CHAPTER 5:
QUANTITATIVE RESEARCH

5.1   Introduction

Research questions and conceptual framework were developed in the previous chapter. During the discussion in the last chapter, it was mentioned that quantitative methods will be the major methodology to test the hypotheses proposed. It is important to discuss the research philosophy of this thesis in this chapter before going into the detail of the quantitative research. It is necessary to understand the research philosophy because it will help researchers to evaluate different methodologies and methods, and avoid unsuitable applications and redundant work by recognising the limitations of particular approaches at an early stage (Easterby-Smith *et al.*, 1997).

In addition, as no similar research has been conducted in Hong Kong before, therefore, this study makes contribution to research by investigating the drivers and impacts of CRM adoption in Hong Kong. In this chapter, the economy and compositions of businesses in Hong Kong is described so that it can be understood that why conducting the research in Hong Kong is valuable.

A mail survey is identified as the most effective method for data collection after evaluating different data collection methods including telephone interviews and face-to-face interviews. Furthermore, this chapter describes the development of scales based on the constructs concluded in the previous

chapters. Finally, the design of questionnaire structure and the sampling methods are presented.

5.2   Hong Kong as the Research Context

Given that the fieldwork is conducted in Hong Kong, some more information on the economy and compositions of business will be provided in this section. In Hong Kong, the economy has been in growth in recent years. The GDP of Hong Kong was HK$1,475,357 million in 2006 (annual growth is about 7%). Hong Kong's overall economic growth has been driven by the strong performance of the services sector (88% of GDP is derived from the services sector). Because of the increasing economic growth and maturity, CRM may be one of the strategies considered by organisations in order to improve their relationship with customers and to increase profits. Hence, conducting this research in the Hong Kong environment is very valuable.

Latest available figures for 2006 indicate that the overall value added in the services sector as a whole grew by 8.7% in real terms. Financial market activities, financing and insurance showed the fastest growth among the constituent service sectors in 2006. These were followed by communications, and the import and export trade. In addition, consumption demand and further expansion of inbound tourism led to a rapid growth in the value added of restaurants and hotels. On the other hand, the manufacturing sector only showed a small increase in value added and the construction sector has shrunk.

The labour market has shown a significant improvement since mid-2003. Major labour-related indicators, including labour force, total employment, unemployment, wages and earnings have shown a better situation in recent years. Table 5.1 shows the GDP by economic activity in 2005 and 2006. The performance of different industries under services sector can be seen.

Table 5.1 – GDP by economic activity
(year-on-year rate of change in real terms (%))

	2005	**2006**
Manufacturing	2.1	2.6
Construction	-9.2	-7.9
Services	8.0	8.7
Wholesale, retail and import/export trades, restaurants and hotels	14.4	10.0
Import and export trade	16.1	10.6
Wholesale and retail trade	7.4	5.0
Restaurants and hotels	6.0	9.0
Transport and storage and communications	8.0	8.8
Transport and storage	6.8	8.2
Communications	11.5	10.6
Financing, insurance, real estate and business services	8.7	14.5
Financial services	11.9	21.1
Real estate and business services	3.2	2.4
Community, social and personal services	0.2	2.2

Source: Extracted from First Quarter Economic Report 2007 published by Government of Hong Kong Special Administrative Region P. 7

5.2.1 Services sector as the context of study

As reviewed before, RM developed in service marketing contexts as a reaction against the limitations of transactional marketing. In addition, due to the efficiency of the mixed management paradigm, changes in the competitive climate in the latter part of the 1980s and early 1990s propelled the interest in RM into mass consumer markets. CRM can be seen as a form to relationship marketing which is underpinned by the same philosophical principles, therefore, it would be appropriate to study the CRM adoption in the area of the services marketing in this research. Dimitriadis and Stevens (2008) pointed out the concern on CRM is growing in the service economy as CRM strategy and technologies offer multiple opportunities to deal with services characteristics like intangibility, in inseparability, heterogeneity and perishability. The developments of some major industries in the services sector in Hong Kong will now be briefly highlighted.

Hong Kong is a major international financial centre, comprising a network of institutions and markets which provide a wide range of products and services to local and international investors. Hong Kong's financial markets are characterised by a high degree of liquidity and operate under effective and transparent regulations, which meet international standards. The International Monetary Fund classifies Hong Kong as an advanced economy according to the World Investment Report 2005. The financial services sector is one of the key supports for Hong Kong's economy and was active in 2006 and 2007 due to the increasing financial integration with mainland China, Hong Kong's expanding economy, as well as the supportive global economic environment. In addition, the monetary conditions remained

encouraging for the further solid expansion of the Hong Kong economy. Both the fund management industry and derivatives market performed well. There is a continuous expansion in financial market activities as Hong Kong attempts to enhance its status as a world-class international financial centre.

Sixty-eight of the top 100 banks in the world are present in Hong Kong. It is also the first economy outside the Mainland that has been allowed to conduct renminbi banking services. Insurance is also an important market within the financial services sector. Increasing demand for investment-linked products and insurance products has enhanced the prospects for Hong Kong's insurance industry.

Hong Kong is also one of the world's great tourism and entertainment destinations. According to the latest forecast by the Hong Kong Tourism Board, the total incoming visitor trips will increase to a new high of 26.4 million in 2007. In addition, more business visitors have been coming to Hong Kong for meetings, conventions, exhibitions and other commercial events. In 2006, mainland Chinese visitors accounted for 48% of total incoming business visitor-trips to Hong Kong, and other Asian visitors accounted for 29%. This is somewhat related to increasing travel convenience as Hong Kong's external transport services have expanded further in terms of connectivity and frequency, particularly with mainland China. The widespread network of airline connections to major mainland Chinese cities makes Hong Kong an ideal crossroads between the mainland China and the rest of the world.

In addition, Hong Kong is a key logistics hub in Asia-Pacific. As a free port with powerful support services in telecommunications, legal, banking and insurance, it plays an excellent role in this fast growing industry. Hong Kong's advantages also include its ideal geographic location, i.e. close to the major economies in Asia. Regarding the import and export area, export growth in Hong Kong has been quite impressive. Exports to Mainland showed growth from 2006 to 2007 due to the strength of the domestic economy and vibrant trade flows. Exports to the European Union had moderate growth. Exports to other Asian economies had mixed performance with those to Thailand, Malaysia and Indonesia outperforming others. The HKSAR Government will continue to take part in trade liberalisation and trade promotion. Further development of the Closer Economic Partnership Arrangement (CEPA) will be built with mainland China, business associations and professional bodies.

Due to the growth of services industries mentioned in the above, organisations in this sector must hold enormous amounts of data on their customers. It is believed that more organisations become aware of the possibilities of using the data they already have about their customers in order to build long-term relationships with them and would consider to adopt CRM.

This research is focused on the services sector because it is such a large sector of the economy and there has been little previous research in understanding the adoption and experiences of companies adopting CRM in this sector. Furthermore, it is argued that CRM is probably more advanced in services sector than in other sectors, so organisations in these other sectors

can learn from the service sector's experiences. Hence, conducting this research is very valuable and it is achieved through conceptual, empirical, methodological and practitioner guidance contributions.

In the next section, the objectives of this research will reviewed before discussing the research philosophy.

5.3 Research objectives

Research questions raised from the previous chapters have to be answered through the implementation of an appropriate methodology. The methodology is comprised of qualitative in-depth interviews (as discussed in the previous chapter) and a quantitative mail survey. As the measurement approach and the data collection method should be in line with the type of research and research questions under investigation, therefore, the research problem and questions are briefly described before going into the choices made in terms of the methodology to be used.

