

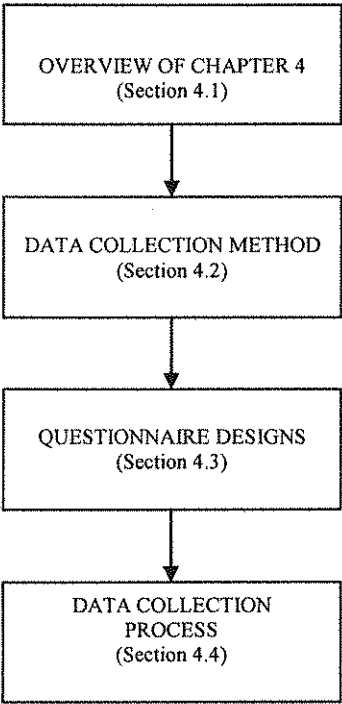
4 RESEARCH METHODOLOGY

This chapter describes the research methodology and statistical methods that will be used to empirically examine and test the research model developed in chapter three.

4.1 Overview of Chapter 4

This chapter consists of three sections, as illustrated in Figure 4.1. The first section describes the data collection method using survey. The following section discusses the questionnaire design. In the last section, the data collection process is discussed

Figure 4.1 Outline of chapter 4



4.2 Data Collection Method

In the next section the method for collecting data is discussed. The qualitative and quantitative methods for collecting the data are discussed briefly and the reason for the choice of survey in this study is justified.

4.2.1 Justification of Using Survey in This Study

Organisational culture data are collected using a mail survey of main informants, and then analysed using statistical tools. A quantitative research is appropriate for this study for several reasons.

First, this study adopts the definition of organisational culture as based on shared beliefs, values and assumptions, and views culture as something that an organisation 'has' and as a variable. This perspective is consistent with the ontological and epistemological positions of this study, as discussed in previous chapter.

Second, organisational culture surveys and questionnaires have been used to identify dimensions of organisational culture since 1980. The main reason for developing a quantitative research method for measuring organisational culture is to overcome weaknesses of a qualitative research method, such as the difficulty in making analytical comparisons among organisations (Denison, 1996), the difficulty in making the generalisation on organisational culture being studied (Denison, 1984), and extra time and costs required to conduct research using a qualitative method (Ott, 1989).

Third, although organisational culture is also a shared phenomenon and it is important to compare responses among members of the organisation, when a strong culture exists in an organisation, elements of organisational culture are unified. Thus, the quantitative research method can be used as a potential measurement for organisational culture (Deal & Kennedy, 1982).

Fourth, organisational culture surveys generate data that are easily understood and can be used for identifying norms that affect behaviour. These norms represent the more fundamental aspects of organisational culture and are probably hidden aspects of culture. Norms are shared by members of an organisation and influence behavioural patterns and interpretations of members. Culture surveys can also be used to measure

the shared values and beliefs that create those systems and structures, and norms sustained by those systems and structures (Cooke & Szumal, 1993).

Fifth, regardless of which method used for measuring organisational culture, qualitative and quantitative methods are exposed to similar limitations due to the theoretical background and the cultural bias of the researcher (Cooke & Szumal, 1993).

In addition, this study aims to gain insight and understanding of the role of organisational culture in CRM implementations from organisations in Australia, rather than investigating particular organisations in depth. Thus, survey research is identified as an appropriate method by which to test the research issues, hypotheses and questions advanced in this study.

4.3 Questionnaire Design

This section describes the preparation of the questionnaire. The questionnaire is in appendix 4. The questionnaire had six sections ordered as follows: from questions related to company information, CRM system implementation, organisational culture, CRM performance outcomes, market conditions, and respondent's background. In designing the questionnaire, several guidelines recommended by Dillman (2000) were followed, such as: asking questions as complete sentences, using closed ended questions with ordered response categories, distinguishing undecided answer from neutral by placing zero after the scale, and providing appropriate time referents in some questions.

