

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

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#### **3.1 Chapter Overview**

This chapter covers the research methodology that has been carried out to conduct the study effectively. It starts with the research design of the study whereby the Model of Technology Appropriation (MTA) by Carroll et al. (2002) was adopted. Data collection and data analysis methods will be discussed as well in the following sections. A summary of the study will be discussed at the end of this chapter.

#### **3.2 Introduction**

The adoption of RFID technology by LSP has been studied in many approaches. These studies are conducted in context of the logistic industry; they touched on supply chain collaborations and relationships (Boeck and Wamba, 2008; Hansen, 2009), benefits gained through the RFID adoption (Roh et al., 2009; Veronneau et al., 2009), challenges faced by the adopters (Lai et al., 2005; Li et al., 2006; Wu et al., 2006) and the extents of RFID applications (Zhang et al., 2006; Poon et al., 2009). As the RFID technology commonly found in organisation of developed nation, leveraging the usage and experiences by the pioneer would assist Malaysian's LSP to have a better understanding on the complexity of the technology. The earliness of the technology may result the urgency for the

adopters and researchers to understand the appropriateness of the technology in the context of logistic. Appropriateness of the technology is being defined as how a technology is used, adapted and fitted in users' daily activities (Karim et al., 2009).

### **3.3 Research Design**

Case Study qualitative approach has been chosen as the appropriate methodological driver for this study to investigate a phenomenon RFID adoption by Malaysian's LSP as the technology is premature in this country. Therefore, gathering the experiences from the practitioners would be crucial in contributing to a theory. Various theories and models have been associated with the adoption of the RFID technology in logistic industry. For instance, the Theory of Acceptance Model (TAM) in IS by Davis (1989) on the adoption and acceptance of RFID technology (Matta and Moberg, 2007; Hossain and Prybutok, 2008) and the Theory of Planned Behaviour (TPB) by Ajzen (1985) in regards to the manager's attitudes towards the adoption of RFID technology (Nyaga et al., 2005). All of the models are applicable to the adoption of RFID technology and focusing on the level of usage. However, most of them do not emphasise on the later stages after the introduction of the technology (Rahim and Alias, 2006). Therefore, the study adopted the MTA as appropriation involve the entire cycle of process after the initial adoption (Carroll et al., 2002).

### **3.4 Data Collection**

This study primarily focuses on the intention to evaluate the capability and suitability of RFID technology in warehouse operation by the Malaysian's LSP. The pilot evaluation project was strongly driven by two persons; the MIS IT director from Malaysia and the research officer from Singapore. During the period of three months, in-depth interview has been conducted with both informants in relate to their experiences on the adoption of the RFID technology in warehouse environment followed by the subsequence follow-up interviews.

The criteria for the interview candidates are as below:

