STAKEHOLDER COLLABORATION ON SOCIAL RESPONSIBILITY IN CONSTRUCTION PROJECTS: FROM THE PERSPECTIVE OF STAKEHOLDER POWER AND INFLUENCE

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Stakeholder collaboration on social responsibility in construction projects: from the perspective of stakeholder power and influence

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CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

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ABSTRACT

The implementation of social responsibility in the construction sector is an imperative because of the adverse social and environmental impacts often caused by construction activities. The construction process faces the problems of resources exploitation, environmental pollution, and community hostility. In addition, the end products of construction have long term impacts on peoples' lives and the environment. Besides the traditional controls on time, cost, and quality, social responsibility must be incorporated in the construction project lifecycle as a routine goal. However, previous research on social responsibility has focused mostly at the level of organization, while research at the project level is lacking.

Collaboration among multiple stakeholders on social responsibility is essential but difficult to achieve because of the conflicting stakeholders' interests and unclarified responsibility distribution. Stakeholders are self-sufficient that they tend not to voluntarily share scarce resources on social responsibility issues. In addition, the dynamic power structures and stakeholder interactions add complexity to any attempt at stakeholder collaboration. The multiplicity and dynamics of stakeholders remain to be the major challenge and have been insufficiently addressed in existing research. In response to the current gaps, this study has its merits by investigating multiple project stakeholders' power and their influences, by which the aim is to facilitate stakeholder collaboration on implementing social responsibility issues in construction projects. Mixed-methods research strategies were adopted combining quantitative and qualitative approaches.

First, on reviewing the existing theories, it was found that power and influence are two key factors that must be taken into account in facilitating stakeholder collaboration in construction projects. Second, stakeholders' dynamic power on dealing with various social responsibility issues was revealed via a questionnaire

survey and two-mode social network analysis. Third, through in-depth interviews with practitioners and computer-assisted qualitative analysis, heterogeneous strategies and tactics that stakeholders use to influence each other on social responsibility issues were investigated. Fourth, a managerial framework was developed to facilitate the collaborative efforts of stakeholders on implementing social responsibility issues in construction projects. At last, a case study in the Hong Kong-Zhuhai-Macau Bridge project was implemented to validate the applicability and effectiveness of the framework.

This study has practical implications by offering a better understanding of the dynamic power and heterogeneous influencing strategies by multiple project stakeholders including developers, contractors, consultants, governments, district councils, communities, NGOs, and end users. The validated framework also provides a tool for project practitioners to organize social responsibility collaboration within a complicated stakeholder environment.

This study makes an original contribution to the current body of knowledge in the following respects. First, the study extends social responsibility theory from the organizational level to the project level. Second, it identifies power and influence as the perspective from which to explain stakeholder collaboration and endeavors to link stakeholder power with the corresponding responsibilities. Third, it supplements current stakeholder theories by addressing the further variables of stakeholder dynamics and multiplicity. Fourth, it enlarges the scope of stakeholder collaboration by involving multiple project stakeholders and exploring their different roles towards improved levels of social responsibility.

PUBLICATIONS

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CHAPTER 1 INTRODUCTION

1.1 Background of study

1.1.1 Why studying social responsibility in construction projects

The concept of social responsibility has become increasingly recognized worldwide, received fast-spreading supports, and been gradually embedded into business norms and practices for recent decades. Construction sectors are under the pressures to fulfill their social responsibility because along with accelerating economic growth in national development they also bring inevitable impacts on society and the environment (Othman, 2009). Construction activities have been associated with notorious reputations because of environmental pollutions, exploitation of unrenewable resources, unhealthy and dangerous occupational conditions, and hostility by local communities (Barthorpe, 2010). The report of United Nation Environment Program (UNEP) in 2014 reveals that, on the perspective of the whole lifecycle, buildings are responsible for 10% of the global energy consumption, 30%-40% of greenhouse gas emissions, 40-50% of raw material use, and 12% of water use. Additionally, construction industry is widely regarded as a sector with unethical reputations and low transparency levels (Ho, 2010; Oladinrin & Ho, 2014). Facing the growing pressures for taking up social responsibilities, construction sector is in imperative need to invest more resources on social responsibility implementation (Jones et al., 2006).

However, Barthorpe (2010) points out that as a visible and high-impact sector that conducts most of the activities in public arena, construction industry has not yet established its formal social responsibility policies and procedures. Although some major construction companies report that they recognized the importance of social responsibility (Brown & Parry, 2009), very few of them practically embrace the idea and incorporate it in their business schemes (Myers, 2005). Due to the fragmented nature of the industry, implementing social responsibility in construction sector has

obstacles. Nevertheless, inadequate research has been conducted focusing on the characteristics of social responsibility implementation in this specific sector.

In addition, although social responsibility in the organizational level has been extensively studied and practiced, social responsibility in project level is still in its infancy (Zeng et al., 2015). The traditional construction project management uses three criteria: time, cost and quality, to evaluate the successes of construction projects, while neglecting the potential environmental and social impacts caused by construction activities. This study argues that social responsibility should be incorporated as an inclusive goal of construction project management.

There are some reasons that studying project level social responsibility is essential. The first reason is because the construction process and end productions have widespread, long-term impacts on our society and the environment. The public and next generation will have to live with the costs and adverse impacts brought by the "irresponsible" projects. The process of construction also can cause great environmental pollutions, resources consumptions, and health and safety risks (Othman, 2009). The second reason is the unclarified responsibility allocation among complicated project stakeholders. Because of the uncertainty and dynamic nature, construction projects often face the challenges of emerging social and environmental issues during project lifecycle. Stakeholders often pass bucks and avoid taking responsibilities voluntarily because roles and responsibilities are unclarified. At last, the diffusion of responsibility in a group may cause more risks of irresponsible behaviors, because stakeholders lack collective responsibility to face the consequences. Therefore, the necessity of studying social responsibility in construction projects is unquestionable, while the key challenge is what is the difference between organizational-level and project-level social responsibility and how to implement social responsibility under a dynamic and complicated environment.

1.1.2 Why stakeholder collaboration is needed

The difference between social responsibility of organizations and projects is that project-level social responsibility needs the collaboration of complicated stakeholders with diverse resources and expertise. Roberts and Bradley (1991) define stakeholder collaboration as temporarily union of stakeholders to share their power and resources in order to achieve the common goals. Project stakeholders from both public and private sectors need to collaborate on solving the "messy social problems" (Savage et al., 2010). Unlike in organizations, resources coordination is simple because managers have centralized power and all departments have their prescribed roles. Due to the resources differentiations, stakeholders' abilities to deal with different issues varied, so their responsibilities in construction projects are also different. Bal et al. (2013) points out that the effective engagement of multiple stakeholders with required resources and expertise is critical to environmental protection, sustainable disclosure, and energy saving. Unlike individual organizations, the accomplishment of objectives in construction projects requires complicated stakeholder interactions and diverse exchanges of expertise and resources (Packendorff, 1995). The implementation of social responsibility issues is beyond individual organizations' abilities, and requires the inputs of efforts from various stakeholders.

Some major stakeholders like developers and contractors are intensively claimed to perform social responsibility. However, the other stakeholders, such as subcontractors, consultants, suppliers, NGOs, government, communities, and end users are generally neglected. This study argued that all internal and external project stakeholders have their indispensable roles in social responsibility collaboration in construction projects. Cross-sector inter-organizational stakeholder collaboration has become a recent phenomenon and be widely supported internationally. It is also the result of an adaption to the increasingly dynamic, networked, and uncertain social environment (Savage et al., 2010). Stakeholders can share resources and collaboratively seek resolutions for the

emerging issues (Bendell et al., 2010), by which the ability of project team to cope with emerging demands and risks can be enhanced (Peloza & Falkenberg, 2009).

Bryson et al. (2006) states that cross-sector collaboration is necessary and important, but it is not easily achieved. Due to different organizational backgrounds and cultures, stakeholders tend to be self-sufficient and intended to put scarce resources on their own goals instead of making joint efforts to deal with social responsibility issues (Cheng et al., 2001). Collaboration is difficult due to the conflicting stakeholder interests (Li et al., 2012), lack of consensus-based communication (Cheng et al., 2001), lack of trust (Karlsen et al., 2008), and unclear responsibility distributions (Loosemore, 1999).

The existing literatures put concentrations on the dyadic stakeholder collaboration relationships between companies and NGOs (Peloza & Falkenberg, 2009), policy makers (Doh & Guay, 2006), or mass media (Apostol & Näsi, 2013). A few attentions have been devoted to provide a better understanding of how multiple stakeholders with conflicting interests can collaborate with each other to implement social responsibility issues in construction projects. This research addressed this gap by focusing on multi-stakeholder collaboration on social responsibility implementation.

1.1.3 Why power and influence is important

Power of social actors, which come from their critical resources demanded by others (Emerson, 1962), stands for the holders' abilities to alter other social actors' behaviors to the favorable intentions regardless of resistance (Gaski, 1984). The capacity of stakeholders to influence project decision making comes from the amount of power they have (Mitchell et al., 1997; Olander & Landin, 2005). With the possession of more resources, stakeholders have higher degree of power to raise initiatives, seek supports, and achieve their objectives in construction projects (Leung et al., 2013). According to Davis (1967), greater responsibility comes along with greater power, because "those who do not take responsibility for their power, ultimately shall lose it (pp.49)". Power

and responsibility are twins. Powerful stakeholders have the abilities to implement social responsibility issues, but it does not mean they actually realize their responsibility. Loosemore (1999) reported that relatively weak stakeholders are shifted with overload responsibilities, because powerful stakeholders tend to avoid exposure to the additional risks or resource demands. It is important that powerful stakeholders be aware of their responsibility, and powerless stakeholders be empowered to safeguard their benefits (Kolk & Pinkse, 2006). According to Aas et al. (2005), the unbalanced power and responsibility is the main problem in stakeholder collaboration. Therefore, this study considered investigating stakeholders' power on social responsibility issues can help to realize stakeholder collaboration in construction projects.

Stakeholders' influence is the manifestation of power, standing as the process of using critical resources to change other's behaviors towards desired outcomes (Cook, 1977; Turner, 2005). Brass and Burkhardt (1993) points out that power represents the capacity to exercise domain over others, but it is only visible when acted with behavioral strategies and tactics. Different project stakeholders have different strategies to influence social responsibility implementation in projects. The influence flows among multiple stakeholders form the original impetus to drive the diffusion of social responsibility values in construction projects. Powerful stakeholders can decide the project resource allocation in environmental and social goals. Nevertheless, secondary stakeholders can drive the implementation of social responsibility issues by adopting proper strategies (Thijssens et al., 2015), whilst inappropriate strategies may lead to the failure of social responsibility efforts and even damage stakeholder relationships (Boyd et al., 2007).

This research argues that it is significant that stakeholders understand and exercise their power to promote social responsibility collaboration (Elijido- Ten et al., 2010). However, the existing literatures are limited on explaining project stakeholders' power and influence on social responsibility implementation. To address this missing element

in literature, this study investigated on stakeholders' power and their influence on social responsibility issues, as well as developed a framework for stakeholder collaboration practices on social responsibility in construction projects.

1.2 Research aim and objectives

1.2.1 Research gaps

The literature review in this study contains three areas: social responsibility, stakeholder collaboration, stakeholder power and stakeholder influence. The cross-subject review was to find out theories that can be linked to develop a theoretical foundation to be applied in this research. Four research gaps were found from reviewing the existing literatures.

Gap 1: Although social responsibility in construction projects needs the collaboration of multiple stakeholders, few research has contributed to the theories and practices regarding how stakeholders with conflicting interests and resources can collaborate with each other.

Gap 2: Stakeholders' power is known as an attribute for managers to prioritize salient stakeholder demands; however, current stakeholder research neglected that power as a vested characteristic of social actors also stands for the ability to resolve social issues. More relevant research is needed to link power to the responsibility of stakeholders.

Gap 3: The previous stakeholder influence research mainly focused on individual stakeholders' strategy on driving the focal company to respond to their demands, but the holistic view of multiple stakeholders' influences on social responsibility has not been addressed.

Gap 4: Although inter-organizational collaboration on dealing with social issues has

received considerable attentions, the framework for guiding social responsibility collaboration under the complicated stakeholder environment in construction projects is missing.

1.2.2 Research aim

This study aims at offering a better understanding of the complicated stakeholders' power and their influence, and developing an operational framework to facilitate stakeholder collaboration on implementing social responsibility issues in construction projects. Project level social responsibility is the target. Improving collaborative efficiency of project stakeholders is the main problem to be tackled. Four objectives are proposed to be achieved in this study.

1.2.3 Research objectives

The first objective is to establish a theoretical foundation linking theories of power and influence with social responsibility collaboration in construction projects (address research gap 1).

The second objective is to explore stakeholders' power distribution on different social responsibility issues in construction project lifecycles (address research gap 2).

The third objective is to investigate the inter-stakeholder' influences on social responsibility implementation in construction projects (address research gap 3).

The fourth objective is to develop a stakeholder collaboration framework for assisting stakeholders with jointly sharing the critical resources and actively engaging in the implementation of social responsibility issues in construction projects (address research gap 4).