As discussed before, CRM has evolved from business processes such as relationship marketing and a great amount of business attention is being focused on improving customer retention through the effective management of customer relationships. CRM applications help organisations assess customer loyalty and profitability using measures such as repeat purchases, money spent, and customers' lifetime. On the other hand, organisations who want to adopt CRM are facing many challenges. Implementing CRM which does not meet an organisations' needs may be damaging for the company. Hence, it is important to look at the

determinants and assess the impacts of CRM adoption. Due to there being little research on this aspect, this research addresses CRM adoption in the B2B context and the objectives are to investigate empirically 1) the factors which lead organisations to adopt CRM; and 2) the impact of CRM on organisational performance.

With regard to the objectives described, the next section discusses research philosophy and the philosophical approach to this study.

5.4 Research philosophy

The research philosophy of this study is going to be explained in this section. When there is a discussion on research philosophy, marketing scholars are encouraged to examine ontological and epistemological issues and then address their own research problems with appropriate methodology (Carson *et al.*, 2001). It is believed that ontological and epistemological issues are important to the success of the investigation process. A review of research philosophy minimises methodological error (Hughes and Sharrock, 1997; Kvale, 1996). The selection of methodology arises from researcher's own ontological and epistemological positions and hence affects the way in which the research is conducted and the expected output format. Choices of methods and techniques are also dependent on epistemological assumptions (Hughes and Sharrock, 1997).

Some researchers work within overall conceptual frameworks which are also referred to as scientific research paradigms. A paradigm is a world-view or "set of linked assumptions about the world which is shared by a community

of scientists investigating the world" (Deshpande, 1983: 101). It is argued that there are four dominant research paradigms: 1) positivism, 2) critical theory, 3) constructivism, and 4) realism. Three elements of a paradigm include: 1) ontology, 2) epistemology, and 3) methodology (Perry *et al.*, 1997).

Ontology is the "reality" that researchers investigate. It is the starting point of all research and is followed by epistemological and methodological positions. A dictionary definition of the term ontology calls it the image of social reality upon which a theory is based. Epistemology is the relationship between that reality and the researcher and it is about the theory of knowledge with respect to its methods, validation and "the possible ways of gaining knowledge of social reality, whatever it is understood to be" (Blaikie, 2000: 8). Epistemology concentrates on the knowledge-gathering process and is about developing new knowledge. Methodology is the technique used by the researcher to investigate that reality. It deals with how we gain knowledge about the world. If ontology is about what we may know, then epistemology is about how we come to know what we know.

Figure 5.1 shows the four categories of scientific paradigm and their elements. Positivism assumes science measures independent facts quantitatively about reality (Guba and Lincoln, 1994; Tsoukas, 1989). In a positivist view of the world, science was seen as the way to get at truth, to understand the world well enough so that we might predict and control it. The other three paradigms are arguably more relevant to much qualitative research. Critical theory focuses on social realities incorporating historically

situated structures. Thus critical theory researchers concentrate on critiquing social, political, cultural, economic, ethnic and gender values. The third paradigm is constructivism. It holds that truth is a particular belief system held in a particular context. Finally, realism believes that there is a "real" world to discover though it is only imperfectly apprehensible (Godfrey and Hill, 1995; Guba and Lincoln, 1994; Merriam, 1988; Tsoukas, 1989). Under different paradigm, the element of ontology, epistemology and methodologies will be different.

Figure 5.1 – Four categories of scientific paradigm and their elements

Paradigm				
Element	**Positivism**	**Critical theory**	**Constructivism**	**Realism**
Ontology	Reality is real and apprehensible	"Virtual" reality shaped by social, economic, ethnic, political, cultural, and gender values, crystalised over time	Multiple local and specific "constructed" realities	Reality is "real" but only imperfectly and probabilistically apprehensible
Epistemology	Objectivist: findings true	Subjectivist: value mediated findings	Subjectivist: created findings	Modified objectivist: findings probably true
Common methodologies	Experiments/surveys: verification of hypotheses, chiefly quantitative methods	Dialogic/dialectical: researcher is a "transformative intellectual" who changes the social world within which participants live	Hermeneutical/dialectical: researcher is a "passionate participant" within the world being investigated	Case studies/ convergent interviewing: triangulation, interpretation of research issues by qualitative and by some quantitative methods

*Source: adapted from Perry et al. (1997: 547) based on Guba and Lincoln (1994)

Two epistemological positions are those contained within positivism and interpretivism. The former "...advocates the application of the methods of the natural sciences to the study of social reality and beyond." The latter can be seen as an epistemological position that "...is predicted upon the view that a strategy is required that respects the differences between people and the objects of the natural sciences and therefore requires the social scientist to grasp the subjective meaning of social action." (Bryman, 2001: 12-13). Figure 5.2 shows the relationship between building blocks of research. The figure shows the directional and logical relationship between the key components of research. Ontology precedes epistemology which is then followed by methodology.

Figure 5.2 – The interrelationship between the building blocks of research
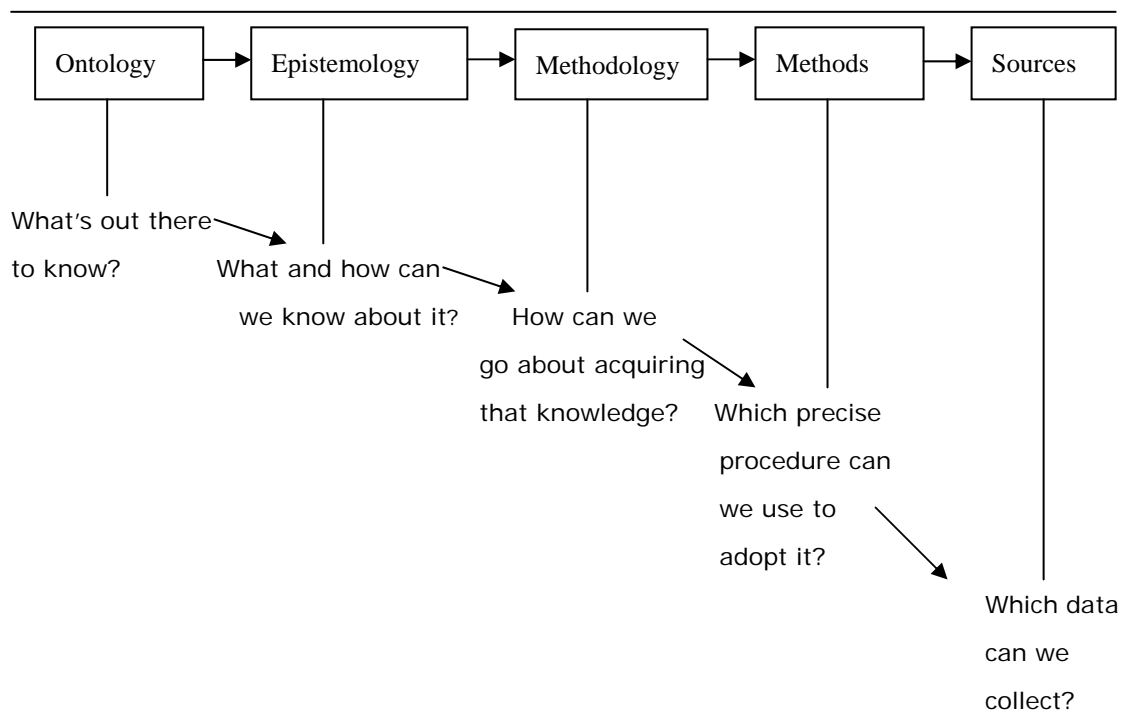
Source: Adapted from Hay, 2002: 64

Positivism recognises two forms of knowledge, the empirical and the logical: the former represented by natural science and the latter by logic itself and also by mathematics (Hughes and Sharrock, 1997: 29). Positivist philosophy assumes things that can be studied as hard facts and the relationship between these facts can be established as scientific laws. The elements of positivist philosophy have a number of implications for social research. The implications from Bond (1993), Easterby-Smith (1991) and Hughes (1994) are:

- Value-freedom: the choice of what to study, and how to study it, should be determined by objective criteria rather than human beliefs and interests

- Causality: the aim should be to identify causal explanations and fundamental laws that explain human behaviour

- Operationalisation: concepts need to be operationalised in a way that enable facts to be measured quantitatively

- Independence: the role of the researcher is independent of the subject under examination

- Reductionism: problems are understood if they are reduced to the simplest possible elements.