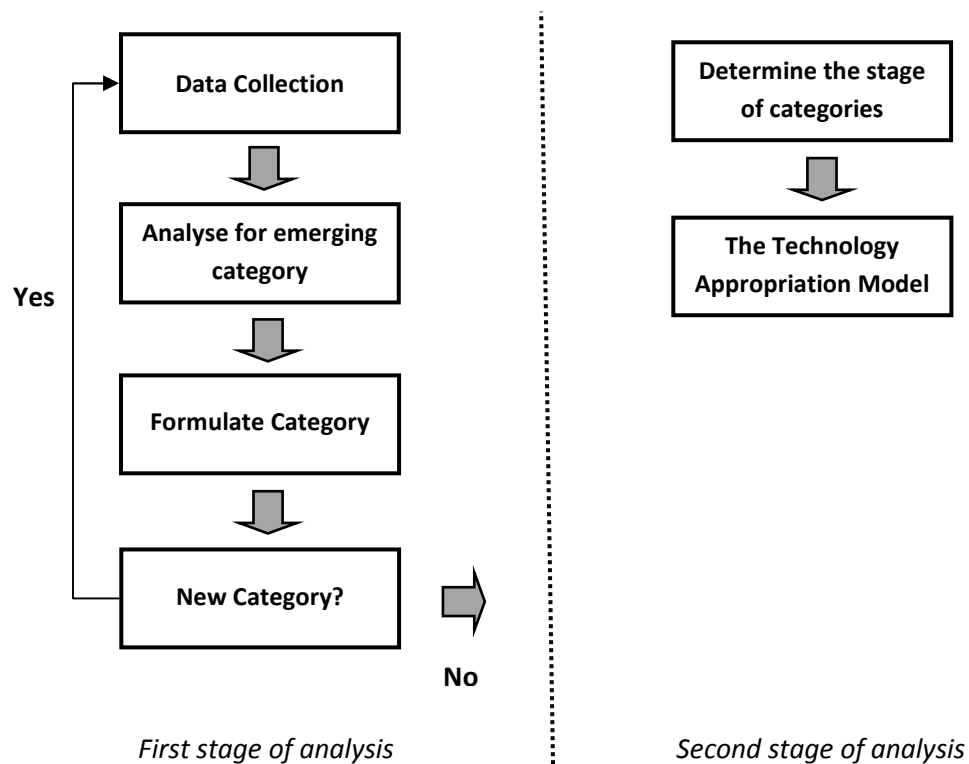
- I. The candidate should be involved in the development of the project through the implementation and thereafter.
- II. The candidate should have use the technology during the pilot test.
- III. The candidate should be willing and available for the interview.

The initial interview was conducted to the IT director in relates to the general overviews on the RFID project such as the primary incentives of the project, project's timeline, and the project status whether success or failure. The transcribed interview being analysed and proceed to the preparation of second interview. The second interview highlights the technical aspects of the RFID technology, recommendations and solutions proposed by the vendor and

evaluation criteria toward the RFID adoption by the LSP. The respondents are the research officer, IT personnel and operators. The final interview was conducted on the IT director in response to the future long-term RFID adoption by Malaysian LSPs.

At certain stage of the interviews, semi-structured interviews were introduced on the informants to further the depths of the investigation. The interviews were conducted face-to-face as well as via telephone conversation. Email was used as a medium to refer respondents on certain questions that has been overlooked during the interviews. All the interviews were being recorded and transcribed for analysis purpose.

### 3.5 Data Analysis Techniques



**Figure 3.1:** The stages in data analysis

The process of identifying the determinants in every stage of the MTA involves collection of data, analysing the gathered data, and the determinants/variables are formulated. The data will go through stage-by-stage of analysis as depicted in Figure 3.1 (Coleman and Cornor, 2007; Bahri, 2009). There are two stages in data analysis process. The first stage involved analysing the interview's transcript conducted on the IT director. The transcript being analysed line-by-line and codes were allocated to the text to formulate a new category. The first transcript gave us an initial overview of the adoption and use of RFID technology in the warehouse. It is then followed by the interview's transcript on the research officer

and subsequent respondents. All the transcripts will be read repeatedly as to enable some first thoughts to emerge which defined by (Easterby-Smith et al., 1991); the familiarisation process. Constant comparison between the initial emerging theory and the transcripts will continue until it reaches saturation whereby no new category was found in the analysis.

At the second stage, all the categories were justified and being placed in the technology appropriation model accordingly. The analysis of this stage involved determining the activities that dampen the adoption of RFID technology in the logistic environment.

### **3.6 Summary**

Limited study has been conducted on the adoption of RFID technology by Malaysian LSP. Therefore, the purpose of the study is to fulfil the research gap. The study adopted the technology appropriation model originated by Carroll et al. (2002). Case study qualitative approaches have been applied in this study. In-depth interview has been conducted on the primary informants – IT director and research officer. Collected data are being analysed via several phases as depicted in Figure 3.1 to formulate new framework in this study. The next chapter will explicitly explain the findings of this study.