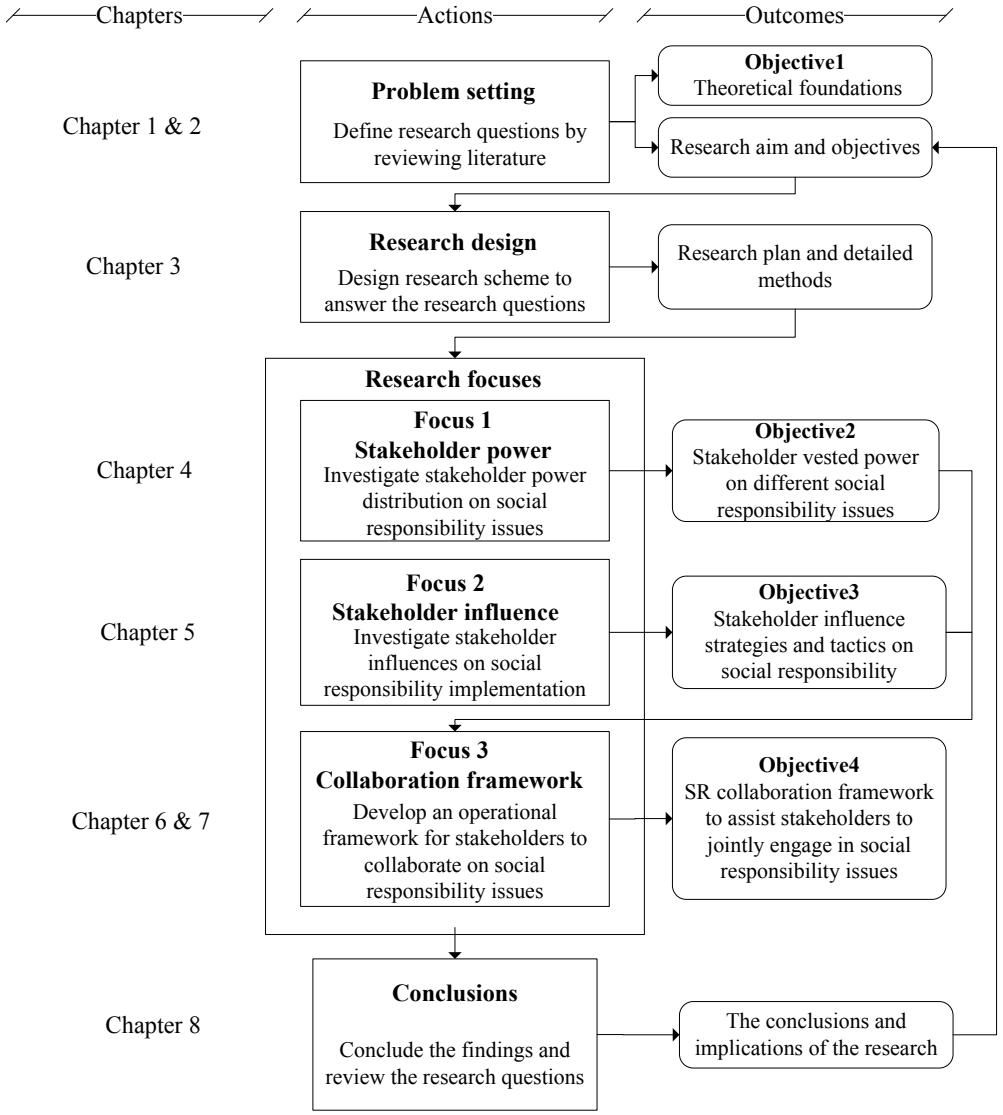
1.3 The Research Roadmap

The research actions were organized in this dissertation according to the roadmap shown in Figure 1-1. Initially, the research questions that guide this study including research gaps, aim, and objectives were formulated in the beginning by reviewing the existing literatures. During literature review, the theoretical foundation on which the study laid its base was also established. Next, the research scheme to resolve the research questions was designed, including the fundamental philosophical assumptions and the detailed research strategies.

The main data collection and analysis had three focuses. The first focus was the exploration of stakeholders' power distribution on social responsibility issues occurring in construction project lifecycle. This part of research contributes to collaborative efficiency by suggesting on what issues that different stakeholders should put emphasis on, because the issues can be most effective if conducted by capable stakeholders. The second focus is the investigation of stakeholders' influence on social responsibility in construction projects. This focus provides stakeholders' roles in driving collaborative efforts. The third is the development of the stakeholder collaboration framework on social responsibility issues, which offer an operational tool to guide and motivate complicated and dynamic stakeholders to collaborate with each other. The findings from the former two focuses generated the propositions that supporting the development of the stakeholder collaboration framework in the third focus. Although the research target is social responsibility at project level, but the resources inputs are needed from individual stakeholder organizations, therefore, the findings generated from these three focuses are mixed by organizational and project level.

At last, the overall findings and discussions of the implications to knowledge and practices were concluded. The author revisited the research questions that set forth in

the beginning and evaluated to what extent the presented research can resolve the existing obstacles.



**Developed by the author*

Figure 1-1 the research roadmap of the study

1.4 Structure of the Dissertation

The whole dissertation contains 8 chapters, with the addition of appendices and references. Chapter 1 firstly explains why the topic is chosen and demonstrates its significance by introducing the current demands and obstacles. Next, the main aim

and objective that expected to be achieved in this study is elaborated. At last, the research roadmap and the dissertation structure are described to show logics and structures of the dissertation.

Chapter 2 elaborates on the literature review and main arguments in this study. This section helps to search the research gaps, generate the core arguments, and form the theoretical foundation. In this chapter, all literature reviews are presented in three parts, including social responsibility, stakeholder collaboration, stakeholder power and influence.

Chapter 3 describes the holistic research design for achieving the research aim and objectives. The epistemology that constitutes the knowledge claims, the general procedures of the research strategy, and the detailed research methods on data collection and data analysis processes are elaborated.

Chapter 4 presents the empirical results of stakeholders' power survey and discusses the findings on how stakeholders' power differ in implementing different social responsibility issues. The comparison results between stakeholder power and their interests on social responsibility issues are also reported. From the discussion of the results, the first proposition that stakeholder power and interest are the determinants for stakeholder engagement levels in social responsibility collaboration is obtained in this chapter.

Chapter 5 expounds the empirical results of the interviews on stakeholder influences on social responsibility implementation in construction projects. The concept map generated by text analysis software Leximancer that coded from the interview transcripts is presented. The interpretations of the quoted excerpts are provided to induce the influencing strategies and tactics adopted by different stakeholders under different conditions. By linking the influence flows among stakeholders, the stakeholder influence map is developed for depicting the diffusion of social

responsibility values among project stakeholders. At last, the second proposition that stakeholder legitimacy and urgency are the main determinants of influencing strategies is proposed.

Chapter 6 develops the stakeholder collaboration framework to implement social responsibility in construction projects. Based on the propositions from Chapters 4 and 5, the stakeholder power index (SPI) and stakeholder influence index (SII) are developed for determining stakeholder engagement levels and influencing strategies. This chapter attempts to bridge the gap between theories and practices on how stakeholders can use their power and influence to facilitate social responsibility implementation.

Chapter 7 validates the collaboration framework developed in Chapter 6 by implementing it in a real construction project. The process and outcomes of implementing the framework in the project are described. The feedback from the participants is discussed for showing the performance of the framework.

Chapter 8 summarizes the main conclusions in this study. The initial research questions are revisited to evaluate whether the planned research objectives have been achieved. The limitations and future research directions are concluded in this part.

1.5 Summary of the Chapter

This chapter shows the direction and structure of the whole study. It first introduces the general background by illustrating the significance of investigating stakeholders' power and their influences on social responsibility collaboration in construction projects. The research aim and objectives which this study intends to achieve are then proposed to address the current research gaps and obstacles. An overview of the research actions from problem setting to resolutions is described for showing a holistic logic of the study.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter presents the establishment of the theoretical foundation for this study. Three fields of theories were drawn upon in this research including social responsibility, stakeholder collaboration, and stakeholder power/influence. Integrative literature review approach was employed for finding the linkages among the three theories. Compared with other review methods such as meta-analysis, systematical review and qualitative review (Whittemore, 2005), integrative review innovatively synthesizes evidences from diverse fields of literatures (Whittemore & Knafl, 2005).

The first part is literature review on social responsibility in general management field and construction management field. At first, the definition of social responsibility was proposed by discussing the controversial definitions in the existing literatures. Next, the development progress of social responsibility research was presented which give implications for the new direction. Afterwards, the social responsibility literatures in construction context were reviewed. Compared with in general management field, social responsibility research in construction industry is deficient, especially in project level. At last, the demands and obstacles for social responsibility implementation in construction context were discussed.

The review on stakeholder collaboration is presented in the second part. Stakeholder collaboration is a subset of general stakeholder research. The key definitions were introduced in this part including stakeholder, stakeholder collaboration, internal and external stakeholders. Instead of dyadic stakeholder-organization relationships, this research chose the stakeholder-stakeholder interacting network as the approach to stakeholder collaboration. The reviews showed that although inter-organizational collaboration is recognized as importance for dealing with social issues, however, the

collaborative framework that address the unbalanced stakeholder power has not yet been developed, which is the important research gap to be filled in this study.

The third part is the review on stakeholder power and their influence for refining the research inquires based on the identified obstacles. The nature of power was discussed initially because of its confusing usage in both academic and daily language. The definition of power was proposed in this part as a capacity of social actors that embedded in relationships to influence others' behaviors. It was found the gaps between stakeholder power and the corresponding responsibility has not yet been bridged. Influence is the manifestation power but does not equal to power. Stakeholder power and influence are important factors for facilitating stakeholder collaboration on social responsibility issues. The research gaps of stakeholder power and influence theories were identified to be filled in this study.

After literature reviews on social responsibility, stakeholder collaboration, and stakeholder power/influence, a theoretical framework integrating evidences from the three fields of theories is developed and elaborated in this chapter. At last, a brief summary of the main arguments from literature reviews is presented.

2.2 Social responsibility

2.2.1 The definition of social responsibility

According to Carroll (1999), the concept of social responsibility has experienced a long and transformational history and received a wide range of academic and industrial interests since it was first introduced in 1950s. Then social responsibility research was expanded in 1960s and proliferated in 1970s. During this period, the debate was growing on whether business organizations should have the responsibility to contribute and respond to social issues beyond their narrow economic, technical, and legal requirements (Davis, 1973). Since the beginning of 1990s, the debate over social

responsibility was subsided, following by the extension of the concept and derivation of alternative themes, e.g. corporate citizenship (Matten & Crane, 2005), sustainability (Milne, 1996), and business ethics (Goodpaster, 1991).

Although most research under reviewed use corporate social responsibility (CSR), this study adopted the term of social responsibility to search and analyze the literatures in order to broaden the scope from corporate to general types of organizations (the literature searching process is elaborated in Chapter 3). Social responsibility was a contestable construct since it was introduced for decades (Carroll, 1999). There have been no predominant and exclusive definition till recently because social responsibility is a vague and intangible term that can mean anything to anybody (Frankental, 2001; Jamali & Mirshak, 2007). In addition, the dynamic social changes and uneven development of economy, culture, and politics decide social responsibility definition as umbrella term that should be applicable in different social environment. Sheehy (2015) argues that giving a certain definition to social responsibility is not only difficult but also impossible, but it is necessary to draw a clear boundary because of the expanded transnational initiatives and global governmental regulations. In order to provide a common ground for this study, a definition that can serve the research inquiry in this study should be identified at first. The main definitions used in previous literatures are listed in Table 2-1.