Positivist research is based on procedures used in natural sciences, quantitative methods such as surveys and mathematical/statistical analysis are used (Benbasat *et al.*, 1987).

Esterby-Smith *et al.* (1991) state that many researchers view qualitative enquiry as an inductive process with which to build theory, and quantitative

methods as deductive and used to test the theory and prove generalizations about the phenomenon (Deshpande, 1983). This positivist view of the utilisation of methodology illustrates a debate on the legitimacy of using qualitative methods from a positivist perspective and existing confusion between the methodology used and epistemological perspectives. For instance, Hyde (2000) argues that a post-positivist may utilize deductive methods within qualitative methodology through the use of "pattern-matching". Miles and Huberman (1994) propose deductive coding systems for the analysis, based upon prior literature-based constructs, but suggest that additional constructs may also emerge through inductive examaination of the data. Hyde (2000) further warns that if using qualitative methods researchers must balance inductive and deductive approaches.

In this research, antecedents and the consequences of CRM adoption perceived by organisations are explored. The research begins by proposing a theoretical model developed using a combination of existing literature and the results of in-depth interviews with marketing managers. It then proceeds to test this model empirically and develops an appropriate survey, sample and measures. Results are found using analytical, mathematical and statistical tools. Finally, the important findings, managerial implications and limitations are presented. Thus, this research is conducted within a broadly post-positivist paradigm, as defined by Carson *et al.* (2001), combining deductive and inductive methods, with the view that "true quantitative understanding might emerge from rich qualitative understandings" (Hughes and Sharrock, 1997: 18). A larger proportion of the work was dependent on the deductive process. Easterby-Smith *et al.* (1997) state that many

researchers view qualitative enquiry as an inductive process with which to build theory, and quantitative methods as deductive with which to test the theory and prove generalisations about the phenomenon (Deshpande, 1983). The qualitative research was to provide first insights and advanced theory in this field. Qualitative investigation aimed to discover significant variables in the field and lay a foundation for a later, more systematic testing of a selection of these propositions using quantitative methods.

The qualitative study, combined with findings from the existing literature will be very useful in discovering the relevant factors and investigating the impacts relating to CRM adoption in the different industries of the services sector in Hong Kong. It is not only for exploring issues that are important to the relationships proposed between constructs, but can also help to ensure the proposed conceptual framework is tackling the relevant aspects. For the stated reasons, a number of in-depth interviews with experts in the business organisations were conducted. The details of interviews have already been described in chapter 4. Other ways such as case studies and focus groups for gaining insights were considered. However, due to the limits of time and depth of information wanted, in-depth interviews were found to be the most suitable for this thesis.

Empirical testing was finally used for investigating the factors affecting CRM adoption and its effects in this research after conducting the qualitative study. The quantitative study would provide some breadth to the results. The developed conceptual model needed to be tested across a wider sample of the population, therefore, the use of quantitative methods are more

appropriate (Deshpande, 1983). As explained earlier, the application of quantitative methodology to the research questions examined in this study would not have been appropriate if sequenced at the start of the programme. Not only for the fact that generally little was known about CRM adoption in Hong Kong, but also that the research instruments would have lacked the insights gained during exploratory interviews of what was currently understood.

Building on the discussions on research philosophy, the chapter now moves on to the questionnaire design issues.
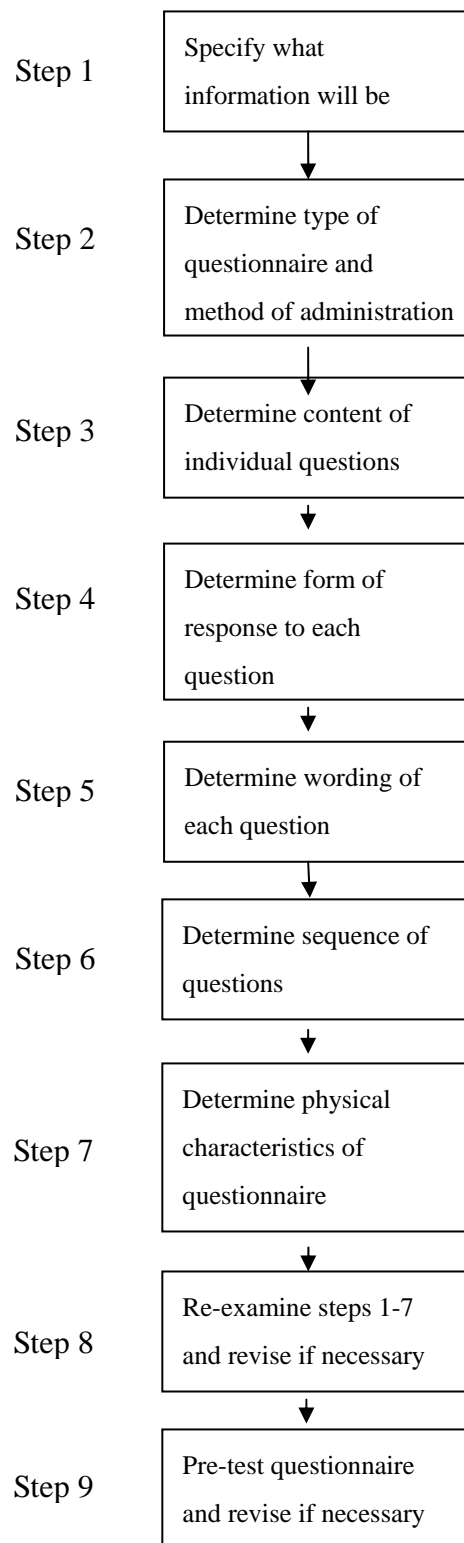
5.5 Design of questionnaire structure

Different methods of quantitative research were considered. As a sample of participants was required to generalise about the theory, pragmatic considerations including time and resources eliminated observational methods or case studies. The option of conducting theory testing by interviewer delivered questionnaires was considered. However, few companies were willing to offer their time during office hours for interview, so this was abandoned. Conducting a questionnaire interview by telephone would have been impractical given the length of the survey. Consequently, a mail survey was undertaken with a large and widely dispersed sample of companies in the services sector in Hong Kong. The mail survey is said to offer many advantages to market research, including wider distribution, less distribution bias, better likelihood of thoughtful reply, no interview bias and cost savings (Cavusgil and Elvey-Kirk, 1998). After the method of

administration has been determined, the type and style of questionnaire could be designed.