The following discussion will explain each section in the questionnaire in detail. The first section in the questionnaire assessed the organisation's sector and industry where it operates, number of full time equivalent employees and organisation's annual revenue in 2004. Types of industries listed in the questionnaire followed the ANZSIC (Australia and New Zealand Standard Industry Classification) categories (ARC, 2005). The range of numbers for full time equivalent employees was based on the Australian Bureau of Statistics (ABS) classification of small, medium and large organisations (ABS, 2002). At the end of page 1 in the questionnaire the respondent was informed that questions in the next three sections ask about how the organisation's performance has been influenced by the implementation of CRM system in its operation in Australia. The definition of a CRM system was also clarified by including this statement in the

questionnaire: “*CRM system is the software that your organisation is using to help manage customer relationships*”. If the organisation did not have a CRM system in place, the respondents were asked not to fill in the rest of the questionnaire, except for questions relating to the respondent’s demographic information in the last section.

The second section dealt with the respondent’s understanding of their CRM system implementation, such as when the organisation first began using its CRM system and how many employees used the CRM system. Questions 1 to 14 in section 2c contained measures of the three types of CRM (Statistical, Operational and Analytical). Section 2d contained measures of the innovative characteristics of the CRM system, in which questions 1 and 2 measured the compatibility of the CRM system with legacy software and hardware, and questions 3 and 4 measured the perceived ease of using the CRM system.

The third section considered respondents’ perceptions of organisational culture by asking what it is like working in the organisation.

From section 2.c to section 3, respondents were asked to rate each issue on a seven-point Likert-style scale, ranging from strongly disagree to strongly agree. This odd-number Likert type scale allows the respondent to select a neutral position.

The fourth section contained questions to measure CRM performance in organisations. Respondents were asked to compare the organisation’s performance before implementing a CRM system and at the end of FY2004, on a seven-point Likert-style scale, ranging from much lower or slower to much higher or faster. In the last part of this section, respondents were asked to rate their satisfaction with CRM performance, on a seven-point Likert-style scale, ranging from strongly disagree to strongly agree.

The fifth section considered respondents’ perceptions of market conditions affecting their organisation’s performance. Questions 1 to 6 measured the competition level in which the organisation operates and questions 7 to 12 measured market turbulence. Respondents were asked to rate each issue on a seven-point Likert-style scale, ranging from strongly disagree to strongly agree.

The final section of the questionnaire addressed different aspects of respondents' backgrounds such as their position in the organisation, numbers of years working in the organisation and their age.

4.4 Data Collection Process

The following section describes data collection process. This began with a pilot study in March 2005. The first round of data collection was started in May 2005 and finished in July 2005. The second data collection was conducted in September 2005, and the last data collection was completed in January 2006.

4.4.1 Ethics Approval & Pilot Study

The ethics application, together with the proposed questionnaire and cover letter, were submitted to Macquarie University Higher Degree Research Office in January 2005 and approved in March 2005 with a minor revision of the cover letter. After the ethics application had been approved, the pilot study was carried out to pre-test the questionnaire with a small sample of the population. The purpose of this pilot study was to test if potential respondents would have difficulties in understanding or interpreting questions in the questionnaire (Alreck & Settle, 1995; Dillman, 2000).

In this pilot study, invitations (see appendix 5), followed by a soft copy of the six-page questionnaire and cover letter (see appendix 6) were sent by e-mail to 56 participants from the CRM competency survey conducted previously by Macquarie Graduate School of Management (MGSM). This questionnaire soft copy was designed for respondents to select answers by clicking on the drop-down menu selections or the answer boxes. Potential respondents were requested to save the questionnaire and return it by e-mail. After two weeks, reminder emails with the same questionnaire attached were sent. In total, ten questionnaires were returned. After dropping questionnaires returned by organisations with no CRM system in place, eight questionnaires were identified as eligible or 15.69 percent response rate.

The usable questionnaires were examined and revisions were made on the questionnaire, invitation letter and cover letter, such as:

- Section 2b asked how many employees use the CRM system. Almost half of respondents selected answer c. (50 employees or more). This question was revised by adding two more options: option d. 100 to 199 employees, and option e. 200 employees or more.
- Questions were asked on what was referred to as a CRM system. There were confusions of whether the system that these organisations had in place could be considered a CRM system as referred to in this study. Although the definition of the CRM system is clarified in the questionnaire, it was not included in the invitation and cover letter sent with the questionnaire. These were revised by including the definition of a CRM system as referred to in this study.
- The questionnaire should be best completed by a person with an understanding of CRM system. The expectation was that this person is not only familiar with CRM system but understands the effect of CRM system to organisational performance. In the invitation and cover letter, respondents were requested to complete the questionnaire themselves or re-direct it to the person with the best understanding of the CRM system.
- Two questionnaires were received from organisations with no CRM system in place. The invitation letter and cover letter were revised to include a request for potential respondents to reply by e-mail if they do not have a CRM system in place. This is to minimise the number of questionnaires or reminder questionnaires sent to ineligible respondents. If they would like to receive a report summarising the results of this study, they were encouraged to inform the researcher by e-mail or by filling in their personal information in the last section of the questionnaire.

