



A STUDY ON THE IMPLEMENTATION OF RELATIONSHIP MANAGEMENT  
(SUPPLY CHAIN MANAGEMENT) IN MALAYSIA CONSTRUCTION INDUSTRY

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## ABSTRACT

Constructions project often suffer from poor performance such as project delayed, cost overruns, and quality defects. The major reason for the occurrence of poor performance comes from the deterioration of supply chain management. Few researchers have identified the influence of supply chain relationships on the construction project. Supply chain management is to enable the companies to ensure the business has the materials, information and financial resources it needs to produce quality goods and services in a timely manner (O'Brien et al., 2008). Delays, cost over budget, failure of a building, poor quality and others was caused by the poor performance of operating staffs and labours. There are few studies have addressed the influence of supply chain relationships on project performance in construction. In this study, a supply chain relationship is described by key indicators in ten areas: mutual objectives, commitment, trust, no – blame culture, joint working, communication, problem solving, risk allocation, performance measurement, and self- improvement. The objective of this research is to study the implementation of supply chain management in Malaysia construction industry and to investigate the challenges in implementing it. This research was conducted by collecting data through respondent from three types of company which are developer, consultant, and contractor. Both questionnaire and interview survey were used for data collection. After that, the data and information was analysed by using Microsoft Excel. Lastly, conclusions and recommendations have been done. From the results of the questionnaire, company did not provided SCM training courses due to financial issues is the main challenge in implementing SCM. The problems of poor performance can be reduced by improving and maintain good relationship between project parties. In addition, further study is needed so the effect of SCM on construction performance by emerging the key indicator of optimum performance by implementing the SCM in Malaysia construction industry can be achieved.

## ABSTRAK

Projek pembinaan sering mengalami prestasi yang lemah seperti projek tertangguh, kos yang berlebihan, dan masalah kualiti. Sebab utama untuk berlakunya prestasi yang lemah datang dari kemerosotan pengurusan rantai bekalan. Beberapa penyelidik telah mengenal pasti pengaruh hubungan rantai bekalan projek pembinaan. Pengurusan rantai bekalan adalah untuk membolehkan syarikat-syarikat untuk memastikan perniagaan yang mempunyai sumber bahan-bahan, maklumat dan kewangan yang diperlukan untuk mengeluarkan barangan dan perkhidmatan yang berkualiti dalam masa yang ditetapkan (O'Brien et al., 2008). Kelewatan, kos lebih bajet, kegagalan bangunan, kualiti dan lain-lain adalah disebabkan oleh prestasi lemah kakitangan operasi dan tenaga kerja. Terdapat beberapa kajian telah ditangani pengaruh hubungan rantai bekalan kepada prestasi projek dalam pembinaan. Dalam kajian ini, hubungan rantai bekalan digambarkan oleh penunjuk utama dalam sepuluh bidang: objektif bersama, komitmen, amanah, tidak - budaya menyalahkan, kerja bersama, komunikasi, penyelesaian masalah, peruntukan risiko, pengukuran prestasi, dan memperbaiki diri. Objektif kajian ini ialah untuk mengkaji pelaksanaan pengurusan rantai bekalan dalam industri pembinaan Malaysia dan untuk menyasat cabaran dalam melaksanakannya. Kajian ini telah dijalankan dengan mengumpul data melalui responden daripada tiga jenis syarikat iaitu pemaju, perunding, dan kontraktor. Kedua-dua soal selidik dan temu bual kajian telah digunakan untuk pengumpulan data. Selepas itu, data dan maklumat yang dilumpul akan dianalisis dengan menggunakan Microsoft Excel. Akhir sekali, kesimpulan dan cadangan telah dilakukan. Daripada keputusan soal selidik ini, syarikat tidak menyediakan kursus-kursus latihan SCM kerana isu kewangan adalah cabaran utama dalam melaksanakan SCM. Masalah-masalah prestasi buruk boleh dikurangkan dengan meningkatkan dan mengekalkan hubungan baik antara pihak-pihak projek. Di samping itu, kajian lanjut diperlukan jadi kesan SCM prestasi pembinaan oleh muncul petunjuk utama prestasi optimum dengan melaksanakan SCM dalam industri pembinaan Malaysia dapat dicapai.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 INTRODUCTION OF STUDY**

Relationship management (RM) is not an entirely new concept (W. Zou et al., 2013). It has taken on many forms, addressing specific organizational constituencies like clients, partnerships, specialized service providers, staff, and supplier. According to Smyth and Edkins (2007), relationships have been developed in many ways, not only in manufacturing but also in construction industry. It is appropriate to use relationship management as a paradigm through which to justify project management relationships for partnerships as it conceptually involves a stage of activity beyond relational contract. The relationship management has various definitions among researchers. One of the types of relationship management is supply chain management which the research focused on.