Churchill and Iacobucci (2002) emphasised that designing a questionnaire is "still an art and not a science". A number of authors have offered a series of questionnaire development steps, which researchers are advised to follow to maximise the quality of the questionnaire (Churchill and Iacobucci, 2002; Chisnall, 2001; Dillon *et al.*, 1994). Oppenheim (2000) states that all questionnaire design processes involve aspects such as item wording or phrasing and the ordering of questions. Each of the steps does not exist in isolation, steps have to be repeated when the questionnaire is re-examined. Figure 5.3 illustrates Churchill and Iacobucci's (2002) procedure for developing a questionnaire and shows the steps used within this research. This procedure has been applied to the research for this thesis because the suggested steps are constructive for designing the questionnaire. Other authors who discussed questionnaire design covered the same aspects that are mentioned by Churchill and Iacobucci (2002).

The procedure, starting from determining the content of individual questions, is now discussed with regard to the development of the questionnaire.

Figure 5.3 – Procedure for developing a questionnaire

Step 1	Specify what information will be
Step 2	Determine type of questionnaire and method of administration
Step 3	Determine content of individual questions
Step 4	Determine form of response to each question
Step 5	Determine wording of each question
Step 6	Determine sequence of questions
Step 7	Determine physical characteristics of questionnaire
Step 8	Re-examine steps 1-7 and revise if necessary
Step 9	Pre-test questionnaire and revise if necessary

5.5.1 Instrument and Scale Development

Within this step, questions have to be developed in order to meet the requirements of the research objectives. Since this study is one of the first empirical studies investigating the reasons leading to CRM adoption and its impact, a large part of the measurement instrument had to be developed from scratch, rather than borrowed from the literature. The previous literature was first reviewed to identify relevant practices comprising customer relationship management theories. Given the aim of carrying out a structural equation model (the detail of analysis method will be explained in the next chapter), observed (indicators) variables should be developed to represent the unobserved (latent) variables. As a result, a systematic and rigorous approach of developing measurement instruments is very important for this research.

The process of instrument development in this study was mainly divided into three stages: (1) item creation, (2) scale development, and (3) instrument testing.

Figure 5.4 – Overview of Scale Development

| Domain Specification | Generation of initial items | Pilot test | Data Collection | Reliability and Validity assessment |

- ♦ Specify domain: CRM definitions, adoption factors
- ♦ Perform a literature review
- ♦ Generate initial list of candidates
- ♦ Have list assessed by expert panel
- ♦ Prepare questionnaire
- ♦ Collect data for pilot test
- ♦ Perform real data collection
- ♦ Assess reliability and validity

Churchill (1979) recommended a series of techniques for generating measurement items, including literature searches, experience surveys, critical incident analysis, focus groups, and in-depth interviews. The use of these methods can enable the generation of measurement items with a relatively high degree of content validity (Moore and Bombast, 1991). On the other hand, Rosier (2002) presented an alternative perspective on the scale development. He proposed a Construct definition, Object classification; Attribute classification, Rate identification, Scale formation and Enumeration and reporting (C-OAR-SE) for the development of scales to measure marketing constructs. C-OAR-SE is based on content validity, established by expert agreement after pre-interviews with target ratters. In C-OAR-SE, constructs are defined in terms of Object, Attribute and Ratter Entity. The traditional procedure becomes a subset of the C-OAR-SE procedure. It allows for both reflective and formative perspectives as well as single-item and multi-item scales. However, C-OAR-SE is offered as a theoretical and procedural solution in developing scales to measure marketing constructs. There are a number of critics of this procedure. In 2005, Diamantopoulos pointed out several problematic issues associated with this procedure including potential confounding of denotative (having the power of explicitly denoting or designating or naming) and connotative meaning (having the power of implying or suggesting something in addition to what is explicit) during construct definition and objective classification, the use of single-item measures and the construction of formed attribute scales, the incorporation of the ratter entity as part of the focal construct, and the sole reliance on content validity. In addition, Finn and Keened (2005) thought that the C-OAR-SE procedure lacks emphasis on empirically validating the

conceptualization of constructs. As the author is dealing with reflective indicators and is focused on empirical validation in this research, therefore, this becomes the criteria for the decision to use the procedure advocated by Churchill (1979).

(1) Questions/items related to the objectives

In this study, 78 items were generated by integrating the information got from the literature review and the exploratory interviews. The idea is to transform the academic concepts to a way that practitioners think about the issues. Draft items were developed for each construct as related to each proposition in the conceptualisation section. The following discussion examines each of these constructs in turn and explains the reasons behind the choice of the items. Newly developed scales will be validated by pilot survey. Reliability and validity of the questions (including the newly developed scales) will be checked before conducting the actual data collection. The definitions of reliability and validity tests will be discussed later in this chapter.

1. CRM adoption

As discussed in section 4.4, the intention was initially to survey representatives of organisations that could be described as either adopters or non adopters of CRM. During the exploratory interview process originally, however, no non-adopter could be identified. At that point is seemed that all respondents claimed that their organisations were using and engaging with CRM in varied levels. At that stage, it was considered sensible to conceptualise CRM adoption as a continuum ranging from no adoption,

through to basic low levels of engagement and on to higher levels of engagement with CRM. Accordingly it was considered essentially to be able to operationally adoption based on the levels of engagement with CRM during the analysis.

Sin *et al.* (2005) have developed a reliable and valid scale for measuring the levels of engagement with CRM by firms. They addressed CRM based on four areas: 1) Key customer focus, 2) CRM organisation, 3) Knowledge management, and 4) Technology based CRM. The characteristics of these four components are consistent with the meaning of CRM perceived by the practitioners in chapter 4 that CRM is a process with the help of technology to increase customer satisfaction. The data for their study were collected from service firms in Hong Kong's financial industry. The results were generated from 215 completed surveys.

Key customer focus involves an overwhelming customer-centric focus (Sheath *et al.*, 2000; Vandermerwe, 2004), and continuously delivering superior and added value to selected key customers through personalised offerings. Key facets of this dimension include customer-centric, key customer lifetime value identification, personalisation and interactive cocreation marketing. *CRM organisation* means that firms should pay heightened attention to the organisational challenges inherent in any CRM initiative (Agarwal *et al.*, 2004). *Knowledge management* includes knowledge learning and generation, knowledge dissemination and sharing, and knowledge responsiveness. From a CRM perspective, knowledge can be understood as what has been learned from experience or an empirical study

of consumer data. *Technology* plays an important role in CRM in adding to a firm's intelligence (Boyle, 2004) since accurate data is essential to successful CRM performance (Abbott *et al.*, 2001).

Thus, the scale developed by Sin *et al.* (2005) was considered appropriate to measure the situation of CRM adoption. As a result, it was decided to operationalise CRM in two ways in the questionnaire – using a binary adopt/non adopt approach and the scale representing levels of engagement with CRM. A simple direct "yes/no" question on the CRM usage was retained in the questionnaire as there is possibility that the larger sample would enable the identification of firms that are genuine non adopters.

Furthermore, the author chooses to adopt Sin *et al.*'s scales since the items were defined by interviewing managers in Hong Kong and this research is also conducted in Hong Kong. Also, the scales should be understood by the practitioners. Thus, CRM adoption is measured from both the answers to the measurement items proposed by Sin *et al* (2005) as well as the answers to the simple categorisation of CRM adopters and non adopters in the analysis. The results of confirmatory factor analysis support the four dimensions that Sin *et al.* (2005) addressed (CFI=0.96). Hence, the author chose not to develop new scales on CRM adoption because suitable scale exists.

