CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the methodology applied in conducting the research. The chapter begins with the discussion on the development of hypothesis. It then highlights the research design, questionnaire design, and samples design followed by data collection and how they are analyzed.

3.2 Development of Hypothesis

The trainees should be able to perform better as they have the training to prepare them to perform their tasks. Hence, the following has been hypothesized:

H1: There is a positive relationship between design of training program and training outcomes

This hypothesis was developed on the basis that trainee's reactions or perceptions of a training design. This dimension will be positive when the teaching material has been adapted to make it suitable for the particular trainees, the program is well planned and the content of the program is seen by trainees to help or assist them in their careers.

H2: There is a positive relationship between course supervisor's support and trainee's performance

This hypothesis was developed on the basis that the course supervisor will play an important role in motivating trainees to perform their work onboard

ship. The support given by the supervisor partially will enhance the trainees to do their tasks effectively and efficiently. This dimension will be positive when firstly, the quality of supervisor's knowledge of the subject is excellent; secondly, there is follow-up by the supervisor after the lessons with practice sessions provided; thirdly, the supervisor is well prepared and delivers the training in a lively manner to keep the trainees interested; fourthly, there is sufficient and responsive interaction between supervisor and trainees; and lastly, the approach of the supervisor produces a good learning climate. In that sense, the trainees see the practical value of what they are taught.

H3: There is a positive relationship between trainee's motivation to learn and trainee's performance.

This hypothesis was developed on the basis that the trainee's motivation to learn will have a significant impact towards knowledge, skill and attitude acquired during training and transfer to the workplace. This dimension will be positive when the trainees' has sense of accomplishment and achievement as a result of the training program. Satisfaction is felt when the results are equal to or exceed his expectations, it is what one typically feels or experiences when a wish or need is fulfilled.

H4: Sea training program will increase the training effectiveness in term of reaction based on trainees' course satisfaction; learning based on the results of the examination: and behavior based on positive increments of basic job skills and personal attributes.

This hypothesis was developed on the basis that trainee's course satisfaction of the course conducted will increase the course effectiveness. This dimension will be positive when the trainee is satisfied with the course,

achieves good results in the examination and there is incremental improvement of basic job skills and personal attributes.

3.3 Research Design

For the purpose of this research, the instrument used is the questionnaire survey. Purposive sampling was used for this research. Purposive sampling is a non-probability sampling technique in which the sampling confined to specific types of people who can provide the desired information set by the researcher. Type of purposive sampling used is judgment sampling that involves choice of subjects who are most advantageously placed or in the best position to provide the information required (Sekaran, 2003). For the survey technique, self administrative questionnaires were used where questionnaire was distributed by the researcher and the researcher explained the questionnaire to the trainees for better understanding. The survey questionnaires were distributed to the respondents in early June 2009 while the respondents were still undergoing their sea training program onboard ship. The course satisfaction questionnaires were distributed early August 2009, after the completion of the sea training program. Analysis was also carried out on the relevant recordings in the respondent's BAT A 3023A which were filled by Training Officer, namely the trainees' examination results, basic job skills and personal attributes.

3.4 Questionnaire Design

The self administrative questionnaire for this study consisted of four sections. In section one; the questions are adapted from the studies by Mathieu et al. (1992). This section measured the trainee's reaction towards training design, i.e whether the program benefitted them. Eleven items adapted from the previous research were used to assess the trainees' utility reactions to the program. Trainees indicated their level of agreement with each item using a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's alpha was 0.82.

Section two consists of 6 items to gauge the ability of supervisor to impart the lesson in effective and efficient manner. Supervisor support was measured using a five-item scale from Facteau et al (1995). A total of six items adapted from previous research were used to assess the trainees' perception toward Training Officer who acted as supervisor throughout Sea Training program. Trainees responded by using a five-point Likert-type scale ranging from 1 (not effective at all) to 5 (very effective). Cronbach's alpha for the scale in this study was 0.91.

Section three was developed to assess the individual factors described as influencing the trainee's motivation to learn. The motivation to learn (Machin & Fogarty, 2004) consisted of ten items were adapted. Trainees responded by using a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). This measure was to capture trainees' motivation for training at the end of the training. Cronbach's alpha for this scale in this study was

0.89. The last section is the demographic information's of the respondents. A copy of the survey questionnaire can be found at **Appendix 1**.

3.4.1 Training Performance Evaluation Method

3.4.1.1 Course Satisfaction

The questionnaire for course satisfaction is developed to gauge the trainees' perception toward sea training program. Trainee's satisfaction with the course was assessed using a 10-item scale. The items for this affective outcome were adapted from prior research (Abbad, 2004). Trainees responded by using a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha for this scale in this study was 0.713. A copy of the survey questionnaire can be found at **Appendix 2**.

3.4.1.2 Examination Grades

The other training outcome operationalized was examination grades. Examination grades do not always adequately represent declarative knowledge, but in this sample, grades largely reflected the learners' mastery of the material covered in the course. A test which was on the basis of a 100-point grade scale, was used to measure the levels of trainees' post-sea training knowledge. The specific percentage of grades based on tests for the ten subjects were C = 50% to 60%, C+ = 61% to 65%, B = 66% to 70%, B+ = 71% to 75% and A = 76% to 100%. The numeric equivalent of the earned letter grade scale ranging from 1 (grade C) to 5 (grade A) was used as the measurement of examination grades.