Table 2-1 summary of social responsibility definitions

No	Source	Definition
1	(Bowen & Johnson, 1953)	the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society
2	(Davis, 1973)	The firm's consideration of, and response to, issues beyond the narrow economic, technical, and legal requirements of the firm.
3	(Carroll, 1979)	The social responsibility of business encompasses the

		economic, legal, ethical, and discretionary expectations that society has of organizations at a given point of time.
4	(Jones, 1980)	Corporations have an obligation to constituent groups in society other than stockholders and beyond that prescribed by law or union contract.
5	(Epstein, 1987)	Social responsibility relates primarily to achieving outcomes from organizational decisions concerning specific issues or problems which (by some normative standard) have beneficial rather than adverse effects upon pertinent corporate stakeholders.
6	(Carroll, 1991)	The total social responsibility of business entails the simultaneous fulfillment of the firm's economic, legal, ethical, and philanthropic responsibilities.
7	(Wood, 1991a)	Business is not responsible for solving all social problems. They are, however, responsible for solving problems that they have caused, and they are responsible for helping to solve problems and social issues related to their business operations and interests.
8	(Frankental, 2001)	Social responsibility can only have substance if it embraces all the stakeholders of a company, if it is reinforced by changes in company law relating to governance, if it is rewarded by financial markets, if its definition relates to the goals of social and ecological sustainability, if its implementation is benchmarked and audited, if it is open to public scrutiny, if the compliance mechanisms are in place, and if it is embedded across the organization horizontally and vertically.
9	(McWilliams & Siegel, 2001)	Social responsibility is defined as actions that appear to further some social good, beyond the interests of the firm and that which is required by law.
10	EU Commission, 2002 Green Paper, Promoting a European Framework for Corporate Social Responsibility	By stating their social responsibility and voluntarily taking on commitment which go beyond common regulatory and conventional requirements, which they would have to respect in any case, companies endeavor to raise the standards of social development, environmental protection and respect of fundamental rights and embrace an open governance, reconciling interests of various stakeholders in an overall approach

		of quality and sustainability.
11	(Garriga & Melé, 2004)	Social responsibility theories are focused on four main aspects: (1) meeting objectives that produce long-term profits, (2) using business power in a responsible way, (3) integrating social demands and (4) contributing to a good society by doing what is ethically correct.
12	(Simmons, 2004)	Organizations are expected to manage responsibly an extended web of stakeholder interests across increasingly permeable organization boundaries and acknowledge a duty of care towards traditional interest groups as well as silent stakeholders – such a local communities and the environment.
13	(Sacconi, 2004)	A model of extended corporate governance whereby who runs a firm (entrepreneurs, directors, managers) have responsibilities that range from fulfilment of their fiduciary duties towards the owners to fulfilment of analogous fiduciary duties towards all the firms' stakeholders.
15	(Doh & Guay, 2006)	Social responsibility is the notion that companies are responsible not just to their shareholders, but also to other stakeholders (workers, suppliers, environmentalists, communities, etc).
16	(Enderle, 2006)	Social responsibility is the contemporary morality to conduct right business
17	(Godfrey & Hatch, 2007)	Social responsibility represents action that appears to further some social good, extends beyond the explicit economic interests of the firm, and is not required by law.
18	(Barnett, 2007)	A discretionary allocation of corporate resources toward improving social welfare that serves as a means of enhancing relationships with key stakeholders.
19	(Basu & Palazzo, 2008)	Social responsibility is the process by which managers within the organization think about and discuss relationships with stakeholders as well as their roles in relation to the common good, along with their behavioral disposition with respect to the fulfillment and achievement of these roles and relationships.
20	(Matten & Moon,	Social responsibility (and its synonyms) empirically

	2008)	consists of clearly articulated and communicated policies and practices of corporations that reflect business responsibility for some of the wider societal good.
21	(Freeman & Velamuri, 2008)	The main goal is to create value for multiple stakeholders simultaneously, through intensive communication and dialogue with stakeholders, without trading off the interest of one versus the other continuously over time.
22	(Vilanova et al., 2008)	Firms should interpret and apply issues included five dimensions including vision, community relations, workplace, accountability, and marketplace.
23	(Barthorpe, 2010)	Social responsibility could be considered as an "umbrella" term, incorporating the tenets of; environmental sustainability, business ethics, governance, public relations, stakeholder analysis and relationship marketing.
24	(Sheehy, 2015)	An international private business self-regulation, incorporating public and private international law norms seeking to ameliorate and mitigate the social harms of and to promote public good by industrial organizations.
25	(Wilburn & Wilburn, 2014)	The term has an ethical responsibility focus; it focuses on doing right by the community and the environment, while also doing right by shareholders by making a profit.

**Collected and organized by the author*

Overviewing the existing definitions, the endeavors on defining social responsibility are decreased and become less intensive in the recent decade. Because the agreements haven't been achieved on the definition, this study concluded several key arguments on social responsibility definition, and defined social responsibility to be adaptive in the changing social environment.

（1） The subject of social responsibility should be general organizations instead of only focusing on corporations.

An noticeable phenomenon is that most of the definitions are for corporations; however, social responsibility of other types of organizations lacks adequate attentions (Farneti & Guthrie, 2009). Additionally diverse types of organizations emerge along with the globalization and increasingly networked society, such as public sector institutions, temporary alliance, and joint venture (Schultz et al., 2013). ISO 26000 social responsibility guidance that published by international standard organizations in 2010 addresses that social responsibility should be general applied in "all types of organizations regardless of their activity, size or location"[1]. Instead of only focusing on big corporations, all kinds of organizations should be included to meet the requirements of dramatically developing organizational environment (Freeman & Velamuri, 2008).

（2） The essence of social responsibility is the contemporary morality to conduct good business (Enderle, 2006).

Social Responsibility has the sense of moral nature because they are normally beyond the narrow economic, technical, and legal requirements at the given point of time (Davis, 1973). There are many reasons why organizations have the obligations or duty to society. Davis (1967) points out due to the enormous resources held by organizations, they have power to earn profits, as well as have the potential to harm social benefits. To maintain their power, organizations must take equivalent responsibilities to resolve the social problems by sharing their profits. In addition, as social citizens that are mutual dependent with the society, organizations have the responsibility to resolve the emerging social problems and safeguard the environment that their existences reply on (Matten & Crane, 2005). However, the core opposite view comes from Friedman (1970), who states that as long as business organizations are profitable, not deviating from the legal and ethical baseline, the responsibilities to the society have been accomplished. But such doctrine neglects that the isolation of profitability is

[1] http://www.iso.org/iso/home/standards/iso26000.htm

unsustainable, leading to the loss of competence in the prospective market, fails as both profit-seeking entities and social citizens (Joyner & Payne, 2002). In view of the increasing number of business ethical scandals that harm society and environment for individual benefits is a result of lack moral obligations (Tievino & Blown, 2004). Therefore, the nature of social responsibility address organizations' obligations to voluntarily and proactively respond to, put resources in, and seek solutions for contemporary social issues.

（3） Social responsibility is not pure altruism, while the intentions can be pluralistic.

Although social responsibility has its moral nature to contribute to wider society good, it does not mean it is pure altruism. Hemingway and Maclagan (2004) propose a framework for analyzing social responsibility. According to the framework, motivations for social responsibility initiatives can range from pure altruistic to pure strategic. As long as such actions can produce social benefits without harming other stakeholders' interests, the intentions of social responsibility endeavors are not necessarily altruistic (Freeman & Velamuri, 2008). The instrumental view states that pursuing social responsibility can enhance the profitability of companies and brings more interests to their shareholders (Garriga & Melé, 2004). And the noted work published on Harvard Business Review by Porter and Kramer (2006) highlights that an important reason that organizations pursuing social responsibility goals is because they are economically feasible without compromising profits. The intrinsic factors that lead to social responsibility actions range from pure morality of leadership, organizational culture to give back to society, political effects, reputations, strategies to enhance competitiveness, to directly save of cost or extra profits in the long run.

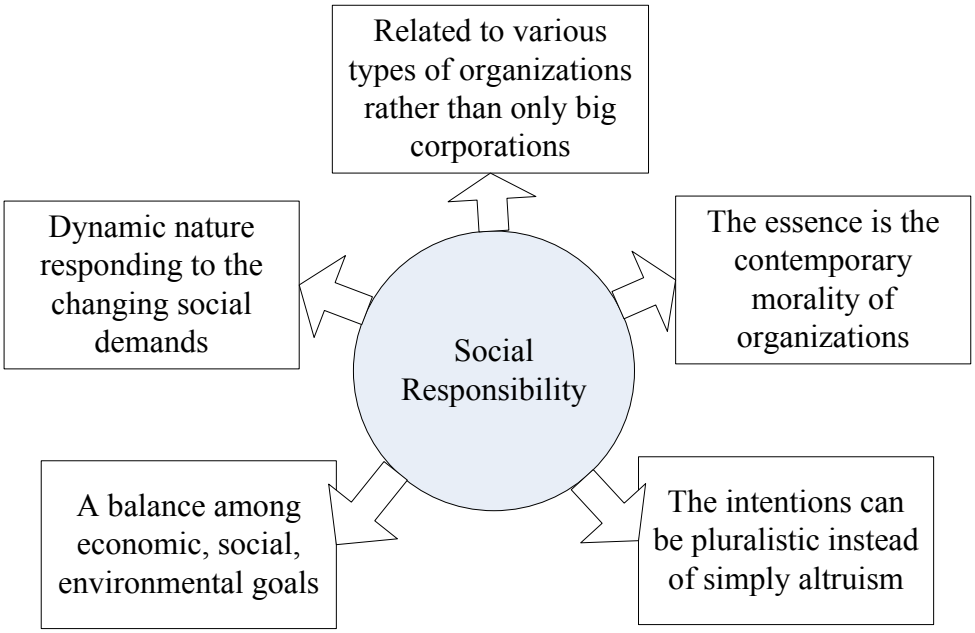
（4） Social responsibility is for seeking a balance among economic, social, and environmental goals.

Some critics claim that because of the finite organizational resources, investment in social responsibility issues are inevitably at the cost of shareholders' benefits (Munilla & Miles, 2005). Social responsibility is not asking business to give up or sacrifice their profitability; in contrast, it aims at seeking for a balance between achieving organizational goals and social benefits (Carroll, 1979). Rather than investing in every social issues, social responsibility is the optimal allocation of limited organizational resources and generate the most valuable outputs (Juscius & Jonikas, 2013). Therefore, organizations are better to prioritize the social responsibility issues that they have best abilities to cope with, such as those highly related to their business or those can be easily influenced by organizational decisions (Wood, 1991b).

（5） Social responsibility is not constant, while it is a changing term representing the contemporary social requirements and dynamic stakeholder demands.

The vagueness of social responsibility definitions is mainly reflected in the scope of "social". It is noticeable that social issues that need to be responded are changing along with the dynamic socialization process. Some definitions use unclear and broad word such as "common good", "wider society good" and "social and ecological sustainability" (Basu & Palazzo, 2008; Garriga & Melé, 2004; Godfrey & Hatch, 2007). These vague descriptions lose efficacy for encompassing almost everything. The vague scope of social responsibility may cause ambiguity and lose its theoretical and practical implications. Carroll (1979) describes the boundary of social responsibility as "economic, legal, ethical, and discretionary expectations". Wood (1991a) argues that organizations should only be responsible for the issues that related to their business operations and interests, rather than solving every social problems. However, it is extremely difficult and impossible to enlist every social issues completely to define social responsibility (Clarkson, 1995). The scope of social responsibility varies under different conditions, including particular social periods, legislations, political environments, national culture, etc. To clarify and operationalize the concept of social responsibility, Freeman (1984) introduces stakeholder theory and propose

organizations are responsible to meet the requirements of their stakeholders. Dahlsrud (2008) finds that stakeholder theory is used in large proportion of social responsibility definitions. Stakeholder perspective claims that the organizations' decision makings should embrace the demands of its multiple stakeholders (Frankental, 2001) and create values to them (Freeman & Velamuri, 2008; Juscius & Jonikas, 2013). This stakeholder dimension is significant in social responsibility definition since the target of social responsibility becomes stakeholders instead of the whole society.



**Developed by the author*

Figure 2-1 the five main characteristics of social responsibility

This study attempted to propose a definition of social responsibility applicable in the dynamically changing society. Based on the discussions above, social responsibility should consider the five main characteristics of social responsibility (See Figure 2-1). In construction projects, stakeholders have their intrinsic responsibilities to achieve the goals of time, cost and quality, which is often indicated clearly in construction contracts. However, due to the emergent and dynamic nature of project environment, many unforeseeable social and environmental issues often occur. Social Responsibility contains both the responsibilities that bounded by contracts, as well as the

responsibilities to respond to the emerging issues based on the autonomy of stakeholders.

The definitions for social responsibility of construction project and social responsibility issues that used in this study are proposed as:

Social Responsibility of construction project *is beyond narrow goals of time, cost, and quality, construction project stakeholders should contribute to broader social benefits by seeking for a balance of project economic, environmental, and social goals.*

Social responsibility issues *are those measures, policies, and activities to respond to the contemporary social and environmental problems.*

2.2.2 The development of social responsibility research

Many researchers have devoted into social responsibility studies since the concept was expanded and prevalent. Some reviews on the existing social responsibility literatures have been published. Carroll (1999) traced the history of social responsibility and identified the milestones recording the evolutionary stages of the concept. Dahlsrud (2008) systematically reviewed the controversial social responsibility definitions. And Garriga and Melé (2004) categorized four territories of social responsibility theories, including instrumental, political, integrative, and ethical. These reviews focus on finding out the development history of social responsibility, however, provide few implications of the future directions that should be headed at. Currently social responsibility practices in some major international companies have run advanced to the theories. Instead of looking into the history, it is worthy to find out the demanded areas that future social responsibility research should aim at. This study attempted to provide a systematical understanding of the development of social responsibility research and seek new research directions from the current research gaps.

Zwetsloot (2003) claimed that the existing literatures only focus on "what are the right things" and "how to do right things", while neglecting how to "continuously innovate and improve the effectiveness of social responsibility efforts". This study proposed that there are three stages of the development process of social responsibility, including the consciousness raising stage, the action-translating stage, and the effectiveness-improving stage. Along the development process, the research locus has been changed from individual perspective to collaborative perspective. The author developed Figure 2-2 to describe the three stages. The consciousness-raising stage laid solid theoretical foundations for social responsibility from sociology and management. The action-translating stage provided productive managerial implications to transform social responsibility from philosophical slogan to an operational scheme. While the last stage effectiveness-improving stands for the shifting of focus from what and how to be socially responsible to improving the effectiveness of social responsibility efforts. Compared to the former two stages, this stage is currently in its infancy and lacks enough scholarly attentions.

