

## CHAPTER 3

### RESEARCH METHODOLOGY

The case study was conducted using the adapted soft system methodology propounded by Yusof Omar (2001) as a framework of this research.

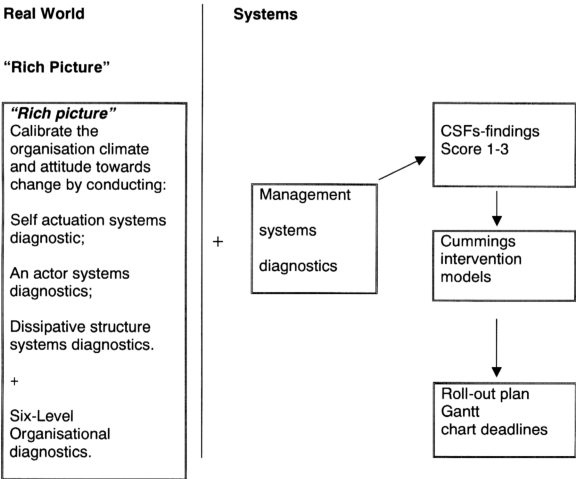


Figure 1: Mohd Yusof Omar's Organisational Diagnostics and Planned Change Model

The Soft System Methodology consists of two types of activities, i.e. real world activities and system thinking activities. Four types of diagnosis had been carried out to assess the 'real world activities'.

First diagnosis applied the 'seven characteristic of self actuation' to gauge the viable system closure. The second diagnosis is on the actor system adaptation for surviving the change. Third diagnosis applied system dissipativeness for evaluating the organisation structure for survival. And the fourth diagnosis i.e. the six level organisation diagnosis was applied to measure the organisation performance.

Observation techniques were used. The firm under studied (PHA) as a whole was taken as an organisation in the general environment, industrial structure, strategic orientation, self-actuation and dissipativeness diagnostic. The four business units (BUE, BUC, BUP and BUM) were taken as subjects in the group level diagnostic, which includes the group level diagnostic and the actor system generic identity diagnostic. Individual employee in the organisation was taken as subjects in the personal characteristics diagnosis and actor system individual identity diagnosis. Each employee's job was taken as subject in the individual effectiveness diagnostic.

On the other hand, the system thinking activities were assessed by Quality Management System ISO 9001:2000.

The processes of diagnosis, auditing and data collection involved reviewing archival records, pertinent documents of the real-life activities. The data collected from the study were analyzed to derive the critical success factors.

### **3.1 RESEARCH PROPOSITIONS**

The following research propositions were formulated as follow:

P1 : The organisation maintain its stability through the process of self-actuation,  $\mu = 4$  or  $\mu > 4$ .

P2 : The organisation is able to survive under change through actor system adaptation,  $\mu = 4$  or  $\mu > 4$ .

P3: The organisation structure is able to survive change through its dissipative structure,  $\mu = 4$  or  $\mu > 4$ .

P4 : The organisation is viable according to the six level organisation diagnosis,  $\mu = 4$  or  $\mu > 4$ .

P5 : The organisation management system is sufficient according to the ISO 9001:2000 international standard,  $\mu = 4$  or  $\mu > 4$ .

### **3.2 SELECTIONS OF MEASURES**

Observation was conducted using the forms designed by Yusof Omar (2001) for the real world diagnosis. The observation consists of four parts in general. First was the overall organisation, second was the group level consisting the departments, third the individual level and lastly the system of the organisation. The study adopted the summated ratings method developed by Rensis Likert. With the Likert scale, respondents indicate their attitudes by checking how strongly they agree or disagree with constructed statements that range from very positive to very negative towards the attitudinal object. To measure the attitude, scores were assigned to the alternative responses. In this study, scores of 5,4,3,2,and 1 were assigned to "excellent", "good", "satisfactory", "fair" and "poor" respectively.

### **3.3 SAMPLING DESIGN**

The samples for this research are the total population. The firm was considered as a subject for the organisation level diagnostic, the four business units (BUE, BUC, BUP and BUM) were taken for the group or department diagnostic, and all individuals in the organisation are subjects for individual level diagnostic.

### 3.4 DATA COLLECTION PROCEDURE

The technique used in collecting data in this case study was a simple design called facts finding. The facts finding required evidence from pertinent documents, archival records, physical artifacts and also participant-observation. All the variables for diagnosis of self-actuation, actor system, structure dissipativeness, six level organisation, quality management system (ISO 9001:2000 Standard) were assessed with the ordinal scale. Likert Scale was utilized to rate from 1 point to 5 points from poor to excellent. Observation was done during working hours for all subjects from September to December in 2001.

### 3.5 DATA ANALYSIS TECHNIQUES

Data collected was stored in the Excel format. Frequency distribution was used to describe the characteristics of the organisation and respondents. Mean scores and standard deviations provide qualitative information about the respondents' perception of the various variables. In the group level analysis, the Z test is used to analyze the data.

The critical value (CV) for Z test and t-test are presented as:

$$CV = \mu \pm Z_{c.l.} S_X$$

where  $\mu$  = population mean

$X$  = sample mean

$Z_{c.l.}$  = critical value of Z at a specified confident level

$S_X$  = standard error of the mean

$S$  = sample standard deviation

$n$  = sample size

When the sample mean is contained in the region of rejection, the null hypothesis will be rejected. Otherwise, the alternative hypothesis will be accepted.