3.4.1.3 Basic Job Skills and Personal Attributes

The evaluation was done through BAT A 3023A which was filled by Training Officer before and after the sea training program. The respondents were supervised by Training Officer with the assistance of the ship's staff officers. The information used to fill BAT A 3023A was based on the Trainee's Training Card and Commanding Officer's monthly report. The supervisors were asked to rank one to nine, from very weak to excellence, the skills and personal attributes which the trainee possess before and after training. The items in the basic job skills were assessed using 6 item scale and personal attributes were assessed using 9 item scale.

3.5 Sample Design

A total of 109 trainees were selected for this research. Hair et al. (2005) recommended that a sample size of 100 to 400 respondents is sufficient for accurate estimation. The researcher selects all the 2nd year cohort of 46 trainees and 3rd year cohort of 63 trainees as the most appropriate to answer the questionnaire. They were selected because they have just completed the sea training program and still fresh with the program and able to provide answer in the sincere way possible in order to reflect the true situation.

3.6 Instruments Testing

3.6.1 Pre-testing (Pilot Testing)

Pre -testing was done in order to ensure clarity, validity and readability in relation to the study objectives. According to Creswell (2003), when an instrument is modified or is combined with another instrument, the original

validity and reliability may not hold for the new instrument. Pilot testing is important to establish the content validity of the instrument, and to improve questions, format, and the scales (Creswell, 2003). Therefore, to determine validity and reliability, the questionnaire was tested through 30 trainees of the 3rd year program. Changes were made base on this initial feedback in order to develop the final version of the questionnaire.

3.6.2 Reliability

To test for reliability, the researcher used Cronbach's coefficient alpha, which is a widely used method for computing reliability (Gall et al, 1996). According to Hair et al (1998), the scales that achieved a Cronbach's alpha of .70 or higher were widely accepted and as low as alpha=0.6 were acceptable for exploratory research. Reliability of each variable are as follows; design of training program=0.733, instructor support=0.716, motivation to learn=0.705 and course satisfaction=0.716. Therefore, the results can be assumed to be reliable and can be used for analysis. The reliability of the measures is as shown in **Appendix 3**.

3.7 Data Collection

In order to satisfy the study requirement, primary and secondary data were collected. The primary data as explained above was collected through a survey of respondents consisted of 2nd year and 3rd year trainees. The data for evaluation of trainees' performance (i.e examination results, basic job skill and personal attributes) were taken from BAT A 3023A which were filled by Training Officer. Kirkpatrick (1998b) suggested the time frame for data

collection should be two or three month after the program ended. However, this study does not include an analysis of Level 4 due to time constraint. The data was collected whilst the trainees were still undergoing sea training. The secondary data were collected from the previous studies, books, project paper, dissertation, thesis, magazines, policy of RMN, related journals, and books related to research.

3.8 Data Analysis

In order to get a true picture of the training effectiveness**,** the data collected were put in the process of vetting by pre-analytical process including data editing, variable development, data coding, error check, data structure development, re-analytical computer check, cross tabulation and finally data storing into computer. After all procedures were completed, Statistical Package for Social Science (SPSS) was used to analyze them. Analyses were carried out as follows:

(1) Examination of normality was conducted using skewness and kurtosis statistics. The most important observation was regarding the distribution of the variables design of the training program, instructor support, motivation to learn and course satisfaction. The skewness and kurtosis scores for all other measures are between ±2.0. Therefore, we can conclude these measures are normally distributed which meets the requirement of normality to run rigorous statistical analysis (Hair et al, 1998). The normality of the measures is as shown in **Appendix 3**.

(2) Descriptive Statistics consists of the frequency, percentage, mean and standard deviation was used to analyze demographic information, each variables in the model (i.e design of training program, supervisor support, motivation to learn and course satisfaction), and the trainees' basic job skill and personal attributes pre and post training. Midpoint of class interval was used for mean interpretation as follows: 4.50 to 5.00 – very high score; 3.50 to 4.49 – high score; 2.50 to 3.49 – moderate score; 1.50 to 2.49 – low score; and 1.00 to 1.49 – very low score. However, for variables basic job skill and personal attributes, midpoint of class interval was used for mean interpretation as follows: 7.30 to 9.00 – very high score; 5.50 to 7.29 – high score; 3.70 to 5.49 – moderate score; 1.90 to 3.69 – low score; and 1.00 to 1.89 – very low score.

(3) Bivariate correlation technique was used to determine the direction of the relationships between the independent variables. The magnitudes of relationships were obtained through Pearson correlation coefficients. Munro (1997) interpretation of Pearson correlation coefficients was used as follows; 0.00 to 0.25 – very weak correlation; 0.26 to 0.49 – weak correlation; 0.50 to 0.69 – moderate correlation; 0.70 to 0.89 – strong correlation; and 0.90 to 1.00 – very strong correlation.

(4) A standard regression analysis technique was used in order to provide answers to the research objective to identify the predictor that contributed most from trainees' perception on sea training program. Multiple regressions allows the researcher to look at naturally occurring combinations of

independent variables and to determine whether there is a significant relationship between the dependent and the multiple independent variables, when taken as a group. In addition, it determines whether a given independent variable accounts for a significant amount of variance in the dependent, beyond the variance accounted for by other independent variables and which independent variables are relatively important predictors of the dependent variable (Hatcher and Stepanski, 1994).

(5) One-samples *t* test was conducted to test for significant differences between the performance of trainees' basic job skills and personal attributes, an analysis consisted of whether there were differences before and after sea training.