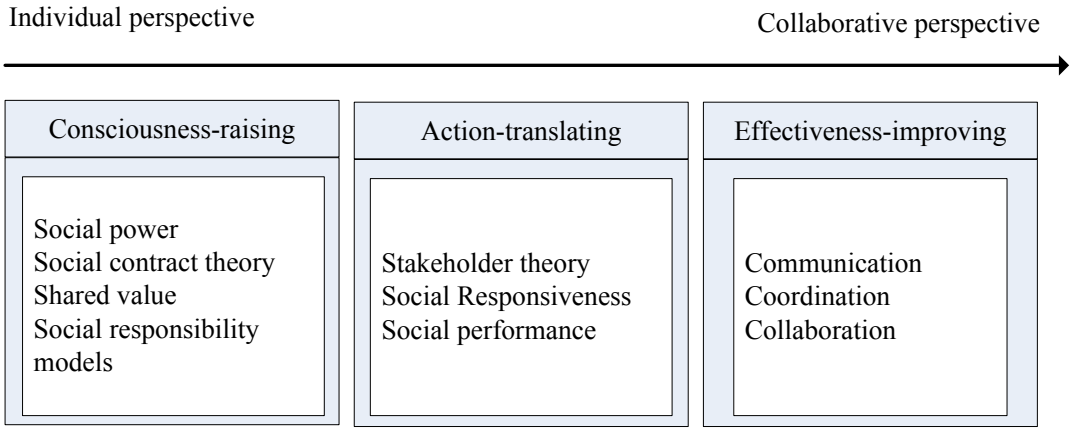


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Figure 2-2 the development of social responsibility research

2.2.2.1 Consciousness-raising stage

Consciousness-raising stage is the enlightenment of social responsibility from an unknown term to a generally accepted concept. The main question that is continuously asked in this stage is that whether or not business organizations should have social

responsibility. As Davis (1973) claimed the reasons for social responsibility is an eternal issue under debate. Diverse bodies of knowledge have been adopted to interpret the rationality of social responsibility, including economic, business, politics, law, and ethics (Sheehy, 2015). Three views on social responsibility are mainly discussed in this stage including economic, political, and ethical.

（1） Economic view

Adam Smith's liberal doctrine denies the "ethical responsibility" of business organizations, and claims each organization is designed for distinctive roles. The involvement in social issues can disperse business organizations from preforming their roles of improving productivity and economic growth (Apostol & Näsi, 2013). This statement is followed by Friedman (1970), who supported that the only and ultimate goal for business organizations is earning profits.

Compared with this narrow view, the broad economic view tries to demonstrate engagements in social responsibility have positive correlations with financial performance. Considerable research attentions have been devoted to test this proposition. The findings shows that although it is undeniable social responsibility investment may cause reductions of short time profits (Aupperle et al., 1985; Davidson & Worrell, 1990; Hamid et al., 2011; Spencer & Taylor, 1987), however, in the long run social responsibility activities can improve financial performance and high profit premium by building favorable corporate reputations (Huang & Lien, 2012; Husted & Salazar, 2006; Klassen & McLaughlin, 1996; McGuire et al., 1988; Spencer & Taylor, 1987; Zahra & Latour, 1987). Executives' and managers' perceptions and attitudes towards social responsibility are altered by the positive profitable expectations from social efforts (Holmes, 1976; Ostlund, 1977).

Porter and Kramer (2006) propose the theory of CSV (creating shared value) that social responsibility is a strategy to enhance competitiveness in the market that achieve the profitability at the same time create values to society. And they described CSV as "a

broader conception of Adam Smith's invisible hand" (pp.77) to manipulate the implementation of social responsibility in the market (Porter & Kramer, 2011). Table 2-2 shows the comparisons between two concepts. The main difference between CSV and social responsibility is whether profit maximization is the ultimate goal.

Table 2-2 the comparison between social responsibility and shared value creation

Social responsibility (SR)	Creating shared value (CSV)
Value: doing good	Value: economic and societal benefits relative to cost
Citizenship, philanthropy, sustainability	Joint company and community value creation
Discretionary or in response to external pressure	Integral to competing
Separate from profit maximization	Integral to profit maximization
Agenda is determined by external reporting and personal preferences	Agenda is company specific and internally generated
Impact limited by corporate footprint and CSR budget	Realigns the entire company budget

**Source from (Porter & Kramer, 2011, p. 76)*

CSV is criticized by many researchers. Wilburn and Wilburn (2014) argue that CSV does not concern the ethical foundation of social responsibility, because if the organizations will not respond to the social issues if they think the actions will not bring extra profit. Crane et al. (2014) address CSV as "sophisticated strategies of greenwashing" rather than social responsibility. Additionally, the whole economic view has opposition due to the basic viewpoint that social responsibility should not simply rely on market-driven (Doane, 2005; van Marrewijk, 2003)

（2） Political view

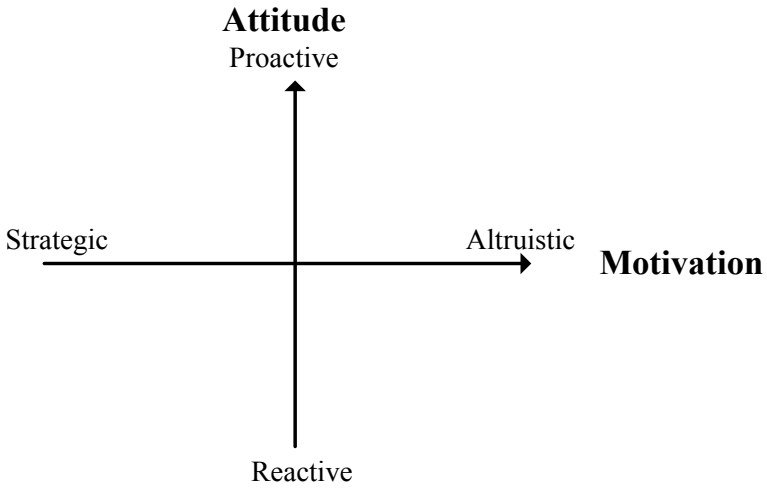
Political academia establishes the foundations for social responsibility based on the classical political theories. Davis (1960) advocates that organizations should not only

compliant with the legal and economic requirements. Social responsibility arises from the social resources that held by business organizations (Davis, 1967). Organizations are constitutions of massive social resources. These resources generate power to make direct impacts on society and the environment. According to the "Iron Law of Responsibility" proposed by Davis (1967, p. 49), organizations shall lose their power if they do not take the responsibility. Therefore business organizations should take the responsibility to respond to social issues. Donaldson and Dunfee (1994) use social contract theory to explain the reason of the obligational connections between business organizations and society. To maintain the legitimacy in society and communities, business organizations should embed social responsibility philosophy in their decision makings. Windsor (2006) identifies the relationships between political, economic, and ethical view of social responsibility that the political view fill the theoretical gaps between pure ethical and economic approaches.

（3） Ethical view

Ethical theories establish the original foundations for social responsibility to contribute to a wide society good. This moral nature of social responsibility is corroborated by many scholars (Garriga & Melé, 2004; McWilliams & Siegel, 2001; Wilburn & Wilburn, 2014). When confronting with ethical dilemma, Kantian Deontology and utilitarianism tell what is right from wrong. But for business organizations with strongly bounded moral rationality, the classical theories tend to be unsuitable (Donaldson & Dunfee, 1994). It is hard to provide a universal ethical principle for business organizations because of the fickle environment. Power theory provides an approach to interpret the ethical view of social responsibility. Enderle (2006) claims that the ethical connotation of "responsibility" has received limited academic attentions compared with its common and prevalent usage in daily language. He points out two types of responsibility: one comes with roles, and the other comes with power. Based on the traditional ethical principle of ought implies can, the extent of responsibility should be allocated in accordance with the extent of power (Enderle, 2006). Following

this principle, powerful social actors are supposed to bear more responsibilities because greater power brings fewer constraints and more opportunities to abuse that power. Based on the discussion, the analysis of social rseponsibility can be viewed as a two-dimensional continuum (see Figure 2-3). One dimension shows the motivation behind social responsibility can be any point ranging from altruistic to strategic. The other dimension is the attitude ranging from reactive to proactive. This continuum shows that any static and absolute perspective on social responsibility is not flawless. Social responsibility research should start from an open and adaptive view to approach the concept.

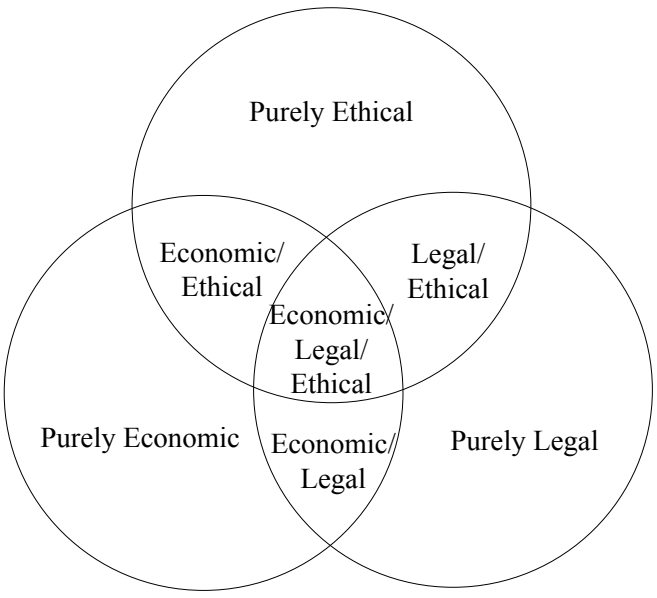


**Modified from (Hemingway & Maclagan, 2004, p. 34)*

Figure 2-3 the framework for the analysis of social responsibility

Another important question remains to be answered in this stage is what social responsibilities should be included. The most influential and applicable categorizations are developed by Carroll and his team. Carroll (1979) initially categorized social responsibility into four groups: economic responsibility, which is considered to be the most fundamental, followed by legal responsibility and ethical responsibility, and finally discretionary responsibility. Afterwards, he proposed another pyramid model in 1991 depicting these four responsibilities in a pyramid structure with being profitable as the base, obeying the law, being ethical, to the paramount of being a good corporate

citizen. Carroll's pyramid model has considerable merits in social responsibility research agenda; nevertheless no metaphor is without its deficiency. Several criticisms generates for this model: 1) there is no evidence of a hierarchical pattern among four groups of responsibilities; 2) four categories are not mutual exclusive as the pyramid model implicitly depict; 3) philanthropic category may not be count as responsibility, otherwise it could fall into ethical categories. Considering these problems, Schwartz and Carroll (2003) propose a three-domain social responsibility model (see Figure 2-4) with three equally significant domains: economic, legal, and social, emphasizing there are the overlapping parts between these domains. This model shares the same Venn diagram with the model of "Triple Bottom Line" (Social, Environmental and Economic), but this three-domain model has a more general coverage with legal domain. Including the overlapping areas, seven distinctive categories of social responsibility can be sorted. Essentially, most social issues can hardly be defined as pure economic, legal, or social; on the contrary, have a hybrid attribution combining two or three domains. It is the managerial decisions that organizations should make when encountering the conflicts in organizational goals, however, the central segment which is both beneficial to society and organizations is indispensable for organizations to seek to operate whenever possible.



**Source from (Schwartz & Carroll, 2003, p. 509)*

Figure 2-4 the Three-Domain Model of Corporate Social Responsibility (CSR)

2.2.2.2 Actions-translating stage

In actions-translating stage, social responsibility has been transformed from an abstract concept to an operational scheme to manage organizational goals. The theoretical discussions on whether organizations should have social responsibility have subsided and be taken placed by how to translate social responsibility to actual policies, programs, and activities (Godfrey & Hatch, 2007). Organizations only have the motivation or willingness to "do good things" is far from socially responsible, but to find operational approaches to implement social responsibility initiatives and achieve social goals is the essential point (Jones, 1980). In practices, the "triple bottom line" and "people planet profit" principles are broadly used in social reporting by organizations. Moreover, detailed managerial principles of social responsibility are referred to in many global standards, including ISO 26000, the Sustainability Reporting initiatives G4, and Social Accountability International SA8000. From reviewing the literature, this study summarized two significant research domains in this stage, including stakeholder theory, social responsiveness, and social performance model.

（1） Stakeholder theory

Since stakeholder theory was introduced by Freeman (1984), it has been frequently associated with social responsibility because it provides an operational way by specifying the demands of multiple stakeholders. Due to the vague boundaries, social responsibility used to be an indeterminate, disintegrative, and conflictual concept (Schultz et al., 2013). The introduction of stakeholder perspective turns social responsibility into a controllable term by embedding stakeholder management. As Jamali (2007) indicates, stakeholder theory solves the problem of social responsibility with respect to vagueness and intangibility, and offers a practical way to implement social responsibility through managing relationships with key stakeholder groups.

Freeman and Velamuri (2008) propose "company stakeholder responsibility" addressing the ultimate objective of social responsibility is to satisfy stakeholders' demands. Clarkson (1995) also advocates that stakeholder perspective is important in social responsibility because organizations are constituted by the relationships with multiple stakeholders. Organizations can implement their social responsibilities by identifying stakeholders, evaluating the salient stakeholder demands, and making strategies to meet their satisfactions (Zhuang & Wheale, 2004). In addition, the incorporation of good communications (Arvidsson, 2010), maintain of stakeholder relationships (Kim & Reber, 2008), stakeholder network management (Akiyama, 2010) also underline the significance of the stakeholder theory in social responsibility implementation.