4.4.2 First Round

After minor revisions of the questionnaire, invitation letter, and cover letter, data collections from public and private organisations in Australia were started. A listing of individuals holding management positions in 11 industries was obtained from Dun and Bradstreet (D&B) Information Services. The D&B database consists of a listing of 38,000 organisations in Australia. The generalisability of this study relies on the representativeness of the respondents, therefore the list was further stratified to obtain a diverse mix of potential respondents and to identify the sampling frame required

(Alreck & Settle, 1995). The aim was to have 150 respondents as an appropriate sample size for this study. With an assumption that response rates will be 10 percent or less, at least 1,500 questionnaires have to be distributed.

Firstly, it was planned to obtain the sampling frame by excluding Small and Medium Enterprises (SME) from the original D&B listing of 38,000 organisations because the CRM market for SME in Australia was still under-penetrated (IDC, 2005). The ABS classifies an organisation as a large organisation if it has employees of 200 or more (ABS, 2002). However, if the sampling frame is stratified by numbers of employees of 200 or more, it is reduced to 3,300. To reduce the sampling frame further, the original D&B listing of 38,000 organisations was stratified by annual revenue of A\$50 millions or above. This step resulted in a sampling frame of 1,469 organisations (at the end of February 2005). The proportion of sample by industry is in table 4.1. After excluding some organisations that have the same management personnel, in order to avoid sending more than one questionnaire to the same people, 1,412 organisations were identified.

Table 4.1 Sample proportions by industry

SIC Code	Industry	No. of Organisations with revenue >A\$50 M
A	Agriculture, Forestry and Fishing	19
B	Mining	87
C	Construction	108
D	Manufacturing	345
E	Transportation, communications, electric, gas and sanitary services	139
F	Wholesale Trade	196
G	Retail trade	113
H	Finance, insurance and real estate	255
I	Services	186
J	Public Administration	20
K	Other	1
		1,469

Initially, a personalised invitation letter was mailed to invite potential respondents to participate in this study. Mail survey is an anonymous, flexible and impersonal data

collection method (Dillman, 2000). An invitation letter serves as pre-notification that the potential respondents will be receiving a mail survey in the next few days. Sending invitation letters may improve response rates to mail survey (Dillman, 2000; Helgeson, Voss, & Terpening, 2002) and also reduce non-responses because it creates a more co-operative situation between sender and receiver (Malhotra, Hall, Shaw, & Oppenheim, 2002). A personalised letter is recommended as an effective and inexpensive method in increasing response rates (Larson & Chow, 2003). However, a recent study showed that a personalised letter is no longer effective in increasing response rates. Even so, a personalised letter might positively affect response rates (Gendall, 2005).

Invitation letters were sent to managers or senior managers in sales, marketing, customer service, or information technology departments. If the D&B database did not have the information needed, invitations and questionnaires were sent to higher management positions, such as general manager or managing director. The selection of potential respondents' job positions was based on the suggestion that CRM implementation involves four major functional areas: marketing, sales, services and support, and information technology (Ngai, 2005; West, 2001). The invitation letter informed potential respondents of alternative ways to receive the questionnaire. Potential respondents had options to receive the questionnaire by e-mail or re-direct it to another person in the organisation. Potential respondents were also offered a result summary of this study to encourage them to complete the questionnaire. An interest in the results of a research project is identified as an important factor for respondents to complete questionnaires (Helgeson, Voss, & Terpening, 2002).