The concept of supply chain management was originated and used in manufacturing sectors (Vrijhoef and Koskela, 2000). Supply chain management is to enable the companies to ensure the business has the materials, information and financial resources it needs to produce quality goods and services in a timely manner (O'Brien et al., 2008). Also, Christopher (2005) defined that supply chain as the management process between suppliers and customers to deliver at better value with least cost to the supply chain as a whole.



When come to the construction industry, supply chain is more complicated because it involve a larger number of key participants, such as client, consultants, main contractor, sub- contractor, specialist contractors, and various suppliers. Research on the supply chain management on the past has focused on improving flow of materials supply to site and site work flow. There are particular relationships between two or more types of supply chain participants. For example, relationship between client and main contractor, main contractor to sub- contractor, main contractor and sub-contractor to direct suppliers, and between main contractors with direct suppliers.

Many major causes have been analyzed that influenced the construction project delayed or failed. All of these causes can be categorized by poor management. Poor management include cost overrun, bad quality of construction, and construction time delayed. Many people ignored the effect of supply chain management in the construction project. It could bring consequences effects to the on-time project. Some of the research have been carried out before which related to this topic. The result shows that the deterioration of relationship management (supply chain management) is a major reason for the occurrence of poor performance.

A research will be conducted to study the implementation of supply chain management in Malaysia construction industry and the feasibility for improving it. Besides, industry surveys will be conducted to identify the challenges in implementing the supply chain management in the overall project.

## **1.2 PROBLEM STATEMENT**

Supply chain has been identified by researchers as one of the critical problems in construction industry that lead to poor performance (Jati and Stephen, 2006). Poor performance, such as time delays and cost overruns, are not uncommon in construction projects. Predominant factors influencing time delays are design changes, poor labour productivity, inadequate planning, and resources shortage, while cost overruns are

generally attributable to material price increases, inaccurate material estimation, and project complexity.

The deterioration of supply chain relationships is a major reason for the occurrence of poor performance. If a supply chain relationship goes bad, time delays, cost overruns and quality defects are more likely to result. Problems that occur at the construction industry always come from the poor management, not only in information flow, but also in physical flow. The information flow allows various supply chain partners to coordinate the project goal, and control the daily activities to carry on. On the other hand, physical flows involve the transformation, movement, and also storage of goods and materials. The problem is, not many people have the information and skills to cope with problem that suddenly happen without referring from the managing documentation.

Construction supply chain management helps to reduce the cost of the project and increase the speed of construction. With well implementation of supply chain management, a lower operational expense with project initial planning for procurement, manufacturing and transportation can be achieved.

### **1.3 OBJECTIVES OF STUDY**

The objectives of this study are:

- 1.3.1 To study the implementation of supply chain management in Malaysia construction industry.
- 1.3.2 To determine the scale of key indicators in implementing supply chain management.
- 1.3.3 To investigate the challenges in implementing supply chain management in Malaysia construction industry.

#### **1.4 SCOPE OF STUDY**

The scopes of study are as follow:

1. This study will focus on the construction companies in Peninsular Malaysia in Kelantan, Pahang and Kuala Lumpur.
2. A set of questionnaire and number of questions for interview will be prepared for the participants.
3. The target of questionnaire survey was fifty practitioners. Those practitioners were related to the construction industry such as design engineer, site engineer, project manager, project supervisor, project engineer, and other.
4. The questionnaire survey was conducted by using online system (Google Docs) and hand distribution. The questionnaire designed based on the concept of supply chain management and the application of it in the construction industry.

#### **1.5 EXPECTED OUTCOME**

Many people tend to underestimate the effects of supply chain management in construction industry. By doing this research, I hope to be able to identify the challenges of implementing the supply chain management and gain an understanding on current construction industry problems focusing on supply chain management. Also, I hope to be able to find out the level of implementation of participants on the supply chain management.