（2） Social responsiveness

Social responsiveness is introduced by Frederick (1994) as an advanced phase of social responsibility representing the process that organizations respond to social issues. Social responsiveness shifts social responsibility from a philosophical and conceptual term to the procedures to implement organizations' good will. The key argument is social responsibility should be implemented by organizational governance procedures rather than just being a philosophical slogan (Azzam, 2010; Nasi et al., 1997; Sturdivant & Ginter, 1977). Preston and Sapienza (1990) explains the procedural social responsiveness using a four-step social response model: 1) awareness or recognition of an issue, 2) analysis and planning, c) response in terms of policy development, 4) implementation. Social responsiveness research has intersections with social issue management (SIM) division, which employs multi-disciplinary theories, such as management, economic, politics, business, and sociology, for developing organizational management models to respond to social demands (Carroll, 1994; Wood, 1991b). Social issue management is praised due to its diverse perspectives, practice relevance, and ethical focuses, meanwhile criticized for lacking theoretical foundations and rigor methodologies (Carroll, 1994).

（3） Social performance model

Some scholars combine social responsibility and social responsiveness into an integrated social performance model (Carroll, 1979; Clarkson, 1995; Sethi, 1975; Wartick & Cochran, 1985; Wood, 1991a). Social performance incorporates social responsibility as the philosophical principle to motivate and guide good behaviors, social responsiveness as the processes and strategies to achieve social goals, and in addition, the measurements of outcomes of social endeavors (Clarkson, 1995). Wood (1991a, pp. 693-694) presents a model of social performance that embedded these three components (see Figure 2-5). According to Wood (1991b), social performance can be only achieved by "examine the degree to which principles of social responsibility motivate actions taken on behalf of the company, the degree to which the firm makes use of socially responsive processes, the existence and nature of policies and programs designed to manage the firm's societal relationships, and the social impacts (i.e. observable outcomes) of the firm's actions, programs and policies. (pp. 693)"

**Source from (Wood, 1991a, p. 694)*

Figure 2-5 the model of social performance

In order to assess the outcomes of social endeavors, efforts have been made to develop measurement tools to evaluate social performance (Fernandes et al., 2013; Gjolberg,

2009). Measuring social performance is difficult because the unavailability of detailed information in quantitative terms (monetary and other forms) and the lack of methodology to measure the full impact on society. In general, there are two types of approaches for evaluating social performance: self-disclosure and objective benchmarking. Many transnational corporations worldwide publish annual social responsibility reports to disclose their social activities and achievements. Content analysis of these textual self-reflections has become a conventional and effective means for evaluation (Abbott & Monsen, 1979; Bhatia, 2012; Li et al., 2013). However, these reports are based on self-evaluations, which may inevitably lead to biases in reliability. Several objective measurements, including scales (Isa & Reast, 2012), balance sheets (Saez-Moran et al., 2008), scorecards (Spiller, 2000), and indicator systems (Fernandes et al., 2013; Gjolberg, 2009; Tong & Wu, 2008; Zhao et al., 2012a), have been developed to enhance the reliability of the evaluation.

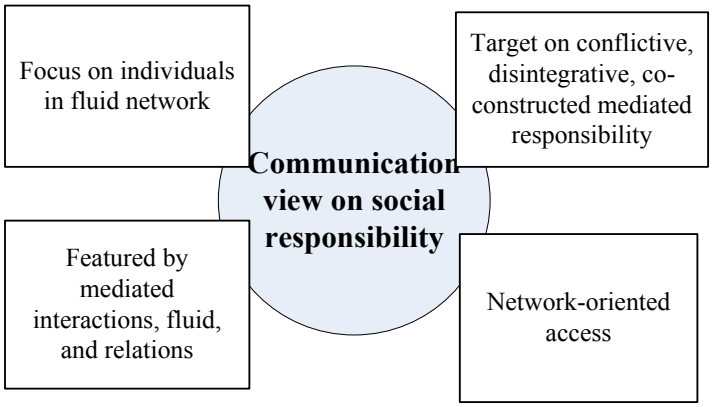
2.2.2.3 Effectiveness-improving stage

Due to the increasing specialization and complex market interactions, new demands on social responsibility research have emerged to consider the interrelations of multiple organizations in the highly networked society (Schultz et al., 2013). Facing such challenges, social responsibility research should step further than accepting and implementing social responsibility, to a higher standard of discussing how to enhance the effectiveness of social responsibility efforts. Compared with the former two stages, research in this stage is evidently insufficient. Zwetsloot (2003) argues that social responsibility is not only about "doing the right things" but to continuously improve and innovate on social responsibility activities. Spena and Chiara (2012) also advocates that social responsibility should be combined with innovation, and be embedded in the supply chain management, because the isolated focus on focal organizations is no longer sufficient in the networked society. This study concluded three prospective research focuses in this stage: communication social responsibility information,

coordination of organizational resources, and collaboration among multiple organizations to deal with social issues.

（1） Communication

Communication plays an important role in exchanging information and building relationships with stakeholders to maximize the returns of organizational social efforts (Manheim & Pratt, 1986). Besides the traditional normative, political, and instrumental view towards social responsibility, a communication view is proposed by Schultz et al. (2013) (see Figure 2-6). They argue that effective social responsibility implementation is very difficult, which requires adequate understandings of many concerns, voices, and demands. Therefore, communication view to social responsibility is worth valuing to be adaptive to the dynamic networked society (Schultz et al., 2013).



**Visualized by the author based on (Schultz et al., 2013)*

Figure 2-6 the communication view on social responsibility

An increasing number of organizations around the globe have realized that they need to disclose their socially responsible activities and achievements to public (Brown & Parry, 2009). Failure on communicating such information may reduce the expected returns of social responsibility because of customers' unawareness or incomplete information. Studies have been carried out to investigate the approaches that organizations use to communicate with the public (Grunig, 1979), communities (Manheim & Pratt, 1986), peers (Grafstrom & Windell, 2011), investors (Teoh & Shiu,

1990), and many other stakeholders. However, the lack of channels is an important obstacle on effective social responsibility communication (Capriotti & Moreno, 2007). It is safe to conclude that improving communications among organizations is a significant focus of future social responsibility research.

（2） Coordination

Coordination focuses on the optimal allocation of organizational resources to strategically respond to different social issues. Under conditions of finite resources and the conflicting demands of stakeholders, organizations cannot resolve all social issues and have to make priorities on different goals (Freeman, 1984). Wood (1991a) notes that organizations are not responsible for all social issues, but only for the issues that caused by their behaviors, and for the issues that related to their business operations and interests. The stakeholder theory add value to this point by advising organizations to put priority on the demands from the primary stakeholders that can directly influence the existence and sustain of organizations (Freeman & Velamuri, 2008). However, according to such principles, the difficult and nasty social issues may become the "hot potatoes" which are strategically avoided by most organizations. However, power theory provides the resolution that powerful organizations are trusted and vested to tackle the social issues that they are capable with (Davis, 1967). Organizational resources should be first invested on the issues that organizations have higher abilities to achieve. Coordination of organizational resources aims at distributing resources strategically on dynamic social responsibility objectives to maximize the overall values. The coordination of resources on social responsibility issues can also enhance reputations and amplify the level of social welfare delivered (Graafland et al., 2003; Jamali et al., 2008; Katavic & Kovacevic, 2011; Zwetsloot, 2003).

（3） Collaboration

Debate continues over whether an internal management system within a single organization is sufficient, especially in a complicated environment (Akiyama, 2010).

Collaboration research calls for jointly efforts among multiple social actors towards a common goal instead of focusing on the individual organizations (Dean, 1996). Because specialization of societal divisions, organizations have distinctive expertise and resources to undertake different social missions (Cook et al., 1983). Commonly social responsibility issues are "meta-problems" calling for an expanded framework of collaboration among organizations from various sectors. Each organization could make its own unique contribution, which is then pooled with those of others to promote sustainable social development in a united manner. Peloza and Falkenberg (2009) find that benefits from social responsibility initiatives can be enlarged by collaboration with other firms and NGOs. Jonker and Nijhof (2006) also note that a systematic method of collaboration among multiple participants becomes increasingly important especially with regard to social issues. Without the effective collaboration among all essential parties, the total values from social responsibility efforts could be reduced (Peloza & Falkenberg, 2009). This statement also conforms to the challenge of current networked society (Boutilier, 2007), which is characterized by a dynamically changing environment, a high density of interactions, and high connectivity among organizations (Schultz et al., 2013). The demands call for a shift from individual organization management to relational collaboration perspective on social responsibility (Peloza & Falkenberg, 2009; Ruan et al., 2013; Schultz et al., 2013). To sum up, collaboration research provides a holistic approach for organizations to exchange information, resources, and techniques on social responsibility implementation. Currently, collaboration has been inadequately addressed in currently social responsibility literatures. It is worth noting in future research to enhance collaboration amongst multiple organizations and, thereby, implement social responsibility more effectively and efficiently.

2.2.3 Social responsibility in construction projects

2.2.3.1 Overview of social responsibility research in construction sectors

Compared with the burgeoning social responsibility research in general management field, studies on social responsibility specific in construction industry are currently fragment and lack rigor methodologies. Table 2-3 summarizes the list of formally published literatures on social responsibility in construction and building sectors by the time of this study. Among the few available research, most are conceptual and qualitative analysis. The literatures start from late 2000s and about half of them are from conference proceedings. Therefore, it is worth noting that the development of social responsibility research in specific construction environment is in the preliminary stage.

The majority of the literatures focus on constructing conceptual framework for bringing in social responsibility concept from general management to construction context. Construction activities are associated with irresponsible behaviors including numerous onsite accidents, jerry-built projects, delay in payment, and environmental pollutions (Lu et al., 2007). Wang et al. (2008) attempts to provide an behavioral model to respond to social responsibility issues. Ye and Xiong (2011) reports the dissatisfactory social responsibility performance in construction industry and calls for future attentions to change this situation. Liu (2011), Zhao et al. (2011), and Zhao et al. (2012a) endeavor on establishing indicator systems for assessing social performance of construction industry, and interestingly, all these research use stakeholder perspective. Most of the literatures focus on construction organizations, Zeng et al. (2015) propose a novel social responsibility framework in construction project level by considering the project life-cycle dynamics, stakeholders' heterogeneity, and interactivity. Their research highlights the extension of social responsibility research from organizational level to project level.

Several journal articles have adopted empirical approaches to explore the current situations of social responsibility report and implementation in local construction industry. Jones (1980) analyzes the annual reports of large UK construction companies. His study shows although companies claims they have recognized the importance of social responsibility, however, it is found they fail to incorporate it in practices and executions. Later another study by Brown and Parry (2009) finds UK construction industry actually has significant commitments to social responsibility. According to their social responsibility reports, the focused issues are community, health and safety, environmental performance, energy and resources, and workforce. Petrovic Lazarevic (2008) conducted interviews with Australian practitioners and finds social responsibility in construction requires "apply a corporate governance structure that take into consideration working environment concerns; improve their sustainability, occupational health and safety measures, relationships with suppliers and commitment to local community protection and engagement". The research by Huang and Lien (2012) shows construction companies can benefit from social responsibility activities. The current problems of social responsibility implementation include lack of internal governance, limited government incentives, and negative perceptions of time, cost and energy constraints (Othman, 2009).

Table 2-3 summary of current research on social responsibility in construction and building sectors

No	Author and year	Source	Research approach	Research focus
1	(Jones et al., 2006)	Journal of corporate real estate	Documentary analysis	Exploration of social responsibility implementation and reporting of major UK construction companies
2	(Kolk & Pinkse, 2006)	European management journal	Case study	Social irresponsible scandals in Dutch construction industry

3	(Ma & Zhai, 2006)	Proceedings of 2006 international conference on construction & real estate management	Conceptual study	Implementing social responsibility to cope with "min-gong-huang" issue in China
4	(Lu et al., 2007)	Proceedings of 2007 international conference on construction & real estate management	Conceptual study	Reasons for the unsatisfactory social responsibility of construction industry of China
5	(Petrovic Lazarevic, 2008)	Construction management and economics	Interview survey	Social responsibility issues addressed by construction industry in Australia
6	(Wang et al., 2008)	Proceedings of 2008 international conference on construction & real estate management	Conceptual study	Social responsibility implementation in large Chinese construction enterprises
7	(Brown & Parry, 2009)	Proceedings of the institution of civil engineers	Documentary analysis	Identification of the prominent topics and waves of social responsibility reported by large UK construction companies
8	(Othman, 2009)	Architectural engineering and design management	Questionnaire and interview	Investigation of social responsibility implementation of South Africa architectural firms
9	(Wang et al., 2009)	Proceedings of 2009 international conference on construction & real estate management	Conceptual study	Social responsibility motivations of Chinese construction companies
10	(Akiyama, 2010)	Asian business & management	Case study	The best practices of social responsibility management in

				Sekisui House Corporate Group in Japan
11	(Barthorpe, 2010)	Property management	Case study	The development of social responsibility in construction industry and the current implementation
12	(Liu, 2011)	Proceedings of the 7th Euro-Asia conference on environment and construction	Conceptual study	Social responsibility evaluation index for real estate companies
13	(Sardinha et al., 2011)	Journal of cleaner production	Comparative study	Social responsibility benchmarking in real estate companies
14	(Ye & Xiong, 2011)	Proceedings of the 16th international symposium on advancement of construction management and real estate	Conceptual study	Social responsibility implementation in major Chinese construction companies
15	(Zhao et al., 2011)	Proceedings of the 16th international symposium on advancement of construction management and real estate	Conceptual study	Social responsibility indicators combining social responsibility issues and related stakeholders
16	(Huang & Lien, 2012)	Construction management & economics	Empirical study	The relationship between social responsibility and financial performance of construction companies in Taiwan
17	(Zhao et al.,	Journal of cleaner	Conceptual	Social responsibility

	2012a)	production	study	indicator framework for construction organizations from stakeholders perspective
18	(Zeng et al., 2015)	International journal of project management	Conceptual study	Conceptual framework for social responsibility of major infrastructure projects

**Collected and organized by the author*

Based on the above literature review, it is found that the development of social responsibility research in construction industry remains in an infancy stage. On one hand, the literatures relate to social responsibility in construction can only be found after 2006, and the number of literatures is considerably poor. However, in construction management field, the research focuses are on fragmented and branched topics under social responsibility, including construction sustainability (Bal et al., 2013; Shen, Hao, et al., 2010; Yao et al., 2011), ethical conduct (Ho, 2013; Ho, 2011; Oladinrin & Ho, 2014; Oladinrin & Ho, 2015), green building (Jing & Qin, 2011), environmental management (Johansson & Svane, 2002), health and safety (Lingard & Rowlinson, 1998; Ringen et al., 1995). These studies are fragmented and focus on different social aspects, therefore lack common ground to communicate with each other. The reason that social responsibility is irreplaceable is because it can offer a theoretical foundation encompassing different social issues and integrate them in one integrative body of knowledge. Construction industry is featured by multi-disciplines, multi-techniques, and complex stakeholders' relationships. General social responsibility research findings may not be applicable in construction context, since social responsibility without considering industrial background can be fatally deficient (Cottrill, 1990). Under this condition, how social responsibility can be constructed in a specific context--construction industry, requires broader attentions (Dahlsrud, 2008). Giving that the significance of social responsibility in construction industry has been

recognized, this study emphasize on answering how to implement social responsibility more effectively under complicated stakeholder environment; how to balance multiple goals within construction projects; and how to promote stakeholder collaboration on social responsibility issues.

