

Figure 3.1: The Perception of Internal Auditor on Organizational Factors Influencing Internal Audit of Quality Effectiveness and Company Operational Performance: A Study of Quality Environment (5S)

The above research model was adopted based on three model/ framework as below:

1. ISO 9000 Application in auditing (Karapetrovic and Willborn, 2000), has focused on allocation and deployment of resources to achieve audit objectives. Auditor competencies and qualification were determined as important factor in quality auditing.
2. Internal Audit Organizations (Mort Dittenhofer, 2001) explained that internal auditor should employ standards guideline in their reporting such as clarity, brevity, timeliness, completeness, freedom from jargon and use in positive language in order to provide useful audit findings (report) and recommendations. In return, the management support provides resources and commitment to implement the internal audit recommendations in attaining audit effectiveness (Mihret and Yismaw, 2007).
3. Connection of the internal audit and business goals achievement (Milena A. and Borut R., 2010) have discussed the management's expectation of the internal audit of

quality effects are changing from compliance audit to assess continuous improvement and management system in fulfilling the achievement of business goal (Karapetrovic and Willborn, 2000; ISO 9004, 2002, Ch. 8.2.1.3; Seaver, 2002).

3.3 Hypothesis Development

The size of an internal audit (IA) team, one of the key criteria used by external auditors to evaluate its quality (see, for instance, Felix *et al.*, 2001; Al-Twaijry *et al.*, 2004, Mat Zain *et al.*, 2006), clearly determines the amount of time that internal auditors can dedicate to auditing activities. Furthermore, in a larger team, there could be a higher rotation of auditors, which could lead to more objectivity. Gul & Subramaniam (1994) showed that when auditors are more acquainted with auditees they are less objective in the case of managerial conflicts.

With that we can consider the internal audit as a system in which various interrelated process and resources are directed to achieve goals. In achieving internal auditing of quality effectiveness it requires adequate human and material resources, and proceeds via planning stages to actual examination of objectives evidence against audit criteria or standard (Beckmerhagen, 2004). Thus, the preceeding discussion led to first hypothesis:

H1 – Number of resources influence the Internal Audit of 5S Quality Effectiveness

The International Standards for Professional Practice of Internal Auditing (IPPF) in attribute standards has highlighted that internal auditor must be proficiency (Standard 1210) which includes possess the knowledge, skill and competencies in order to perform their responsibilities effectively (IIA, 2010).

The auditors' competencies can also increase the effectiveness of the IA team by improving the recognition of their role within the organization. Previous studies underlined that line managers often believe that internal auditors do not have enough knowledge to provide useful help (Griffiths, 1999; Van Peursem, 2004, 2005) and, if this is the case, they do not take into account their advice, hence reducing the effectiveness of IA (Van Peursem, 2004, 2005). Therefore, the above argument led to following hypothesis:

H2 – Auditor competencies influence the Internal Audit of 5S Quality Effectiveness

In performing auditing activities, internal auditor must objectively and independently collect and verify audit evidence, evaluate it against audit criteria (standard) and report the findings. Objectively relates to the consistency of the auditing process and results, the use of methodology (checklist), the application of systematic approach to auditing and free from bias. On the other hand, independence refers to both the auditor's organizational position and his or her state of mind (Karapetrovic and Willborn, 2000; ISO 9004, 2002, Ch. 8.2.1.3; Seaver, 2002).

There are some criteria that tempting for use in measuring internal audit activities that provide good indicator of audit performance. One of it is the audit report. Audit findings in audit report represent actual output of an audit. In normal situation the number of findings (non-conformance report) can be counted to demonstrate the effort of auditor. However this indicator only focused on audit efficiency. In that effort, the internal auditor should not only concentrating on miniscule non-conformance but they need to find the opportunities for improvement (Beckmerhagen et.al, 2004).