#### **1.6 SIGNIFICANT OF STUDY**

Therefore, I believe this research helps to identify the challenges in implemented the supply chain management in Malaysia construction industry and also the common problems that occurs due to poor supply chain management. Therefore, a further research can be conduct based on this research topic in order to improve the implementation of supply chain management in construction industry.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

The INVESTOPEDIA dictionary defines the terms of “relationship management” is a strategy that employed by an organization in which a continuous level of engagement maintained between the organization and its audience. Relationship management can be between a business and its customers (customer relationship management) and between a business and other businesses (business relationship management). Also, it can be the relationship between client, main contractor and various suppliers (supply chain management).

On the other hand, the APICS dictionary defines the term of supply chain as either the “processes from the initial raw materials to the ultimate consumption of the finishes product linking across supplier-user companies”. Also, it is seen as a set of practices aimed at managing and coordinating the whole supply chain from raw material suppliers to end customers (Vollman et al., 1997) and which develop greater synergy through collaboration along the whole supply chain (New and Ramsay, a997). So, supply chain management is one of the types of relationship management which the research focused on.

## **2.2 RELATIONSHIP MANAGEMENT**

Relationship management is a focus of the financial and investing industries as a way to identify potential cross-sales of products and services (Vrijhoef and Koskela, 2000). It aims to create a partnership between the organization and its client rather than consider the relationship merely transactional. The clients who feel that a business responds to their needs are more likely to continue using the products and services that a business offers. Additionally, maintaining a level of communication with consumers allows the business to identify the potential risks and problems before they occur from bottom to top.

## **2.3 SUPPLY CHAIN MANAGEMENT ON THEORY**

Supply chain management covers those activities associated with moving goods from the raw materials through acceptance of the product by the end-user. Construction supply chain performance management will help decision makers to evaluate their performance along the way. SCM enable the achievement of continuous process improvement in business process reengineering. Supply chain management offer a new approach to reduce the cost and increase the reliability and speed of facility construction.

It takes a systems view of the production activities of production units such as subcontractors and suppliers in construction project and seek global optimization of these activities. SCM offers a way to work that can fulfil the promise of a collaborative construction environment. Supply chain management offers a system focus on production that furthers the collaborative initiatives. So, by improving supply chain relationships may reduce the occurrence of poor performance and help to solve the performance problems.

Supply chain management is to enable the companies to ensure the business has the materials, information and financial resources it needs to produce quality goods and services in a timely manner (O'Brien et al., 2008). An effective supply management technique reduce inventory and ensure product availability when required. Supply chain management personnel ensure that all departments in the business get the raw materials

they need to complete their work. The concept of supply chain management is the innovation of JIT (just-in-time) in manufacturing (Vrijhoef and Koskela, 2000).

The supply chain in construction is more complex compared to the manufacturing due to the involvement of large quantities of key participants like client, contractor, engineers and also suppliers. Basically, the supply chain relationship in construction have three categories which are traditionally adversarial, short-term collaborative, and long-term collaborative.

The traditional adversarial relationship is one that involves two or more people or organizations that are opposing each other. This type of relationship is mainly characterized by constant disagreements and opposition. Somehow, it can be criticized by a focus on win-lose, suspicion of each other, withholding or manipulation information, ineffective problem solving, and unfair risk allocation.

On the other hand, partnering is widely recognized as a collaborative supply chain management which can be divided into long term and short term collaborative relationship. Collaboration shall be defined as a process to reach goals that cannot be achieved by one single agent. It includes the following components jointly developing and agreeing on a set of common goals and directions, sharing responsibility for obtaining those goals, and also working together to achieve those goals by using the expertise and resources of each collaborator. Collaboration stresses sharing risks and responsibilities towards a jointly defined goal such as preventing a stressed out caretaker engaging in child abuse. It increases the likelihood that the goal can be met.

Thomas & Thomas (2005) found out that are several negative perspectives in the traditionally adversarial often occurs like lack of trust, poor communication, lack of improvement among each other, and have selfish objectives. On the other hand, according to Chan et al. (2004) has manage to identified the top five critical success factors for construction partnering like communication as effective problem solving, sharing culture, clear definition of responsibilities, participated in win-win attitude, and regular monitoring of the partnering process.

So, the common factors can be determined by all these studies, from both positive and negative perspectives, indeed it can be the key indicators of supply chain relationships in construction. The key indicators include relationships indicators and also performance indicators.

## **2.4 KEY INDICATORS OF SUPPLY CHAIN MANAGEMENT**

The key indicators can be divided into two parts which are relationship and performance. In addition to the identification of the both indicators, the literature review will help to provide the indicators definition for the both relationship indicators and also performance indicators.