2.2.3.2 Social responsibility in project level

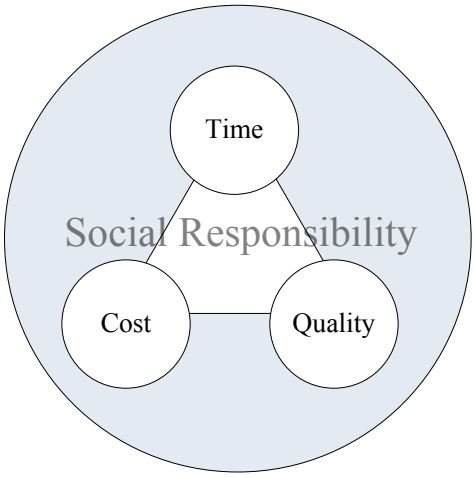
The current social responsibility literatures mainly focus on individual organizations. However, for construction projects, implementing social responsibility becomes more difficult due to the complex project stakeholders. Unlike traditional organizations, projects are temporary unions for completing unique tasks through interactions of various project stakeholders with different expertise and resources (Packendorff, 1995). Although social responsibility in organizational level has been extensively studied, that in the level of construction projects is still an undeveloped field (Zeng et al., 2015). There are several reasons for bringing social responsibility from organizational level to project level:

（1） Social responsibility should be incorporated in project management besides time-cost-quality goals, because of the adverse impacts caused by construction project lifecycle.

Construction projects consume tremendous physical resources and insert harmful impacts on the environment over project lifecycles, from project construction processes to the operation of the end product (Othman, 2009). The construction processes are associated with exploitation of non-renewable resources and neighborhood hostility, the disturbance on communities and environment are inevitable (Moodley et al., 2008). Compared to the construction process, the end products of construction projects, the artificial built environments, have longer-lasting and more significant impacts on the society and the environment. The lifecycle assessment of building energy analysis shows the operating stage of buildings has the largest share (80% to 90%) of the overall energy demands (Ramesh et al., 2010). Considering the

long-span of construction buildings (about 50 to 100 years), the carbon dioxide emission per square meter in the operation stage is tens and hundreds times of that in the construction and demolition stage (Gustavsson et al., 2010).

The traditional construction project management only concentrates on the triangle of time, cost, and quality. Because of the potential social and environmental impacts, and the increasing pressures from the society, social responsibility should be incorporated in project management as the ultimate goal towards success projects. As shown in Figure 2-7, the traditional triangle of time-cost-quality is compassed in the gerenal scope of social responsibility. However, it also shows most of the other issues in social responsibility scope, such as environmental protection, human rights, community issues, and philanthropy, have been ignored.



**Developed by the author*

Figure 2-7 social responsibility in construction project management

（2） Construction industry is featured with multi-level operations (intra-organizational and intra-project management), a separate management system should be implemented in project level to cope with social issues.

Construction projects contain interactions and resources exchanges both within and inter organizations. Besides organizational governance, social issue management in project level is also indispensable for the success of social responsibility goals.

Packendorff (1995) redefines construction projects as temporary organizations that are well organized for completing a non-routine product. Since early 1990s, project companies are established in project conception stage for some long-span infrastructure projects as independent business entities that are vested to take both financial and social responsibility as normal business organizations do. Looking at social responsibility definition in section 2.2.1, social responsibility should be taken by all types of organizations, including construction projects. Therefore, construction projects are also expected to embrace social responsibility and respond to the social demands from employees, communities, the environment, and the general public.

（3） Construction projects lack pre-agreed framework for dealing with social issues collaboratively, while self-sufficient stakeholders may not take the responsibility voluntarily.

As a self-sufficient organization, each project stakeholders tend to devote their resources into their primary goals rather than making joint efforts on implementing social responsibility issues (Cheng et al., 2001). Moreover, stakeholders' obligations to social responsibility in projects are not fully stated in contracts and policies; stakeholders are less likely to sacrifice their benefits or share competitive resources. This is especially true when social responsibility issues bring extra costs and risks exposure. Stakeholders avoid taking responsibility and often kick the ball to others when the social issues arise. One example is the pollution of the Pearl River in Guangdong Province, China. According to the 2009 Poisoning the Pearl River Report by Greenpeace[2], the qualified rate of drinking water in Guangdong is only 67.8% among the samples. In addition to the polluting factories, many construction projects including the dam and power stations along the bank, caused water pollution. No

[2] Greenpeace(2009), "Poisoning the pearl river", available at: http://www.greenpeace.org/international/en/publications/reports/poisoning-the-pearl/

controlling measures were taken before the pollution was found. This is because the powerful stakeholders, including the developer and the government department, transfer the risk and responsibility to relatively powerless taxpayers at the expense of the health of the current and next generation. In construction projects, it is common that powerless stakeholders take high responsibility that is beyond capacity, while powerful stakeholders take less Loosemore (1999). This unbalanced power and responsibility calls for the management framework in project level to explicit stakeholders' roles and responsibilities on social issues.

（4） The last reason that social responsibility should be extended to project level is because construction projects are highly uncertain and dynamic in nature (Missonier & Loufrani-Fedida, 2014).

Compared with general organizations, construction projects are conducted under the uncertain and complicated stakeholder environment over lifecycle (Aaltonen, 2011). Emerging social issues such as ecology habitat conservation, land use, resettlement of the local residents, relationship with neighboring, construction waste, energy efficiency, dust environment, need the immediate reactions and proper solutions by relevant stakeholders. Under the challenges of such emergent and dynamic project environment, implementing social responsibility in project level provides a novel approach to redefine project goals and pursuing improved social performance. However, implementing social responsibility in construction projects is not an easy practice, an integrative framework that enable the effective communication and collaboration among stakeholders are required to achieve that goal.

S2.2.3.3 The needs and difficulties of stakeholder collaboration on social responsibility in construction projects (research gap 1)

Based on the argument from section 2.2.2, the research direction on social responsibility should concentrate on sharing information, optimizing resources allocation, and at last, facilitate stakeholder collaboration to achieve social

responsibility goals. Stakeholder collaboration on social responsibility is not only the theoretical gap in general social responsibility research but also the bottleneck of social responsibility practice. The demands and obstacles of stakeholder collaboration on social responsibility issues in construction projects are as follows.

（1） Construction stakeholders need to collaboratively build and maintain reputations of construction projects; otherwise negative impacts of projects will influence all project stakeholders.

Construction projects are unique and temporal union of different project participants, therefore the social influences on these projects shall not be attributed to any single organization (Packendorff, 1995). However, the irresponsible behaviors and outcomes such as on-site accidents, environmental pollutions, and community conflicts, can influence the credits of all project stakeholders. All stakeholders including developers, contractors, consultants, government departments, and subcontractors should all be aware of this risk, and try to improve the project social performance collaboratively.

（2） Social issues in construction projects are “mega problems” that call for resources sharing and interactions among multiple stakeholders.

Similar to the success of many traditional project goals, the success of social responsibility objectives relies on the effective interaction of multiple stakeholders (Missonier & Loufrani-Fedida, 2014). Social issues in projects such as climate change, health and safety, sustainability, energy efficiency, employment, and ecological balance need the engagement of various stakeholders (Bendell et al., 2010; Savage et al., 2010). It is not possible for individual organizations to respond to all social responsibility issues due to the scarcity of resources (Jamali, 2007). Stakeholders from private sectors, government, and civil society all have irreplaceable roles. For example, to implement green construction, governments must enact regulations to force developers to require green materials in tenders. Developers, in turn, must encourage contractors to adopt green features during procurements. End users can drive the

developers and contractors to use green products via green purchase behavior or by increasing demand for green buildings. Therefore, stakeholder collaboration is essential in pursuing social responsibility in construction projects.

（3） One obstacle is that stakeholders have heterogeneous interests, so it is difficult for them to share critical resources and information to collaborate on social responsibility issues.

Diverse social responsibility issues are currently faced by construction projects such as labor issues, sustainable construction, and green building, and future challenges are increasing including resources efficiency, climate change, and housing issues (Martinuzzi et al., 2011). The discretion and heterogeneity of stakeholders determine that stakeholders' emphasizes are different based on their organizational backgrounds and values (Jonker & Nijhof, 2006). Lindgreen et al. (2009) found that organizations have different focuses on stakeholders' demands, putting varying emphasis on customers and suppliers, employees, financial investors, philanthropy, and environment. And such differences may relate to the nature of organizations' size, nature, history, culture, leadership, and etc. In addition, construction projects involve an extensive scope of stakeholders, representing conflicting interests and demands (Aaltonen, 2011). Driven by self-interests, project stakeholders tend to invest resources in their individual goals instead of showing concerns for a project's overall social performance (Cheng et al., 2001). A lack of consensus and joint efforts among stakeholders may lead to the failure of a project's social performance (Li et al., 2012). Therefore, the complexity of stakeholder environments is the main obstacle of stakeholder collaboration in construction projects.

（4） Another obstacle is the dynamic stakeholder power structures and interactions in construction projects.

Because of resource differentiation and specialization, stakeholders have different power and abilities to deal with social issues (Cook, 1977). But it cannot be guaranteed

the powerful stakeholders are aware of their abilities and voluntarily take the corresponding responsibilities. In addition, in construction projects, the power structures that show the flow of forces to drive the implementation of social responsibility are changing constantly (Aaltonen & Kujala, 2010). This dynamic nature of construction projects makes it even more difficult to identify the power structure and organize proper stakeholders to collaborate with each other. The failure of empowerment of important stakeholders brings ineffective social engagement and bad social performance of the projects (Dainty et al., 2002). The unbalance power and responsibility is also one of the consequences that let the powerless stakeholders bear more pressures that they can cope with (Loosemore, 1999). And more importantly, the power of stakeholders is dynamically changing along construction lifecycle (Aaltonen & Kujala, 2010). Under different social responsibility issues, the powerful stakeholders that should be collaborated with in the implementation process change significantly. The dynamic power structures and complicated interactions of stakeholders cause the second obstacle to collaboration on social responsibility issues.

Research gap 1: Accordingly, an effective approach is needed to assist project teams to identify dynamic power structures in order to ensure proper engagements of capable stakeholders to collaboratively implementing social responsibility in construction projects. Although the demands of stakeholder collaboration on social responsibility implementation in construction projects are urgent, however, no research has contributed to the theories and practices that how stakeholders with different interests and resources can collaborate**.**

2.3 Stakeholder collaboration

2.3.1 Stakeholder theories

Stakeholder theories are found prevailing in the management of social issues. They have been integrated in research on sustainability (Bal et al., 2013; Sharma &

Henriques, 2005), social responsibility and social performance (Clarkson, 1995; Valackiene & Miceviciene, 2011; Xun, 2013), environmental management (Onkila, 2011; Reed, 2008), risk management (Deng & Zhou, 2009; Jing & Qin, 2011), and business ethics (Jones, 1995; Moodley et al., 2008). Stakeholder and social responsibility theories both address the extensive organizational objectives to broader society and environmental good. Nevertheless, social responsibility cannot be replaced by stakeholder theories, because it unlikely provides solutions to any moral dilemmas (Phillips et al., 2003). General stakeholder theories contain various aspects of assumptions and models. For clarifying the integrating point of this study, the author tried to draw the boundary in general stakeholder theories.