	Items	References
1	Through ongoing dialogue, we work with individual key customers to customise our offerings.	Sin *et al.* (2005)
2	My organisation provides customised services and products to our key customers.	
3	My organisation makes an effort to find out what our key customer needs.	
4	When my organisation finds that customers would like to modify a product/service, the departments involved make coordinated efforts to do.	
5	My organisation has the sales and marketing expertise and resources to succeed in CRM.	
6	Our employee training programmes are designed to develop the skills required for acquiring and deepening customer relationships.	
7	My organisation has established clear business goals related to customer acquisition, development, retention and reactivation.	
8	Employee performance is measured and rewarded based on meeting customer needs and on successfully serving the customers.	
9	Our organisational structure is meticulously designed around our customers.	
10	My organisation's employees are willing to help customers in a responsive manner.	
11	My organisation fully understands the needs of our key customers via knowledge leaning.	
12	My organisation provides channels to enable ongoing, two-way communication with out key customers and us.	
13	Customers can expect prompt service from employees of my organisation.	
14	My organisation has the right technical personnel to provide technical support for utilisation of computer technology in building customer relationships.	
15	My organization has the right software to serve our customers.	
16	My organisation has the right hardware to serve our customers.	
17	Individual customer information is available at every point of contact.	
18	My organisation maintains a comprehensive database of our customers.	

2. Relative advantage related to CRM

Originally defined by Rogers (1962) as the degree to which an innovation is perceived better than the idea it supersedes, relative advantage has been mentioned in numerous studies. Since relative advantage is specific to innovation, it was necessary to develop specific items focusing on CRM by referencing relevant literature. More than one source of items was adopted because different aspects of relative advantage need to be captured.

Dowling (2000), Berger (1999), McKim and Hughes (2000) and Premkumar and Roberts (1999) all argued that customer satisfaction, customer retention, customer lifetime value and profits are most relevant to the relative advantage of CRM adoption. During the interviews, customer satisfaction, customer lifetime value and profits were also mentioned as the relative advantages of CRM. Consequently, the following items are proposed as no other well developed instruments are available in the existing literature. The wordings were chosen based on the terms stated by the practitioners in the interview.

	Items	*References*
1	Customers' satisfaction is believed to be increased after adoption of CRM.	(Dowling, 2000)
2	Adoption of CRM can increase customers' repeat purchases	(Berger, 1999)
3	Adopting CRM can increase average customers' life time value	(McKim and Hughes, 2000)
4	Adopting CRM can increase the return on investment (ROI)	(McKim and Hughes, 2000)
5	CRM adoption can increase the profitability of our business	(Premkumar and Roberts, 1999)

3. Compatibility

This is the degree to which an innovation is perceived as consistent with the existing values, past experience and the needs of potential adopters, and is similar to suitability according to Rogers (1962). As there is a lack of pre-existing scales that can be adopted, questions are developed according to the fundamental concept and the ideas gathered from the exploratory interviews in chapter 4 such as the consistency between the company value and the CRM philosophy. Refining will be required after pre-testing.

	Items	*References*
1	CRM fits our need in keeping relationship with customers.	Newly developed
2	The philosophy of CRM is consistent with our company value.	
3	The practice of CRM is consistent with our previous practice.	

4. Complexity

this is the degree to which an innovation is perceived as difficult to understand and use according to Rogers (1962). Given the shortage of suitable scales for this construct, a new three-item scale has been developed based on the ideas mentioned by the participants during the qualitative interviews. Referring to chapter 4, the difficulty in using IT for CRM implementation as well as the difficulty to put CRM into practice was implied as complexity by the practitioners. Therefore, items with similar concept are created in a way that the practitioners can understand. The appropriateness of the items will be checked again during pre-testing of the survey.

	Items	*References*
1	The concept of CRM is easy to understand.	Newly developed
2	We find that it is difficult to put CRM into practice.	
3	The CRM related IT support tools are difficult to use.	

5. Trialability

According to Rogers' (1962) definition, trialability is the degree to which an innovation may be experimented with on a limited basis. Two items were created based on whether CRM can be tried and is easy to be applied. It was found that similar ideas of trialability were mentioned during the interviews when the practitioners talked about the factors affecting CRM adoption. Therefore, the ideas in the items should be consistent with how the practitioners think. There may be a problem on the reliability issues by creating just two items. However, I believe the meaning of the two sentences is enough to represent this construct and will keep the questionnaire manageable. The discussion of validation for this construct can be found in section 6.5 in chapter 6.

	Items	*References*
1	CRM can be tried with the available system in the market.	Newly developed
2	The practice of CRM is easy to be tested out.	

6. Observability

This is defined as to what extent the innovation is visible to others according to Rogers (1962). Also, similar ideas were mentioned during the interviews with the practitioners. One adopter indicated that they adopted CRM because they found the market leader has setup CRM to maintain

relationship with customers successfully. Therefore, a simple scale is created and the meaning is believed to be consistent with the original idea of this construct.

Although the reliability may be a problem for a one-item scale, the meaning of this item is quite sufficient to measure this construct and it can also help to keep the questionnaire manageable.

	Items	*References*
1	I have seen other companies benefit from CRM.	Newly developed

7. Perceived accessibility of IT solutions

Advances in IT have improved the implementation of relationship marketing principles according to literature chapters. The qualitative study interviews revealed that data mining tools and data warehousing were perceived as common and accessible IT solutions particularly in the CRM context, thus two items were created in order to measure this construct more accurately. Items used by Li and Collier in 2000 were found to be relevant references for this construct in this thesis. The items were stated in the same way that the practitioners think.

Besides the two items exist in the literature, two more items were developed by concluding the ideas mentioned by the practitioners during the exploratory interviews. They are about the data mining tools and the data warehousing techniques. The validity of the newly developed items will be tested carefully during pre-testing and data analysis.

	Items	References
1	The newly developed data mining tool or programme helps to handle the customers' information more efficiently.	Newly developed
2	Data warehousing provides an opportunity for our company to search for important historical customers' information.	Newly developed
3	Advance in computer information systems can help to turn data of customers into information for strategic business purposes.	(Li and Collier, 2000)
4	The development of communication systems (e.g. email, fax, mobile SMS and website) helps our organisation communicate better across different departments and with customers.	(Li and Collier, 2000)

8. Competition intensity

This construct aimed to examine the extent to which competitive intensity makes an organisation adopt CRM. Questions developed by Kohli and Jaworski (1990) from the literature review were adopted. The reliability of the items from Kohi and Jaworski is 0.81, therefore they should be reliable to be used for this construct. In 1996, Banker *et al.* referred to the scale developed by Kohi and Jaworski to measure the competition intensity when they investigate how contingency factors including competition intensity influenced the effectiveness of an outcome-based incentive plan supporting a customer focused service strategy. Furthermore, Yang and Liu (2006) applied the scale of competition intensity developed by Kohi and Jaworski when they examine the antecedents of the adoption of innovation diffusion in high technology firms in China. The reliability of the items under the competition intensity construct that they got is 0.8 and almost all items in

their empirical study get loadings higher than 0.6 in the confirmatory factor analysis. Hence, the scales created by Kohi and Jaworski are believed to be reliable and representative items in presenting competition intensity in my research.

In addition, the exploratory interviews revealed that some organisations adopted CRM because they had to follow competitors in order to have high competition intensity. Hence, this can be a driver of CRM adoption under the competition in Hong Kong. For this reason, two more items were created to fit that situation. Reliability has been tested before adoption in the real data collection.