### **2.4.1 Relationship Indicators**

The relationship indicators are the critical success factors that identify by the past researches for the of supply chain management in construction industry. Six factors that will be used in this study are mutual objectives, commitment, trust, no- blame culture, communication, and joint working.

#### **i. Mutual Objectives**

The development of shared objectives is seen as one of the key backbones of a successful partnering arrangement (Allen and Cooper, 1999). Walker et al., (2002) stated that the best value and mutual benefits can only be achieved through shared commitment between the parties to common goals and objectives.

#### **ii. Commitment**

Identity commitment creates a referential and directed framework that is used for reviewing, assessment and regulation of behaviors and feedbacks (Berzonsky 2003). People

with the informational identity style possess problem-centric strategies, have proactive decision making, are committed to their goals and have a sense of integrity.

### **iii. Trust**

According to Rousseau et al. (1998), trust is a complex construct with multiple bases, levels and determinants. The term of trust is often associated with situations involving personal conflict, outcome uncertainty and problem solving. Besides, trust is a prediction and expectation of future events. Smyth et al. (2010) stated that the trust can be defined as a disposition and attitude concerning the willingness to rely upon the actions of or to be vulnerable towards another party with the potential for collaboration.

### **iv. No-Blame Culture**

According to Stuart (2006), stated that blame culture is the ethical problem that arises essentially concerns whether anesthetists should be blamed, or held responsible, for their errors. Blaming others for one's problems and misfortunes has been around since the dawn of time. As societies developed, the "culture of blame" has turned into the "culture of compensation" which can often place obstacles in the way of improving safety. In this work we explore the blame culture and ways to avoid it in the workplace. (John, 2008)

### **v. Joint Working**

Best practice for problem solving is to see problems as an opportunity to make a joint effort and to find the best solution for all parties (Cheng et al., 2000). So, it is important that the joint working between engineers and also parties in the construction project to increase the efficiency of finishing works within duration.



## **vi. Communication**

Ng et al. (2002) has determined the lack of open communication is the one of the main reason for the failure of construction partnering. In addition, two-way communication is more effective and should be encouraged, which can maximize understanding and minimize misinterpretation (Chen & Chen, 2007).

### **2.4.2 Performance Indicators**

There are more than ten key performance indicators have been identified by the researchers in order to achieve a good performance and response in supply chain management in construction industry. In this study, four performance indicators will be select and use as the fundamental element for the questionnaire. The performance indicators included problem solving, risk allocation, performance measurement, and self-improvement.

#### **i. Problem Solving**

According Minhong et al. (2013), for effective learning through practical experience, problem solving and knowledge construction should be highly integrated and reciprocally reinforcing. Temporal problem-solving experience can be forgotten, and knowledge embedded in problem-solving experience may not be transferable to new problems. Problems are cannot be negligible during a project. In addition, for the parties' attitude towards problems, the effectiveness of problem solving processes is an important indicator to describe the relationship between the parties.

#### **ii. Risk Allocation**

There are certain risks are inherent in all construction projects (Aurelija et al., 2013). These risks are faced by all parties involved in a project – owners, contractors, designers, suppliers, etc. On the other hand, the more important role the parties play in the

development and successful completion of the project, the greater risks they have to carry. So, equitable allocation of risks among parties is very important.

### **iii. Performance Measurement**

Thomas & Thomas (2005) stated that performance should be measured on a regular basis throughout the project, where it will help the team to review progress and identify opportunities for further improvement. Besides, Waggoner et al. found that performance measurement in business serves the purposes of monitoring performance, identifying the areas that need attention, enhancing motivation, improving communications and strengthening accountability.

### **iv. Self-Improvement**

According to Thomas and Thomas, (2005) by through the joint working and continuous improvement, the partners can identify opportunities to eliminate the activities that do not add value and focus on those that do.

## **2.5 IMPLEMENTATION OF SUPPLY CHAIN MANAGEMENT**

Supply chain management (SCM) is a long, complex and dynamic process. Its implementation requires a thorough understanding of concept (Akontoye et al., 2000; Edum-Fotwe et al., 2001). It is also seen as closely dependent upon the ability to create, manage and reshape relationships between individuals, organisations and networks within the supply chain management.

The complete of application in supply chain management methodology can resolve problems in the construction supply chain (Vrijhoef & Koekela, 2000). So, the commitment and cooperation from all parties in construction is essential to ensure a complete implementation of supply chain management for the success in construction process.