In other research of audit report found that the internal auditor should capable to provide useful audit findings and recommendations. The performance standards of the IIA (1999b) require the auditor to plan and perform the work such that he or she would be able to arrive at useful audit findings and forward recommendations for improvement. For example, internal audit has to evaluate its performance and continually improve its service (Ziegenfus, 2000). The ability to properly plan, perform and communicate the results of audits is a proxy for audit quality. Therefore, audit quality is arguably a function of extensive staff expertise; reasonableness of the scope of service; and effective planning, execution and communication of internal audits.

Audit findings and recommendations would not serve much purpose unless management is committed to implement them. Adams (1994) has explains that it is in the interest of management to maintain a strong internal audit department in order to ensure that the implementation of audit recommendations is highly relevant to audit effectiveness (Van Gansberghe, 2005). The preceding discussion led to third hypothesis:

H3 – Quality of audit reports influence Internal Audit of 5S Quality Effectiveness

The work of researchers and development of new standards such as the ISO 10014 reveal a need for the QMS to realise financial and economic benefits (Johansson, 2003; Johansson and Palmes, 2005). Researchers are trying to find approaches to use the different tools implemented inside the QMS to create positive economic effects. Internal audits represent one of the key activities required by the ISO 9000 in order to maintain and develop the QMS.

The general purpose of internal audits is to determine whether the established QMS conforms to the requirements of the ISO 9001 and to eliminate any detected non-conformities and their causes. However in achieving internal auditing effectiveness it requires adequate human competencies and material resources, and proceeds via planning stages to actual examination of objectives evidence against audit criteria or standard (Beckmerhagen, 2004) to produced audit report.

In order to stimulate the interest of company management in the business perspective of internal audits, researchers are searching for different approaches to the implementation of internal audits in such a way that brings the biggest benefit to the company. The basis of these approaches is a reorientation away from a pure determination of conformity to requirements of the standard to a search for ways of business improvement. We can talk about internal audits that add value activity to achieve company performance (Liebesman, 2002; Hutchins, 2002; Russell, 2004). Therefore, the above statements led to following hypothesis:

H4 – The relationships between

a) number of resources and company operational performance
b) auditor competencies and company operational performance
c) audit report and company operational performance

are mediated by the effective of internal audit of 5S Quality.

3.4 Survey Questionnaire and Variables

3.4.1 Sampling Design

This research used random sampling to obtain respondents. According to Abu Musa (2006), random selection of the individual observation of the research sample is an appropriate means to obtain an accurate and representative sample. Sampling is selecting

scientifically units from a population. It is impossible for researcher to reach every employee in order to conduct survey due to big population and unmanageable of data that will be collected.

3.4.2 The Population and Sample

The technique of probability sampling has been chosen in this research. According to Uma Sekaran (2003), the suggested sample size for given population of 392 is approximately 196 respondents (Table 11.3: Sample Size for a Given Population Size, pg 294). This sampling design is used to samples respondent for researcher structured questionnaires which is a tool in this effectiveness of survey to determine this problem statement. The target population for this questionnaire is involve of 5S internal auditor from private sectors of 5S certified company. Private sector has been chosing in this research due to the greater impact of the 5S on operational activities such as process improvement, quality products and services improvement and cost reduction, as compared to public sector.

The demography sampling can be identified as the target population in 5S certified company. From the population, 196 respondents had been selected randomly to represent the population, in order to draw conclusions that would be generalized to the population of interest. The selection of potential respondent as based on age, educational background, working experience, position, and audit experience.

3.4.3 Structure of the Questionnaire

The questionnaires were distributed to 196 private companies that recieved 5S certification from MPC. The questionnaires were solicited to 5S internal auditors who possess knowledge about 5S audit and have participated in the audit process. Each person was targeted and included based on willingness to participate in the study.

