

## CHAPTER 3

### 3. RESEARCH METHODOLOGY

This chapter describes the journey through the research process, presents the concepts central to research methodology as well as the methods used in this study. The intention in this chapter is to create an understanding for how and why the selected methods have been chosen as a guide in collecting and analyzing data.

Taking into consideration this case study scope, sensitivity and depth, a case study strategy by Robert K. Yin which was cited by L.Green, Camilli, & B.Elmore (2006) was adopted. The strategy was also adopted in view of its ability to examine in depth the case in a real life context. This methodology allows addressing descriptive questions for example like what happened. The method also allows the study to address why or how does something happen. Robert K. Yin also recommended that case study method is the best method to be applied for a research that addresses descriptive or explanatory questions.

Just like other research method, this method also require literature review, defining the research questions, data collection, analysing data collected and preparing research report. However, in order to capture in-depth and firsthand data, the case study method adopted “interviews” session. The interviews allow a better understanding of the scenario. Direct observation can be obtained since interviews sessions

were held at the convenience of the interviewees and the interviews were situated in its natural setting. Therefore, data captured reflects better understanding of people and events. This method also enables the data to be analysed immediately during data gathering. Should there be conflict of information during the process, data captured can be clarified and analysed quickly. This can be done either by re-interviewing the earlier person or through interviewing another resource who is involved with the conflict. According to (Irani Z. J., 2005) the interviewing approach has proven successful in a qualitative case study.

Other than the interviews, this study also captured secondary data through reports, files and documents. The data captured is to compliment the data collected through the interview process and for better understanding. The data later transcribed to be formed as the basis for the qualitative content and data analysis.

The data captured in presented in various way for easy understanding and analysis. The presentation includes tables, charts, figures, pictures, diagrams, publications, illustrative materials, narrative questions and answers. The study also presents its interview protocol as the data collection protocol. Data analysis techniques such as pattern matching and time series analysis were also utilized in this study. These techniques are used to track the actual sequences and assess the reality of the behavioural changes that were predicted.

### 3.1 Data collection

Data collection can be divided in two basic categories which are as follows:

- i. primary data
- ii. secondary data.

*Primary data* is information originated by the researcher for the purpose of the investigation at hand. In this qualitative case study, primary data is data collected from interviews. Whilst, *Secondary data* is information not gathered for the immediate study at hand, but for some other purpose. All researches should start with, or with regard to, earlier work within the same area. Therefore the first attempts at data collection should logically focus on secondary data. The most significant advantages of secondary data are the time and money they save to the researcher.

Two problems that commonly arise with secondary data which are as follows:

- i. They do not completely fit the problem
- ii. They are not totally accurate.

The data collection procedure followed all the major prescriptions within the literature for doing fieldwork research (Walsham, 1993; Fiedler, 1978). This was applied within the overall context of the normative Information Systems Evaluation (ISE) literature, which

suggests that the primary reason why organisations fail to realise benefits from their IT/IS investments lies with a lack of understanding with regards to the evaluation of human, organisational and technology perspectives (Irani & Love, 2001). The authors sought to gather primary data (via a semi-structured interview and participant observation protocol) and secondary data (via organisational reports, memos and archived material).

The data collection procedure has followed the major prescriptions in doing fieldwork research (Yin, 1994). A variety of secondary data sources were used to collect data with regard to the development of technology management taxonomies for evaluating EDMS investments, such as internal reports, budget reports, and filed accounts.

In the study, approaches to data collection continually expand in the qualitative area (Creswell, 2007). There are four basic types of information to collect:

- i. Observations – ranging from non-participants to participants
- ii. Interviews – ranging from semi-structured to open-ended
- iii. Documents – ranging from private to public
- iv. Audio-visual – including materials such as photographs, compact disks, and videotapes.

In another paper, (Yin, 1994) presented Six Sources of Evidence, namely Documentations, Archival Records, Interviews, Direct Observations, Participant Observation and Physical Artefacts.

Based on Six Sources of Evidence presented by Yin (1994), we collected the following evidence:

Table 2: Source of evidence

Source of Evidence	Reason	Evidence
Documentations	Stable: can be reviewed repeatedly Unobtrusive: not created as a result of the case Exact: contains exact names, references, and details of an event Broad coverage: long span of time, many events, and many settings	Proposal Paper for RNZ EDMS Implementation Operating Procedure for RNZ EDMS
Archival records	Same as for documentation Precise and quantitative	Records of EDMS helpdesk reporting Records of EDMS datas Records of EDMS Service Request
Interviews	Targeted: focuses directly on case study topic Insightful: provides perceived casual inferences	Interviews to the above focus group.