When come to the implementation of supply chain management, Lambert et al. (1998) concluded that, conveys the SCM implementation process as a more straightforward matter. In their view, senior management must address the process and they identify three closely inter related elements to aid the SCM task, namely: the supply chain network structure; the business processes; and the management components.

While Bushnell (1999) stated that implementing supply chain management requires a thorough understanding of the concept and its technology over a lengthy and diverse range of activities and organizations. Besides, he also emphasizes that there is nothing worse than trying to train for a technology when employees do not really understand or fear the concepts that it supports. And there is nothing worse than managers pursuing a concept when they do not understand the importance of, or the difficult related to, the technology on which the concept depends.

The parties involved in the project must work as a team towards achieving a successful construction project. Teamwork can establish an effective communication among each other and enhance knowledge and information sharing and finally reduce the problems that happen due to communication failure.

## **2.6 CHALLENGES IN IMPLEMENTING SUPPLY CHAIN MANAGEMENT**

Briscoe and Dainty stated that construction industry is facing the problems in managing its supply chains. Also, what are the problems behind of it? Yusof et al. (2012) identified six critical challenges in implementing the supply chain management as complexity and harsh of supply chain processes, multi trades supply chain members, inefficient of information sharing and integration, temporary or short-term supply chain network, competitive nature of supply chain, and separation of the design and production operation.

Malihe et al. (2011) pointed out another top three critical challenges in implementing supply chain management as lack of information and knowledge, lack of time, high cost for purchasing new equipment and need to employ the experts.

Thus, these challenges addressed the necessity of supply chain management to be implemented to change especially when clients request a good quality product and more reliable services. Therefore, a study related to supply chain management concept and identify the critical challenges in Malaysia construction industry must be carried out so the improvement can be made, and thereby will be discussed in the next chapter.

## **2.7 SUMMARY OF THE CHAPTER**

Based on the literature review above, the first section was discussed about the relationship management and supply chain management. Then second section was described about the definition of key indicators ten area. The third section was implementation of supply chain management in construction industry and the fourth section was about the challenges in implementing supply chain management. Lastly, the way to study about the implementation of relationship management in Malaysia construction industry will be discussed in the followed chapter, which is research methodology.

## **CHAPTER 3**

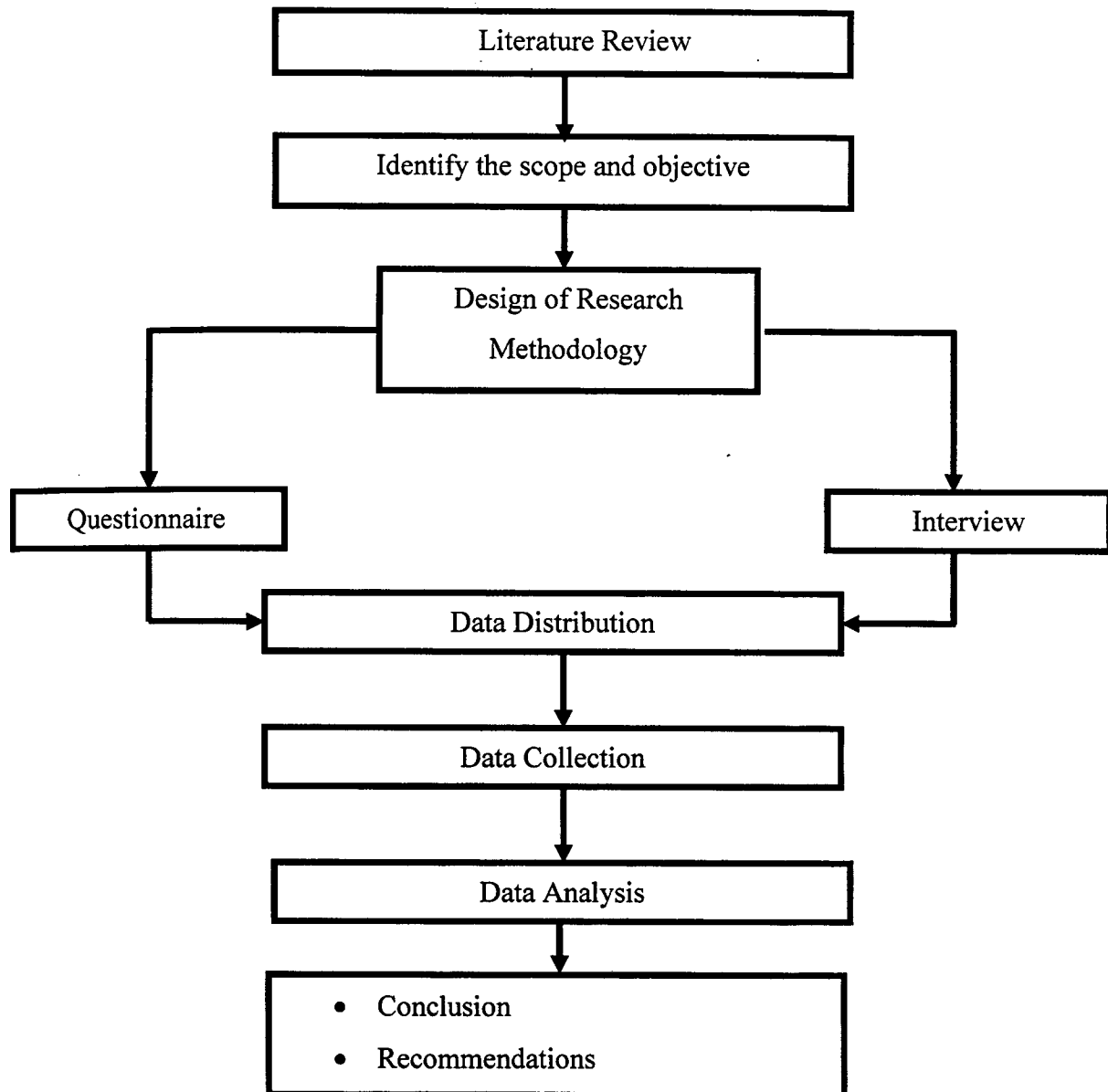
### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter is a review on the methods that use in this research which focus on the implementation of relationship management (supply chain management) in Malaysia construction industry. In this project, there are two methods to be use for the data collection. The first method is questionnaire and the second method is interview session.