	Items	*References*
1	In our industry, it is essential to keep good relationship with customers in order to be competitive.	Newly developed
2	Most of our competitors have adopted customer relationship management strategy and this makes us have no choice but choose it.	Newly developed
3	Competition in our industry is cut-throat.	(Kohli and Jaworski, 1990)
4	There are many "promotion wars" in our industry.	(Kohli and Jaworski, 1990)
5	Anything that one competitor can offer, others can match readily.	(Kohli and Jaworski, 1990)
6	Our competitors are relatively weak.	(Kohli and Jaworski, 1990)

9. Attitude toward change

Top management's support and attitude toward change was found to be important in leading organisations to adopt innovation in literature as well as findings in interviews. Items about managerial attitude toward change in a

firm was adopted from Lau and Woodman's (1995). The Composite Reliability and AVE of the items was 0.721 and 0.464 respectively which suggests that they are relevant to be used. Since practitioners in the qualitative study interviews emphasised that support for and belief of top management in a new strategy is very important for change or policy implication, hence, two more items were developed which aim to capture more the attitude of top management towards change. The items were tested carefully before the actual data collection.

	Items (CR=0.721;AVE=0.464)	*References*
1	Reform is beneficial to everyone in society.	Lau and Woodman's (1995)
2	Changes will bring vitality to our firm.	Lau and Woodman's (1995)
3	The top management has full confidence in the change.	Lau and Woodman's (1995)
4	Top management has full support for practicing strategy to keep good relationship with customers.	Newly developed
5	In order to change for the better, senior management believes that good customer relationship is a necessity.	Newly developed

10. Market orientation

Narver and Slater (1990) emphasise that market orientation consists of customer orientation, competitor orientation and interfunctional orientation. They have already provided a useful and reliable item measure scale for those areas; a reliability measure (Cronbach's Alpha) which is about the "consistency" and "repeatability" of the measures was also provided in their paper. Alternative measures were also developed by Kohli and Jaworski in 1990, as they focused on Intelligence Generation, Intelligence Dissemination and Responsiveness at that time. The items created by

Narver and Slaster (1990) have been chosen for this thesis because the constructs proposed by them are closer to the situation in Hong Kong as reflected in the in-depth interviews. They emphasised the constructs: customer orientation, competitor orientation and interfunctional coordination. Customer orientation is a sufficient understanding of one's target buyers to be able to create superior value continuously. Competitor orientation means that a seller understands the short-term strengths and weaknesses and long-term capabilities and strategies of both the key current and the key potential competitors. Interfunctional coordination is the coordinated utilisation of company resources in creating superior value for target customers. In the results of exploratory interviews in chapter 4, the elements of market trend, customer orientation and competition orientation were stated by the practitioners as the factors affecting CRM adoption. Therefore, the scales developed by Narver and Slaster (1990) are consistent with the way that the practitioners think.

i. Customer orientation (alpha=0.83)

	Items	*References*
1	We constantly monitor our level of commitment and orientation to serving customers' needs.	Narver and Slater (1990)
2	Our business objectives are driven primarily by customer satisfaction.	
3	Our strategy for competitive advantage is based on our understanding of customer needs.	
4	Our business strategies are driven by our beliefs about how we can create greater value for customers.	
5	We measure customer satisfaction systematically and frequently.	
6.	We give close attention to after-sales service.	

ii. Competitor orientation (alpha=0.64)

	Items	*References*
1	We rapidly respond to competitive actions that threaten us.	Narver and Slater (1990)
2	Our salespeople regularly share information within our organisation concerning competitors' strategies.	
3	Top management regularly discusses competitors' strengths and strategies.	
4	We target customers where we have an opportunity for competitive advantage.	

iii. Interfunctional coordination (alpha=0.8)

	Items	*References*
1	All of our business functions (e.g. marketing/sales, manufacturing, research and development) are integrated in serving the needs of our target markets.	Narver and Slater (1990)
2	All of our business functions and departments are responsive to each other's needs and requests.	
3	Our top managers from every function regularly visit our current and prospective customers.	
4	We freely communication information about our successful and unsuccessful customer experiences across all business functions.	

11. *Innovation orientation*

Innovation orientation is the ability of the organisation to introduce new ideas or concepts according to Hurley and Hult (1998). During the interviews, participants believed that new ideas or innovation can help them to improve their business. Hence, it makes the organisations to adopt CRM as CRM was regarded as an innovation in chapter 3 due to its technology dimension included in the CRM definition.

In 1998, Hurley and Hult have developed the scales for this construct. The validity measures show that the items are suitable to be used. As no other better alternatives are available in the existing literature, therefore, the following items are adopted for this research.

	Items (CR=0.869, AVE=0.689)	References
1	Our company pays close attention to innovation.	(Hurley and Hult, 1998)
2	Our company emphasises the need for innovation for development.	(Hurley and Hult, 1998)
3	Our company promotes the need for development and utilisation of new resources.	(Hurley and Hult, 1998)

12. Organisational group culture

Group culture was measured with items developed from the cultural value framework of Quinn (1988), which assess participative management, employee involvement , and internal cooperation. Looking at the literature review, Quinn (1988) is the major person to have defined organisational group culture and the validity measures show that the items are suitable to be used, therefore, his items are adopted. It is also acknowledged that organisational cultural scale developed by Quinn and his colleagues (cf. Cameron and Quinn, 1999) has also been widely used in the past research. The scale identifies the relative influence of four culture types that comprise a firm organisational culture. However, that framework assumes that organisation's culture can be differentiated by their dominant organisational attributes, bonding mechanisms, leadership styles and overall strategic emphases (Cameron and Quinn, 1999; Desphande *et al*. 1993). As discussed in chapter 3, the degree of employee unity, cooperation, sense of belonging to in the firm and the degree of employee involvement in decision making should be more significant in enabling organisations to adopt CRM, as CRM adoption requires organisation-wide coordination and genuine adoption will be an easier process when there is a cohesive and supportive

group culture. Therefore, the items developed by Quinn (1988) are considered more relevant.

In addition, the unity of staff in implementing CRM and the company culture towards keeping relationship with customers were demonstrated in the exploratory interviews. As a result, a new item has been created in order to measure such an aspect under the group culture factor in order to make sure the thinking of practitioners is included in the questions, Together with the scales developed by Quinn (1988), five items will be used to measure this construct. The suitability of the new question will be tested in pre-testing and data analysis.

	Items (CR=0.41, AVE=0.760)	*References*
1	Our company tries to help employees understand what is happening in the company.	(Quinn, 1988)
2	Our company gives employees opportunities to be involved in the decision-making process.	(Quinn, 1988)
3	Our company promotes unity and cooperation.	(Quinn, 1988)
4	Our company tries to help employees understand the dynamics of the market situation.	(Quinn, 1988)
5	The organisational group culture towards keeping good customer relationships is strong.	Newly developed

13. Organizational characteristics

As discussed, organisational size is a very important indicator in assessing whether a company would invest in any change or innovation adoption. Therefore, <u>size of organisation</u> will be collected. In addition, the respondents in the in-depth interviews emphasised that age of organisation is an essential factor for them to judge whether they can afford to adopt CRM, and as a result, this item has to be included.

14. Desire for customer intimacy

As mentioned in the literature review chapter, the organisation's perception of the consumer's desire for intimacy is an important driver of CRM adoption. In addition, the results of in-depth interviews demonstrated that organisations have a desire to have a close relationship with customers. Hence, organisations consider to adopter CRM. Since there are no available items that can be adopted, therefore, scale items were created based on the views obtained from the exploratory interviews which aim to capture the meaning of this construct. More attention will be paid to pre-testing the items before the actual data collection.

	Items	*References*
1	Our organisation wants to build close relationship with customers.	Newly developed
2	Customers value a company with the strategy to enhance intimacy with them.	
3	More customers want personalised services in industry.	