After a week, a six-page questionnaire and personalised cover letter were mailed with a postage-paid return envelope attached. After three weeks, the second questionnaires were sent to selected potential respondents as follow up. The follow-up mailing of the questionnaire is an effective way to increase numbers of responses (Erdogan & Baker, 2002). The second questionnaires were sent only to managers or senior managers in sales, marketing, customer service or information technology, and then followed by either a phone call for organisations in New South Wales or by sending a fax reminder letter (see appendix 7) to organisations in other regions, encouraging them to participate. A total of 49 potential respondents replied by e-mail to inform that their organisations did not have a CRM system in place or they were unable to participate in

the survey. In total, 110 questionnaires were returned. This low response rate, between 5 and 10 percent, is common in a mail survey (Alreck & Settle, 1995, p. 35). After dropping 29 questionnaires returned by organisations with no CRM system in place, 81 questionnaires were identified as usable or 5.74 percent response rate.

4.4.3 Second Round

A low response rate was anticipated because only organisations with a CRM system in place could complete the survey and also according to a Gartner Inc. survey, only 35 percent of Australian organisations with employees more than 500 have adopted CRM (as cited in Peterson, 2003). Therefore, multiple data collections by using convenience sampling were carried out to ensure enough numbers of respondents. Invitation e-mails were sent to Executive MBA students enrolled in previous CRM courses at MGSM. After receiving positive e-mail responses, questionnaires were sent to 40 potential respondents. After two weeks, reminder e-mails with a questionnaire attached were sent. In total, 11 questionnaires were returned and identified as usable or 27.50 percent response rate.

4.4.4 Final Round

In the final round, questionnaires are distributed in partnership with SAS Institute in Australia. SAS is the market leader in providing a new generation of business intelligence software and services that create true enterprise intelligence. According to the information on SAS website, SAS solutions are used at 40,000 sites – including 96 of the top 100 companies on the FORTUNE Global 500® – to develop more profitable relationships with customers and suppliers; to enable better, more accurate and informed decisions; and to drive organizations forward. SAS is the only vendor that completely integrates leading data warehousing, analytics and traditional business intelligence applications to create intelligence from massive amounts of data.

Partnering with SAS, 100 questionnaires were sent by mail to senior managers who attended SAS events in October 2005. Three questionnaires were returned and only one was usable.

From table 4.2, in total, 1,608 invitations and questionnaires were sent and 134 responses were received. From a total of 134 responses received, 75 percent or 101

organisations had implemented CRM. This low response rate was anticipated because only organisations with a CRM system in place could complete the survey. Previous studies on CRM outcomes published in leading marketing journals reported samples higher than 101, but they failed to specify the percentage of the sample that had actually implemented a CRM system or technology. Reinartz et al.'s (2004) study collected data from a sample of 211 organisations that had implemented CRM processes. Yim et al.'s (2004) study sampled 215 organisations that they assumed to have high degree of relationship orientation. In Jayachandran et al.'s study (2005), from a total of 172 responses, only 28 percent or 48 organisations had implemented CRM technology and only 21 of these responses were used in their measurement model. Thus, the sample size of 101 of organisations that have implemented CRM system is within the desired level for analysis in this study, but with some limitations that will be discussed further in chapter seven.

Table 4.2 Survey response rate

Response Type	Frequency	Percentage
<i>Pilot Study (Previous survey participants)</i>		
Total invitations to participate sent by e-mail	56	
Refusal due to unwillingness to participate	3	
Ineligible response (respondents do not have CRM system)	2	
Number of eligible response	8	15.69
<i>First Round (from D&B)</i>		
Total Sampling Frame	1,469	
Total invitations to participate sent by mail	1,412	
Returned due to incorrect or changed personnel or address	107	
Refusal due to unwillingness to participate	13	
Refusal due to respondents do not have CRM system	36	
Ineligible response (respondents do not have CRM system)	29	
Number of eligible response	81	5.74
<i>Second Round (Executive MBA Students)</i>		
Total invitations to participate sent by e-mail	40	
Number of eligible response	11	27.50
<i>Final Round (Partnership with SAS)</i>		
Total invitations to participate sent by mail	100	
Ineligible response (respondents do not have CRM system)	2	
Number of eligible response	1	1.00
<i>TOTAL</i>		
Total invitations to participate sent	1,608	
Returned due to incorrect or changed personnel or address	107	
Refusal due to unwillingness to participate	16	
Refusal due to respondents do not have CRM system	36	
Ineligible response (respondents do not have CRM system)	33	
Number of eligible response	101	6.28