Firstly, the questionnaire method will be given to fifty participants who work in three different types of construction companies which are consultant, contractor and developer. Those participants are related to the construction industry such as design engineer, site engineer, project manager, project supervisor, project engineer, and other. The questionnaire will be conduct by using Google Document through online system and also by hand. The second method will be use in this project was interview. The interview session will be done after the respondent response to the questionnaire. Ten respondents will be selected for the interview session based on the questionnaire they answered.

### 3.2 FLOW CHART



**Figure 3.1:** Flow Chart of Methodology

### 3.3 DETAIL DESIGN

#### 3.3.1 Questionnaire

The questionnaire designed based on the concept of supply chain management and the application of it in the construction industry.

The questionnaire consists of four parts where:

**Part A:** Respondent's information.

**Part B:** Relationship management (Implementation of supply chain management in participant's company)

**Part C:** Key indicators (Participant's overview on the level of implementation of supply chain management)

**Part D:** Challenges in implementing supply chain management

**Part C** related to the relationship and performance indicators that discussed in the literature review in previous chapter. The ten key indicators are mutual objectives, commitment, trust, no-blame culture, joint working, communication, problem solving, risk allocation, performance measurement, and also self-improvement.

This questionnaire will be answered by fifty participants who work in construction companies. Mostly of the question includes in the questionnaire was short and easily understand. The questions need the respondents to answers the questions that how well do them agree on the level of implementation of supply chain management in Malaysia construction industry. Also, it helps to identify the challenges in implementing supply chain management. The sample on online questionnaire can be review in Appendix A.

### **3.3.2 Interview Session**

Interview has a direct connection with the respondents in this research which make it more reliable. In this study, 10 respondents will be selected based on the questionnaire where their companies have implemented supply chain management.

The interview will be done in three different ways that depends on the respondent's favourite which as below:

1. Face to face interview
2. Phone call
3. Telecommunication (webcam/ Skype)

The interview session will be made by using the five questions that have been well prepared. The questions need the interviewer to give answer on the challenges of supply chain management and state the problem that related to their companies. Also, interviewers are allowed to give their own opinion about this research topic. The sample of interview question can be review in Appendix B.

### **3.4 DATA ANALYSIS**

The data will be analyzed by using Microsoft Excel. The results of analysis will be shown on next chapter. Thus, the discussion and conclusion will be done based on the result of survey.

### **3.5 SUMMARY OF THE CHAPTER**

As a conclusion, this study is to study on the implementation of the relationship management in Malaysia construction industry and also identify the challenges of implementing supply chain management. A combination of questionnaire and interview surveys will bring up the research more reliable and also useful.