15. Information utilization

During the interviews, participants confirmed that information processing and utilisation is very important to CRM adoption. Segmentation process is emphasised by the participants and it implies the importance of processing of customer information and data mining in CRM for getting relevant information in order to devise a customer relationship strategy. Their views are in line with the literature that implementation of CRM initiatives have become increasingly important due to recent developments in technology, particularly in data storage capabilities, data warehousing applications, segmentation technology and data mining techniques (Berry and Linoff, 1997).

In 2005, Jayachandran *et al.* suggested that the use of CRM technology is expected to boost the ability of an organisation to sustain profitable customer relationships by enabling information to be integrated and shared smoothly, thus facilitating more efficient and effective firm-customer interaction, analysis of customer data and customisation of responses. They have proposed a set of questions on the construct - information use with factor loadings around 0.7 or above. As the terms in the scales are consistent with the way that the practitioners think, thus they are adopted to measure information utilisation in this research.

	Items	References
1	We use customer information to develop customer profiles.	(Jayachandran *et al.*, 2005)
2	We use customer information to segment markets.	(Jayachandran *et al.*, 2005)
3	We use customer information to assess customer retention behaviour.	(Jayachandran *et al.*, 2005)
4	We use customer information to identify appropriate channels to research customers.	(Jayachandran *et al.*, 2005)
5	We use customer information to customise our offers.	(Jayachandran *et al.*, 2005)
6	We use customer information to identify our best customers.	(Jayachandran *et al.*, 2005)
7	We use customer information to assess the lifetime value of our customers.	(Jayachandran *et al.*, 2005)

16. Impacts of CRM adoption

Practitioners have pointed out that it is difficult to measure the direct impact of CRM adoption as it is usually implemented with other marketing activities in an organisation. Thus, this thesis tries to investigate the organisational performance from three areas: 1) customers, 2) employees, and 3) business performance. The significant impact of CRM can be found by comparing the performance of organisations with different levels of CRM adoption.

In the past, researchers mainly focused on measuring the impact of innovation about business performance and employees. It was found that the scale developed by Kohli and Jaworski (1990) were the most suitable to be utilised. However, new items for examining the impact related to the customers' side for an innovation such as CRM have to be developed based

on the opinions collected during the exploratory interviews as no previous scales were found.

Furthermore, Pearce *et al.* (1987) showed that subjective evaluations are reliable means for measuring business performance. A Likert scale consisting of the following items was used to measure performance. Respondents were asked for their impression of their firm's performance relative to the competitors in their industry. The scale development will be explained in the next section.

a. Customers

	Items	References
1	Customer satisfaction towards your organisation	Newly developed
2	Customers' repeat purchases	
3	Word of mouth of customers	

b. Employees

	Items	References
1	Employees feel as though their future is intimately linked to that of this organisation.	(Kohli and Jaworski, 1990)
2	The bonds between this organisation and its employees become stronger.	(Kohli and Jaworski, 1990)
3	Employees are proud to work for this business unit.	(Kohli and Jaworski, 1990)
4	Our people have stronger commitment to this business unit.	(Kohli and Jaworski, 1990)
5	Employees are fond of this business unit.	(Kohli and Jaworski, 1990)

c. Business performance

	Items	References
1	Overall performance of the business	(Kohli and Jaworski, 1990)
2	Market share	(Wisner, 2003)
3	Customers' lifetime value	(Strauss, 2000)
4	Return on investment (ROI)	(McKim and Hughes, 2000)

(2) Scale development

In this study, convergent validity was also checked by experts. Two judges who are experts in marketing were requested to do the card sorting with the items. As there were 16 constructs and 78 items in the item pool, the card sorting process was simplified with labels and definitions of constructs provided for categorisation. Theoretically, if an item was correctly placed in a particular category, it was considered to display initial convergent validity with the related construct, and discriminant validity with the others. Finally, the 78 items were kept and used for the final questionnaire.

Then, questionnaire was designed. As the purpose of the questionnaire was to test and not generate propositions, a structured questionnaire was selected with standardised questions, which also facilitated tabulation and statistical analysis (Churchill and Iacobucci, 2002). An undisguised questionnaire format was chosen as it was not necessary to hide the ultimate purpose of the questionnaire (Webb, 2000). Indeed structured, undisguised questionnaires are most commonly used in marketing research (Churchill and Iacobucci, 2002) because the administration is relatively simple and clear-cut opinions due to forced alternatives can be collected.

5.5.1.1 Form of response

In general, questions are classified as either open-ended or closed-ended (Churchill and Iacobucci, 2002). Though open-ended questions could generate a rich source of information, they provide little opportunity for the researcher to compare across respondents and make coding difficult and time consuming (Webb, 2000). Closed-ended questions are suggested for self-administrated mail surveys as they establish the same context for each participant and have a significant effect on response rates (Gendall, 1998). In this study, the qualitative interviews had already provided a rich information source to formulate the propositions, therefore, closed-ended questions were mainly used throughout the questionnaire to test the hypotheses across a larger population. Moreover, items taken from previous studies were set as closed-ended questions. Open-ended questions were reserved for factual information such as investment on CRM, number of staff in an organisation and the number of years that interviewed companies had been established.

Closed-ended questions were further divided into three categories: dichotomous, multichotomous, and scale (Churchill and Iacobuccj, 2002; Kinnear and Taylor, 1996). Within this survey, the dichotomous questions acted as branching questions, allowing participants to be guided to appropriate questions. On the other hand, multichotomous questions could capture the respondents' views and are critical in ensuring adequate cooperation in self-administered surveys. Respondents are asked to tick which of the alternative answers most apply to their situation (Chisnall, 2001). In some cases the lists were taken from previous studies, in others

they were derived from a combination of the literature and insights from the qualitative study. The number of alternative answers should be mutually exclusive and collectively exhaustive (Tull and Hawkins, 1984).

The mostly extensively used scale within this questionnaire was the Likert scale which is a form of multichotomous question. It is an itemised rating scale. Respondents are asked to rank their responses to items along a continuum from strongly disagree to strongly agree, and the summated scores are only relevant when compared to other respondents' total scores (Chisnall, 2001). Furthermore, an important assumption of the method is that each of the individual items measures an aspect of a single common construct (Aaker *et al.*, 2001). The Likert scale shows good reliability, allows respondents more freedom in response and provides information about the degree of respondents' feelings (Chisnall, 2001). Foddy (1993) suggests that the optimal number of response categories is seven plus or minus two. Since the scales used from previous research were mainly five-point, therefore, five-point was adopted throughout the questionnaire in order to maintain consistency.

5.5.1.2 Question wording
In terms of language, since the survey was conducted in Hong Kong and most interviewees may have a better understanding of Chinese than English, the questionnaire had to be translated from English into Chinese. It was a challenge as some of the items chosen from previous studies were in English. As a result, back translation (from translated Chinese to English) was done by a separate professional in order to make sure that the understanding of

the Chinese is very close to the original version of English. The Chinese version is shown in Appendix 5.3.

In addition, as most of the questions concerning CRM adoption were targeted towards both adopters and non-adopters, questions were worded so that both could relate to the statement. Most statements began with a short statement 'Regardless of whether CRM is used in your company or not, we are interested in understanding your opinion related to CRM adoption'. It was hoped this would encourage non-adopters to provide their answers. Indeed even if a company had not adopted CRM, it was felt that they would be able to provide an opinion on its potential application within their business.

Further issues addressed within the question wording included avoiding double-barrelled questions (Churchill and Iacobucci, 2002); implicit alternatives and assumptions (Kinnear and Taylor, 1996) and ambiguous words and questions (Churchill and Iacobucci, 2002).