Source of Evidence	Reason	Evidence
Direct Observation	Reality: covers events in real time Contextual: covers context of event	Visit and observation to RNZ DCC, Project Department and Engineering Disciplines.
Participant Observation	Same as for direct observation Insightful into interpersonal behaviour and motives	This part is not done
Physical Artefacts	Insightful into cultural features and technical operations	Records of document transmittals Records of deliverable registers.

Source: Yin, 1994.

The Yin's evidences are described in details as the following paragraphs.

### 3.2 Documentations

Documentations on EDMS are the important evidence to show current characteristic of RNZ EDMS. Information from these documents will help author to understand EDMS, thus give direction on what, who and why questions to RNZ EDMS.

### 3.3 Archival records

Archival records mainly historical data or documents kept for later references for operational analysis and future improvements. Records

provide trends, problem history and development progress of RNZ EDMS.

### **3.4 Interview**

As case study data collections are designed with qualitative approach, interviews method is selected as one of the method for the study. The following paragraph described detail on interview method starting from selecting interviewee candidates and topics on the interviews.

#### **3.4.1 Identified interviewees:**

Identify interviewees based on one of the purposeful sampling procedures mentioned in the preceding (Miles & Huberman, 1994). Based on first interview with the CEO, the CEO suggested that the following people are selected as interviewees as they have involved directly and indirectly with the current EDMS either as current users or during the implementation period:

##### **i. Chief Executive Officer (CEO)**

CEO is the one who provide direction and he is the one who approve the implementation project of EDMS. All updates for EDMS will be reported to him through Director of Project Services.

**ii. Director of Project Services (DPS)**

DPS leads all the project managers in RNZ. Project managers are supposed to provide project document updates for DCC

**iii. Chief Financial Officer (CFO)**

CFO is the one who manages financial information regarding EDMS and any financial information resulting from EDMS implementation. CFO was involved as part of the team in conducting feasibility study for EDMS in RNZ.

**iv. Chief Information Officer (CIO)**

Manage overall operation of EDMS infrastructure and its service deliveries. CIO did the feasibility study on acquiring EDMS for RNZ.

**v. Lead Engineer / Project Manager (LE)**

Lead Engineer is one of EDMS user in Engineering Disciplines. LE also lead the user acceptance testing during implementation of RNZ EDMS system.

**vi. Document Controller (DC)**

DC is the focal user for EDMS. In RNZ all document transmittal pass through Document control Centre and manage by Document Controllers.

Responses from the interviews conducted will be summarised in Chapter 4.

#### 3.4.2 Type of interview selected

Determine what type of interview is practical and will net the most useful information to answer the research question. In this study, the interviews were all conducted face to face and followed, when needed, by phone interviews. An interview guide was developed that would allow for open ended answers and intended to let the interviewee talk as much as possible without interference.

This interviewing technique was carried out in the manner of that proposed by (Tan & Hunter, 2003) using 'probe' questions as suggested by (Shaughnessy & Zechmeister, 1994): i.e. an extended interview where responses were feedback to the interviewee, allowing for the resolution of research biases from the interviewer.

#### 3.4.3 Use of adequate recording material

Interviews were conducted in a closed room where recording method used were interview notes and electronic voice recorder for the purpose of voice recording. The recorded voices were then translated into transcript for better understanding. The transcribed scripts were then given to the interviewee for review and confirmations.

#### 3.4.4 The interview protocol

A form about four or five pages in length, with approximately twenty five open-ended questions and ample space between the questions to write responses to the interviewees' comments were prepared before conducting interview.

Interview questions are chosen based on (Irani & Love, 2001) taxonomy of technology management namely nature of strategic, tactical and operational benefit to the company.

#### 3.4.5 Interview location

A pre-interview appointment were set among those interviewees and interview are conducted in close area. Most of the interviews were conducted in RNZ Kuala Lumpur Head Office and mainly either in the interviewees' office room or in RNZ common library.

#### 3.4.6 Duration of Interview

Time frame were set as 45 minutes for each interviewee and the time were informed to the interviewee to have both party aware on the time constraint.

### 3.5 Direct Observation

For direct observation, three area were selected namely Project Service Department, Engineering Disciplines and the Document

Control Room. During observation, record aspects such as portraits of the informant, the physical setting, particular events and activities, and own reactions (Bogdan & Biklen, 1992). Observations were put together as one of the method in the recording methods.

After all the data and evidence were collected those data will be presented in the findings section for the case study analysis.