The questionnaire was divided into five main section namely item 1 to 10 in Section A specified in the importance of resources to the internal audit of 5S Quality. Section B contained questions on the importance of auditor competencies in carried out internal audit of 5S Quality in organizations selected. In Section C, the questions focused on the importance of audit report in internal audit of 5S Quality. For Section D, it specified on the impacts of internal audit of 5S Quality effectiveness towards company operational performance. Section E contained demograpic questions. Respondents were required to indicate their answer based on 5 point Likert scale as follows:

1 Strongly Disagree	2 Disagree	3 Niether disagree nor agree	4 Agree	5 Strongly Agree

Section E contained basic demograpic questions such as age, gender, educational level, working experience, job title, industry, size of companies and position in 5S Committee. The questionnaire is represented in Appendix A.

3.4.4 Pilot Test

A pilot test was conducted 6 months before the questionnaires were sent out to selected companies whose recieved 5S Certification. 23 auditors from MPC who possesed knowledge, skills and experience on IAQ were selected to participate in the pilot test. The purpose of the pilot test is to ensure the clarity of questionnaire statement to respondents and also to detect other possible weaknesses in the questionnaire. Some feedback received from the pilot study helped to improve the questionnaire especially in Section D, where most of them suggested that the IAQ effectiveness should be links to company Key Performance Indicator (KPI) such as increase productivity, improve quality of products and services, reduce cost, improve delivery, safety and morale.

3.4.5 Data Gathering

In this research, a survey has been conducted using self administered questionnaire to identify and evalutes the effective of IAQ towards company operational performance. The survey has distributed to private companies that recieved 5S Certification from MPC. Total answered questionnaires received were 83. The response rate of 42.3% was recorded accordingly.

3.4.6 Distribution on Survey Questionnaire

The surveys were distributed to the participants through email, fax and telephone to identified companies. Total questionnaires distributed were 196 and collected by the researcher personally.

3.5 Data Analysis Techniques

The Statistical Package for Social Sciences (SPSS) version 18 was used to analyzed the data collected. There were four techniques of analysis in this test namely descriptive statistics, reliability analysis, correlation analysis and regression analysis that have been used.

3.5.1 Descriptive Statistics

Descriptive statistics involves transformation of raw data into a form that would provide information to describe a set of factors in a situation. Descriptive statistics are commonly used to provide analysis for data transcription errors and distribution patterns, to provide description of the basic demographic characteristics of the sample obtain from the survey. Descriptive statistics are provided by frequencies, measures of central tendency and dispersion. Frequencies simply refer to the number of times various subcategories occurred, in which the percentage of the occurrence can be easily calculated. For example, analyses on how many respondents are female or male, etc.

Besides frequency test, normality test also been using in descriptive statistic. Normality test is an assessment of the normality of data and also a prerequisite for many statistical tests as normal data is an underlying assumption in parametric testing. There are two main methods of assessing normality - graphically and numerically. The results tells us if the Sig. value of the Shapiro-Wilk Test is greater the 0.05 then the data is normal. If it is below 0.05 then the data significantly deviate from a normal distribution.

3.5.2 Reliability Analysis

Reliability analysis is used for testing both consistency and stability. Consistency indicates how well the items measuring a concept hang together as a set. Cronbach's Alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability (Cronbach, 1951). Therefore, Cronbach's Alpha (α) was use tested how well the items in a set are positively correlated to one another. Cronbach Alpha coefficient accepted in this test is 0.5 and above (Sekaran, et.al. 2001).

3.5.3 Correlation Analysis

This test would like to see the nature, direction and significance of the bivariate relationships of the variables used in the study (the relationship between any two variables among the variables tapped in the research). A Pearson Correlation (r) matrix will provide this information, that is, it will indicate the direction, strength and significance of the bivariate relationships of all the interval or ration variables in the study. The (r) between 1.0 which indicate positive relationship and (r) -1 indicate negative correlation.

3.5.4 Regression Analysis

Regression analysis is used to trace the sequential antecedents that cause the dependent variable through what is known as Path analysis. Regression analysis examines the situation where a dependent variable is simultaneously influenced by a number of dependant variables. R square value close to one indicates that the model fits the data very well. However, above 0.5 has been considered significant. Beta is an attempt to

make the regression coefficient more comparable. The analysis of variance (ANOVA) table provides details of the variation explained by the regression model compared with the unexplained variation.