5.5.1.3 Question sequence

When deciding the questionnaire sequence, a funnel approach is recommended. Respondents are led through from general questions down to specific and more sensitive questions (Kinnear and Taylor, 1996). It is also important to prevent conditioning of the respondent, by asking specific questions prior to higher-level questions, or questions which might suggest the answer to later questions known as order bias (Webb, 2000; Aaker *et al.*, 2001). Classification questions were also generally placed at the end of the

questionnaire (Chisnall, 2001).

As a result, the questionnaire used in this thesis began with a short statement about the objective of this research which is included in the covering letter. The covering letter was produced on University headed paper and printed with electronically scanned signatures of both the author and the supervisor. The covering letter included the promise of confidentiality and gave appreciation. A copy of the covering letter is included in Appendix 5.1.

Table 5.2 illustrates the key sections of the questionnaire.

Table 5.2 – Sections contained in the questionnaire

Section	Topics
Part I	Use of CRM strategy
Part II	Drivers of CRM adoption
Part III	Attitudes on strategy about customer relationship management
Part IV	Drivers of CRM adoption (within organisation)
Part V	Information utilisation
Part VI	Organisational performance
Part VII	Company Profile

At the end of the questionnaire, a final section was included to allow participants the option of requesting a brief summary of the study's main findings.

5.5.2 Instrument testing

In order to test the instrument, questionnaires were sent out to a 10 contacted companies who had agreed to participate in the survey testing stage. The respondents replied within one week. No special comments or enquiries were reported. Finally when questions were confirmed, the overall layout and appearance of the questionnaire was further improved by additional spaces or changing fonts. This final version of the questionnaire is attached in Appendix 5.2.

The questionnaire was then used for real data collection after the pre-testing stage. Reliability and validity of the questionnaire was further examined after the main survey had been conducted. Reliability means that the findings would be consistently the same if the study were done over again. A study can be reliable but not valid, and it cannot be valid without first being reliable. There are four standard methods of measuring reliability: test-retest, multiple forms, inter-rater and split-half.

The test-retest technique is to administer an instrument, survey, or measure the same group of people at different points in time. The method is to calculate the correlation coefficient between the two scores on the same group and report it as a reliability coefficient. The multiple forms technique has other names, such as parallel forms and disguised test-retest. The idea is that it is a more rigorous test of reliability. Inter-rater reliability is used to report the percentage of agreement on the same subject between raters. Split-half reliability is estimated by dividing all items that claimed to measure the same construct into two sets and calculating the total score for

each randomly divided half. The split-half reliability estimate is the correlation between these two scores. Cronbach's Alpha is mathematically equivalent to the average of all possible split-half estimates.

Cronbach's alpha represents the statistics most often used to assess internal consistency (Spector, 1992; Dillon *et al*. 1984). It examines the proportion of variance in a scale that is attributable to the true score of the latent variable. There are general rules applying to the acceptability of a Cronbach's alpha score. In 1991, DeVellis suggested that a Cronbach's alpha below 0.6 is unacceptable; between 0.6 and 0.65 is undesirable; between 0.65 and 0.7 minimally acceptable; between 0.7 and 0.8 respectable; and, between 0.8 and 0.9 is very good.

Validity refers to the truthfulness of findings, i.e. the extent to which a set of measures accurately represents the concept of interest (Hair *et al*. 1998). There are four methods of estimating validity: *face, content, criterion and construct*. Face validity is the least statistical estimate (validity overall is not as easily quantified as reliability) as it is simply an assertion on the researcher's part claiming that it is reasonably measuring what they intended to measure. Content validity goes back to the ideas of conceptualisation. If the researcher has focused too closely on only one type or a narrow dimension of a construct or concept, then it is conceivable that other indicators have been overlooked. In such a case, the study lacks content validity. Content validity is making sure all the conceptual spaces are covered. There are different ways to estimate it, but one of the most common is a reliability approach where scores on one domain or dimension

of a concept are correlated with scores on that domain or dimension with the actual test. Another way is to simply examine inter-item correlations. Criterion validity is using some standard or benchmark that is known to be a good indicator. There are different forms of criterion validity: concurrent validity is how well something estimates actual day-by-day behaviour; predictive validity is how well something estimates some future event or manifestation that has not happened yet. Construct validity is the extent to which items are tapping into the underlying theory or model of behaviour. It is how well the items hang together (convergent validity) or distinguish different people on certain of their traits or behaviours (discriminant validity). Average Variance Extracted (AVE) was checked in order to measure the convergent validity and the discriminant validity for the measurement model. The results of the tests will be discussed in the next chapter.

After discussing the issues regarding the scale development, the next section presents the sampling method and the way of administering the mail survey.

5.6 Sampling method and administration

The target respondents in this research were the decision makers for CRM adoption or top executives in organisations of the services sector in Hong Kong. As discussed in the previous chapter, the services sector includes retail, wholesale and retail trade, import/export trade, restaurants and hotels, transport and storage, communications, financing and insurance and business services in Hong Kong. A sampling frame of around 4,000

organisational contacts in the mentioned industries was collected from websites and the trading development council directory. Based on the experience of conducting a mail survey in Hong Kong, the response rate is generally between 5% and 7%, therefore, a minimum of 4,000 mailings would be required to have least 200 returns. In order to make sure that the samples covered different industries in the services sector in Hong Kong, the number of mails sent out to each industry is proportional to the distribution of establishments of that industry in Hong Kong.

After collecting the data from the mail survey, different statistical methods will be employed to test for the hypotheses concluded in chapter 4. Descriptive analysis will be performed in order to have an understanding on all the answers to the questions. Regression models will first be used in order to investigate which drivers affect the adoption of CRM. Exploratory Factor Analysis (EFA) will be undertaken to find out if the items can be grouped under the factors proposed as the conceptual theory. Confirmatory Factor Analysis (CFA) will be performed in order to assess the fit of the indicator variables loaded on the latent variable. Finally, a Structural Equation Model (SEM) will be used to investigate the proposed relationships in the conceptual framework. The reasons in using different analysis methods as well as the principles, techniques and assumptions of the analysis methods will be discussed further in the analysis chapter.

5.7 Conclusion

This chapter has provided a summary of available research philosophy and the way to achieve the objectives of this research is identified. This research is conducted within a post-positivist paradigm, as defined by Carson *et al*. (2001), combining deductive and inductive methods, with the view that "true quantitative understanding might emerge from rich qualitative understandings" (Hughes and Sharrock, 1997: 18). Qualitative study is used to discover the relevant factors and investigate the impacts relating to CRM adoption in the different industries of the services sector in Hong Kong. It is not only for exploring issues that are important to the relationships proposed between constructs, but can also help to ensure the proposed conceptual framework is tackling the relevant aspects. The quantitative study would provide some breadth to the results. The application of quantitative methodology to the research questions examined in this study would not have been appropriate if sequenced at the start of the programme. Not only for the fact that generally little was known about CRM adoption in Hong Kong, but also that the research instruments would have lacked the insights gained during exploratory interviews of what was currently understood.

The survey instrument (78 items) was developed based on existing measurement scales and on the way that practitioners think from the results of qualitative interviews and the review of literature. After that, the form of responses, question wording, question sequence and instrument testing were also discussed. The target respondents in this research were the

decision makers for CRM adoption or top executives in organisations of the services sector in Hong Kong. The principle of the sampling method was explained.

The next chapter will examine the responses of the survey and present the analysis results of the information collected.