2.3.1.1 Three aspects on stakeholder theories

The notion of stakeholder is introduced by Freeman (1984) in his book *Strategy Management: a stakeholder approach*. Stakeholder theory aims at explain and improve the operation of organizations and becomes prevailing in both academic and management practices (Mitchell et al., 1997). The proliferation of stakeholder theory in management field has been praised for enlightening the way to achieving organizational objectives through analyzing and managing stakeholder relationships. Donaldson and Preston (1995) propose that stakeholder theories can be used in three different aspects: descriptive, instrumental and normative stakeholders. Descriptive aspect depicts organizations' characteristics and behaviors by stakeholder relationships. Using this aspect, organizational success and sustain can be described as creating desired values to all important stakeholders who can directly influence the operations and survivals of organizations (Clarkson, 1995; Jawahar & McLaughlin, 2001). Instrumental stakeholder offers managerial tools for organizations to achieve organizational goals through analyzing and managing the demands of their stakeholders (Brugha & Varvasovszky, 2000). This view is frequently used in empirical studies that try to evaluate the correlations between organizational performance and stakeholder management. Normative aspect is the core of stakeholder

concept, which addresses the basic philosophy that stakeholders are persons or groups who have intrinsic interests in organizational activities. Descriptive, instrumental, and normative aspects address different perspectives of stakeholder theories. This study also adopted hybrid aspects of normative, descriptive, and instrumental, by accepting the basic concept of stakeholders, admitting the nature of construction projects is to meet the demands of stakeholders, and seeking for management framework for stakeholder collaboration on social responsibility issues.

2.3.1.2 The specific definition of stakeholders

The initial step to employ stakeholder theories is to answer the question "Who are the stakeholders", and draw a boundary by defining stakeholders with distinctive features. These particular features depend on the meaning of "stake", reflecting the influences, claims, or interests of stakeholders have to the focal organization (Clarkson, 1995). One of the most recognizable definition is proposed by Freeman, "any groups or individuals who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984). Following this definition, stakeholders mean those who hold influences on organizations or their activities. Clarkson (1995) describes organizations as systems of primary stakeholders who can directly influence the survival of focal organizations such as shareholders, investors, employees, customers, and suppliers. The secondary stakeholders are defined as those who do not participate in core business activities thus cannot influence the survival of focal organizations. Mitchell et al. (1997) argue that stakeholders must include individuals or groups who have either claims or abilities to influence. According to the statement of Mitchell et al. (1997), some organizations or individuals have claims, interests, or risks related to the organizations' activities but not necessarily have enough power to influence the decision making. Vice versa, the powerful stakeholders may not have interests to perform their influences.

The existing definitions are criticized as too broad and almost includes every groups and individuals, leading to the loss of focuses and lending no reference to management

(Aaltonen & Kujala, 2010). Because stakeholders are changing under different conditions, stakeholder definition in specific context can provide more operational and managerial implications (Weber & Marley, 2012). This study used influence as the "stake" that held by stakeholders and provided a specific definition for stakeholders on dealing with social responsibility issues.

Based on the discussions, establishing a specific boundary for identifying stakeholders is the important precondition. Thus, stakeholders in social responsibility collaboration in this study can be defined as:

Stakeholders *are organizations or individuals that can influence or be influenced by social responsibility issues in construction projects.*

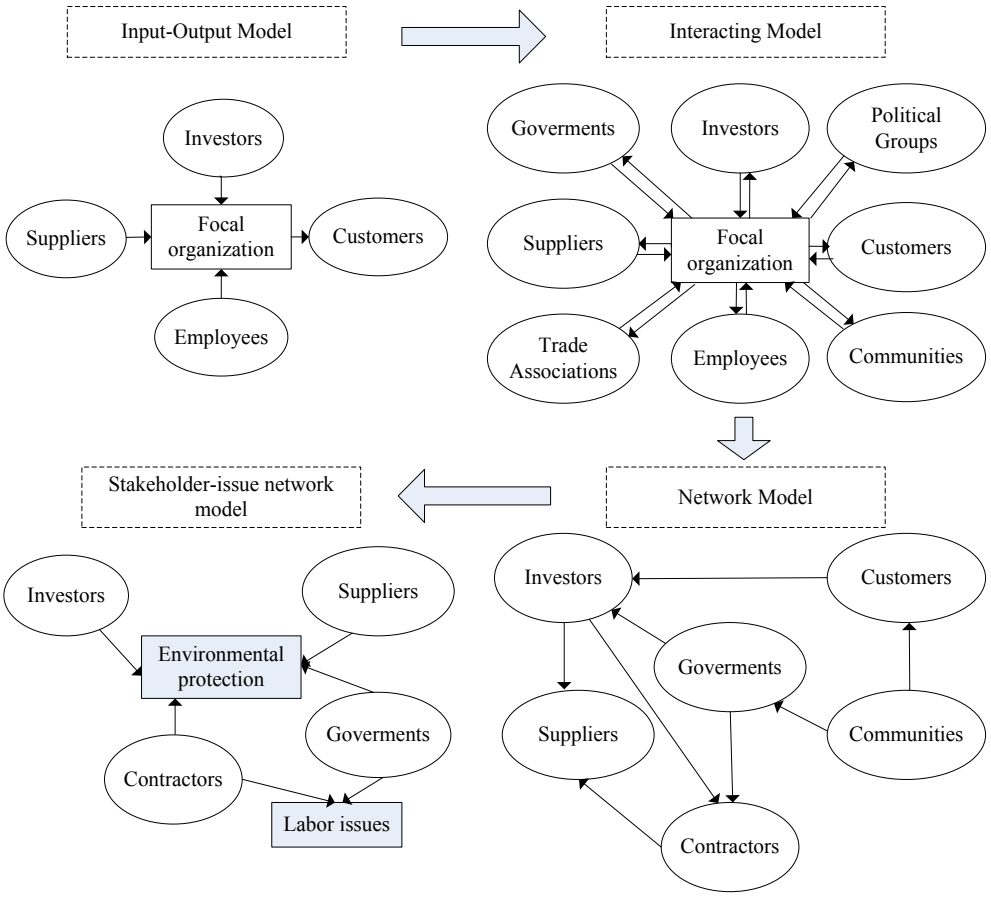
2.3.1.3 The stakeholder-issue network model

The development of stakeholder analysis model is depicted in Figure 2-8. It shows that classical view takes organizations as focal positions and stakeholders are individuals or groups who have a one-directional relation with the organization (Freeman, 1984). In the early input-output model, the focal firm was taken as a black box which creates products to meet customers' demands. Afterwards, Donaldson and Preston (1995) propose the interacting model indicating stakeholders and the focal firms have mutual influences. Both the input-output model and the interacting model put the focal organizations as the core. The main aim is to design strategical approaches for focal organizations to cope with different stakeholders' demands by analyzing stakeholders' saliences. This viewpoint of focal organizations has been adopted by many stakeholder research (Jensen, 2002; Mitchell et al., 1997; Polonsky & Scott, 2005; Yang et al., 2008).

The introduction of network model of stakeholder analysis is inspired by Rowley's work in 1997. Rowley (1997) argues that "stakeholder relationships do not occur in a vacuum of dyadic ties, but rather in a network of influences". Stakeholder relationships

are dependent on each other, so one relationship can be influenced by the change of network structures. As it is shown in Figure 2-8, in the network model, each stakeholders can have interactive relationships with other stakeholders (Rowley, 1997). This model changes the focus from organization-stakeholder relationships to stakeholder-stakeholder interactions. The locus of stakeholder analysis is changed from focal organizations to the holistic view of stakeholders (Co & Barro, 2009; Peloza & Falkenberg, 2009; Roberts & Bradley, 1991).

However, Rowley's network model has no consideration of the dynamics and heterogeneity nature of stakeholders. Stakeholders and their interactions change significantly under different issues. Because stakeholders and issues are two different concepts with different analyzing focuses, it is demanded to involve both dynamic stakeholders and issues in the analysis model. Luoma‐aho and Vos (2010) points out that stakeholder management should move forwards to "issue arenas", by which both issues and stakeholders can be analyzed to assist stakeholder management more efficiently. The latest work of van Offenbeek and Vos (2016) asserts current research neglects the linkages between stakeholders and issues. This study adopted the stakeholder-issue model to study stakeholder collaborations on social responsibility issues. The dynamics of stakeholders' characteristics on different social responsibility issues was highlighted in this model. The identification of stakeholders and their saliences was after the identification of issues, and based on these identified issues. The analysis of stakeholder-issue network structures shows the characteristics of stakeholder interactions, issues clusters, as well as the stakeholder-issue relationships.



**Developed by the author*

Figure 2-8 the development of stakeholder analysis model

2.3.2 Construction project stakeholder theories

2.3.2.1 Identifying project stakeholders

The application of stakeholder theories has been spreading from its original strategic management field to project management research and practices since 1980s (Littau et al., 2010). Project management institute (PMI) defines construction projects as "a temporary endeavor undertaken to create a unique product or service". Because the construction projects are unique in location, time, and scope, project stakeholders involved in project implementation are also distinguished. Achterkamp and Vos (2008) claims although stakeholder theory has been extensively used in project management literatures, the identification of project stakeholders in different project environment

is still clarified. Li et al. (2012) defines project stakeholder as individuals or organizations "who can influence the project process and/or final results, whose living environments are positively or negatively affected by the project, and who receive associated direct and indirect benefits and/or losses of project execution or project completion" (pp.4-5). Considering the lifecycle perspective, construction projects involve a changing profile of stakeholders including but not limited to client, project management team, consultant and design, contractor, subcontractor, supplier, employees, local communities, financial institutions, government authorities, end users, NGOs and NPOs (Heravi et al., 2015).

The categorization of project stakeholders continues to use the typology in classical stakeholder theories (Clarkson, 1995; Freeman, 1984). Freeman (1984) classified stakeholders into internal and external stakeholders based on their proximity of relationships with focal organizations. In view of project, stakeholders also usually be separated into these two categories (Aaltonen & Kujala, 2010; Winch & Bonke, 2002):

Internal stakeholders *are those who have formal, official, or contractual relationships with decision makers in project;*

External stakeholders *are those who do not have formal connections with major organizations which are often excluded by project management.*

Besides only identifying internal stakeholders and meet their demands, an increasing stream is to include external groups and find out invisible stakeholders. It is noted that there are more literatures focusing on internal stakeholders, while limited attentions have been addressed on external stakeholders that do not directly related to the project (Davis, 2014). This study addressed on both internal and external stakeholders, and found out how the whole stakeholder groups can collaborate on social responsibility issues.

2.3.2.2 The dynamics and heterogeneity of project stakeholders

Construction projects are featured by highly dynamic and uncertain environment (Aaltonen, 2011; Karlsen, 2002), representing by the highly complicated stakeholder interactions and conflicting demands, dynamic and increasing uncertainty in project lifecycles, the severe public hostilities and controversies (Mok et al., 2015). General stakeholder management theories cannot be employed directly in construction project management because the dynamic context that requires continuous adjustments (Cuppen et al., 2016). Stakeholder dynamics and heterogeneity are significant natures that need to be taken into consideration in project stakeholder research.

First, construction project stakeholders have different and conflicting interests (Atkin & Skitmore, 2008). Li et al. (2012) identify the conflicts among the external stakeholders' concerns on infrastructure projects. They find that general public care most about land use and environmental issues, governments focus mainly on economic growth, while NGOs value on the green and sustainable techniques. Bryde and Robinson (2005) reveal the conflicts between contractors and developers. They find that contractors have more emphasis on saving cost and shortening durations, while developers shows higher interests on meeting needs of end users and communities. The differences in stakeholder interests are because the intrinsic nature of stakeholders (Donaldson & Preston, 1995) and the different perceptions on project successes (Davis, 2014). The conflicting stakeholder interests have been revealed by many researchers and marked as the primary problem in project management practices (Bourne & Walker, 2005; Olander & Landin, 2005; Sutterfield et al., 2006; Winch & Bonke, 2002).

Second, stakeholder power and influences are not static, but changing on different issues and in different project stages. The role of stakeholder power and influences is essential to the success of project goals for driving exchanges of critical resources among project stakeholders (Bal et al., 2013). Bourne and Walker (2005) address the

complexity and dynamics of stakeholder influences on project decision makings. Because the changing conditions and variations of materials, technics, skills, knowledge, information, stakeholders' power and influences vary throughout the project lifecycle (Aaltonen & Kujala, 2010). Stakeholders have different power to control resources flows, so they have unique roles on dealing with social responsibility issues. Understanding stakeholders' changing power and influences can help to manage resources and relationships in highly dynamic and uncertain environment in the process of construction projects.

2.3.3 Stakeholder collaboration on social issues

Stakeholder collaboration between the public and private sectors to address social and environmental issues is extolled as having many advantages, including sharing competencies and resources, enhancing innovation, and promoting partnerships (Savage et al., 2010). It becomes a recent phenomenon and receives widespread governmental supports for private and public sectors to seek resolutions collaboratively for contemporary social challenges (Bendell et al., 2010). Stakeholder collaboration is also the result of adaption to the increasingly complex, uncertain, and turbulent environment (Savage et al., 2010).

Because social responsibility issues emerging in projects cannot be accomplished by individual organizations, important stakeholders need to collaborate to respond to these issues jointly (Peloza & Falkenberg, 2009). Stakeholder collaboration brings positive effects on social responsibility implementation such as enhanced commitments, higher degree of consensus, and shared ownership by involving all stakeholders with shared goals and continuous communications (Aas et al., 2005). Stakeholder collaboration is also an operational way to implement social responsibility by setting out common goals, communicating and negotiating, finding out innovative resolutions, achieving desirable outcomes. Therefore, the research agenda has been set out about stakeholder collaborations to respond to the emerging social demands (Bendell et al., 2010).

Roberts and Bradley (1991) illustrate collaboration by five sociology elements: 1) a temporary arrangement; 2) explicit understandings about participants' capacities in collaboration process; 3) consistent interactions for dealing with the emerging difficulties and conflicts; 4) elaborate planning and coordination; 5) a common goal of the improvement of the current situations. This study adopted the definition of stakeholder collaboration proposed by Roberts and Bradley (1991, p. 212):

*"**Collaboration** is a temporary social arrangement in which two or more social actors work together toward a singular common end requiring the transmutation of materials, ideas, and/or social relations to achieve that end."*

2.3.4 The problems in stakeholder collaboration research (research gap 2)

Given the importance of stakeholder collaboration, barriers remain to hinder the effectiveness of collaborative endeavors. The current stakeholder research and practices have two problems that need to be overcome.

（1） The ignorance of the imbalanced power and responsibility is the primary problem for current stakeholder collaboration research and practices (Hardy & Phillips, 1998; Loosemore, 1999).

The most important criticism in collaboration theory is that all interested stakeholders are assumed to have equal capability to discharge their responsibilities, which neglects the basic constraint of power distribution and resources variation (Aas et al., 2005). Obviously, not every stakeholder has the same resources and capabilities to accomplish social responsibility issues. Some stakeholders with claims or interests may not have the corresponding power to influence (Mitchell et al., 1997). The imbalanced power and responsibility can threaten the success of collaboration. Powerless stakeholders have difficulties to raise their voice, while powerful stakeholders form coalitions to marginalizing the legitimate demands of weak stakeholders (Arnaboldi & Spiller, 2011). Some powerful stakeholders may be reluctant to collaborate due to the fear of

uncertain costs, time-consuming procedures, and the loss of control in decision-making (Arnaboldi & Spiller, 2011; Jamal & Getz, 1995). Thus collaboration is not a simple gathering of interested parties, stakeholders' different power should be identified and commensurate with corresponding responsibility (Aas et al., 2005). This imbalance between power and responsibility has been demonstrated by empirical studies and needs to be addressed in stakeholder collaboration research (Aas et al., 2005; Arnaboldi & Spiller, 2011; Loosemore, 1999).

（2） The operational framework is needed which can direct stakeholder interactions and joint decision makings to collaboratively implementing social responsibility issues.

Many researchers have found that setting common goals alone is not enough for stakeholder collaboration; structural features that facilitate stakeholder interactions is one of the most important factors (Savage et al., 2010). The literatures have found positive correlations between the clarification of group structures and the performance of group work. Aviv et al. (2003) find that a structural group has higher levels of group learning than a un-structure group. The group structures include newfound accountabilities, active mutual communications, and appropriate responses (Valentine & Edmondson, 2014). Group structures should be designed with a strong form of collective responsibility—that is, all stakeholders should jointly share the consequences (Valentine, 2014). In construction projects in particular, "team scaffolds" can be built to clarify role boundaries in order to enhance stakeholder collaboration by assigning roles to different stakeholders, and enabling stakeholders to interact like an actual team. Collaborative framework could transform unclear responsibilities into an explicit accountability system, thereby facilitating collaborative implementation of social responsibility in project teams.

Research gap 2: Although stakeholder collaboration on social issues was added considerable merits, the collaborative framework considering imbalanced power and

responsibility in dealing with social responsibility issues in construction projects contexts is still undeveloped.

2.4 Stakeholder power and influence

2.4.1 Stakeholder power

2.4.1.1 The nature of power

Power is a long-history concept in sociology, which is derived from a psychological term, permeating into social, political, and organizational research (McGuirk, 2001). As familiar as in academy and daily language, power is often confused with many terminologies such as control, influence, dominate and authority and status, due to the bias in understandings. It is the primary task to answer "what exactly is power" before using power theory. This section elaborates the nature of power by reviewing relevant literatures.

According to the notable definition by Max Weber, power is one's capacity to perform its own will against resistance representing the control of resources in particular domains, such as economic power, social power, legal or political power,. Another distinguished sociologist Lenski (1966) interpreted power as the ability to govern the distribution of surplus and determine the prestige. This view to conceptualize power as a property of individual social actor is shared by many other scholars (French Jr & Raven, 1959; Pfeffer, 1992). The basis of power is controls of different resources such as coercion, reward, legitimacy, expertise, and information (French Jr & Raven, 1959). To sum up, power can be understood as the potential of one social actor to change other actors' behaviors in order to achieve one's own intentions (Gaski, 1984).

Power is not an evil term. It can be acted in coercive approaches, but it can also be acted in moderate manners. The manipulation character of power is over-stressed in daily usage of the word, because powerful actors can coercively alter others' behaviors

to the favorable direction regardless of resistance (Gaski, 1984). This overcome of rejection is addressed in many definitions of power (Pfeffer & Fong, 2005), so power is labeled with the property of going against others' wills (Emerson, 1962). On the contrary, not all of the power works through coercively pressures on others. Turner (2005) reveals two distinctive approaches that power can work through. In one hand, power through affecting is to persuade others to voluntarily perform in accordance with power holders' intentions through changing peoples' attitude, value and beliefs, for instance by rewards, culture, or leaderships. In the other hand, power through controlling means manipulate peoples' behavior by conducting coercion, threaten, or punishment regardless their original initiatives (Turner, 2005).

Power exists and be exercised within interactions between social actors. Therefore, power need to be associated with social relations (Blau, 1964; Emerson, 1962; Hickson et al., 1971). According to oxford dictionary[3], relation is defined as "social interactions that occur and feelings that exist between two or more people or groups of people". Motivated by the contingencies including asymmetry, reciprocity, efficiency, stability and legitimacy, social actors tend to establish multiple forms of relations with other social actors (Oliver, 1990). As it was indicated in social exchange theory, resources flow through exchange relations between social actors (Emerson, 1976). Different social actors are bonded together by relations to cope with uncertainties. Because power is the key driving force of the resources exchanges, as well as the key adhesive of stakeholder relations, therefore, the effective exercise of power is essential for successful functioning of society.

Therefore, in stakeholder collaboration, power performs as an indispensable stakeholders' attribute to obtain necessary resources from other stakeholders to fulfil their objectives on social responsibility issues, in exchange for the compliance with

[3] Refer to "relation", item 3c, in Oxford English Dictionary Third Edition, December 2009

others' power simultaneously. Thus power is not an evil term that representing manipulations and coercions for individual favorable results, in contrast it is an approach through which stakeholders with different resources could collaborate to accomplish common social responsibility goals. Based on the discussions, stakeholder power in this study can be concluded as:

Stakeholder power *is the capacity of one stakeholder to influence others' behaviors in conformity with their own intentions regardless of resistance.*

2.4.1.2 Power-dependence theory and resource exchange theory

Because the targets of this study are project stakeholders, who are organizations, institutions, and groups of individuals with similar interests involved in construction projects, a macro-level view of power between organizations was adopted (Brass & Burkhardt, 1993). There are two important theories in inter-organizational power: 1) resource exchange theory (Blau, 1964; Cook, 1977; Cook et al., 1983; Emerson, 1976) and 2) power-dependence theory (Emerson, 1962). According to the resource-dependence theory by Emerson (1962), actor A's power over actor B is equals to the dependence of actor B has on actor A. This theory indicates that power relation is the reflective relations of resource dependency. The degree of power depends on the criticality of the A's resources to actor B, and the substitutability of that resources. Trigos (2007) points out in the organizational settings, power can emanate from diverse sources, including coercive, utilitarian, or normative resources. In resource exchange theory, Cook (1977) defines inter-organizational relations as exchanges of resources between two or more organizations for mutual benefits. The resources that flow from one actor to the other include material and non-material resources (Blau, 1964). Power in resources exchange relations stands for the ability to determine what and how many resources to be exchanged (Cook et al., 1983).

According to the two classical theories, stakeholder power comes from the possession of resources that are demanded by other stakeholders in projects. The degree of

stakeholders power is directly determined by the criticality of the resources, and inversely determined by the substitutionality of the resources. As the consequence of stakeholder power, necessary resources flow among stakeholders driving by power for implementing social responsibility issues in construction projects.

2.4.1.3 Linking power with responsibility

An important argument in this thesis is that power should be linked with responsibility of stakeholders on dealing with social issues. Referring to the political view of social responsibility in section 2.2.2.1, powerful stakeholders should take the corresponding responsibilities to respond to social issues, otherwise they shall lose their power (Davis, 1967, p.49). Like policy making, the power of citizens determine their participatory levels of their engagement in the policy making process (Arnstein, 1969). Enderle (2006) claims that the term "responsibility" has received limited attention compared with its common and prevalent usage. There are two types of responsibilities: one comes with roles, and the other comes with power. Because power can bring additional freedom to the decisions and actions of social actors; as an antecedent, an equal scope of responsibility should be allocated to social actors to constraint their behaviors (Enderle, 2006).

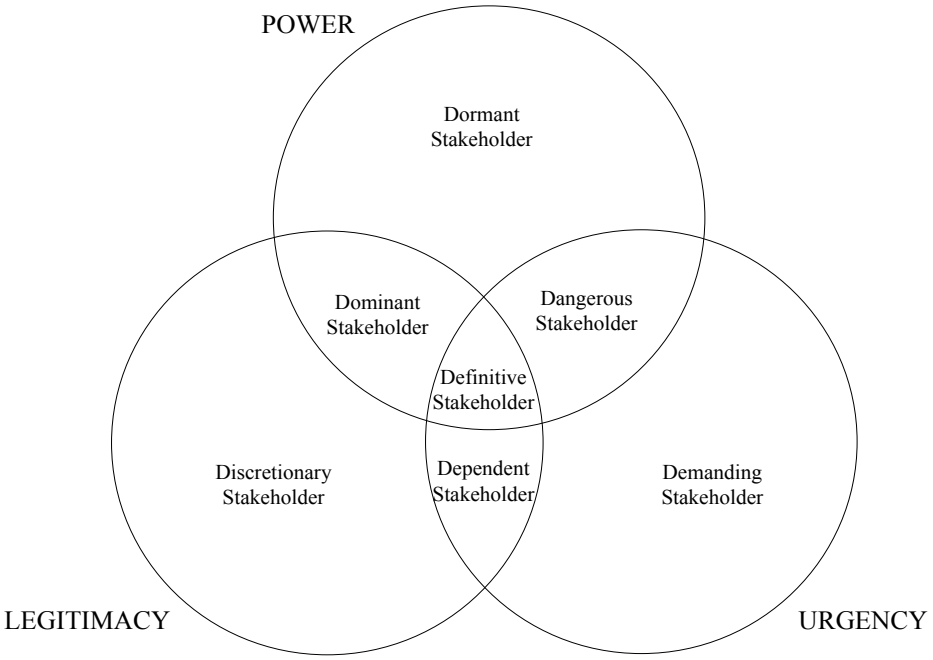
Therefore, powerful stakeholders are supposed to accept and take the responsibilities to implement social responsibility in construction projects, because they are more capable of accessing scarce resources and obtaining supports from other stakeholders. With sufficient power, stakeholders can "alter social and political forces, as well as their capacity to influence project objectives, obtain resources from the community, and maintain social relationships" (Leung et al., 2013, p. 2). The use of power can drive the diffusion of social responsibility values along the construction supply chain (Jones et al., 2006). More values can be produced given the effective resources flows among stakeholders (Cook, 1977).

However, investigations in construction projects show an imbalanced distribution of stakeholder power and responsibility, which inevitably cause pressures on stakeholders with limited power (Loosemore, 1999). If powerful stakeholders are unaware of or intentional avoid taking their responsibilities, the influenced stakeholders may suffer from undesirable outcomes. Linking responsibilities with power can help stakeholders to clarify and to become more aware of their responsibilities (Aas et al., 2005).

Despite the moral nature of social responsibility, there are no moral standards for business organizations to judge what is right and wrong. Therefore, it is important to introduce power theory in social responsibility research. Social responsibility need to be initiated and led by powerful stakeholders. The existing research on social responsibility has shown limited attentions on balancing stakeholder power and responsibilities. In general stakeholder management research, stakeholder power is assessed for suggesting focal firms with strategies to cope with stakeholder risks, however, whether stakeholders' responsibilities is balanced with their power is currently neglected. The theories on social responsibility and power theory have not yet been linked. Following the discussion above, this research integrates "power comes with responsibility" as a basic philosophy, that is, stakeholders' responsibilities are assigned based on the evaluation of their power.

2.4.1.4 Power in traditional stakeholder theories

In traditional stakeholder theories, power is regarded as one of the attribute to evaluate stakeholder salience. Because organizations are unlikely to satisfy every stakeholder interests since the finite organizational resources (Jawahar & McLaughlin, 2001). There comes the demands for evaluation of stakeholders' levels of salience before making decisions on allocating organizational resources to meet stakeholders' demands (Harrison & Freeman, 1999).



**Source from (Mitchell et al., 1997, p. 872)*

Figure 2-9 three-attribute stakeholder salience model

Mitchell et al. (1997) proposed a three-attribute model to depict stakeholder salience, including power, legitimacy, and urgency (Figure 2-9). This three-attribute model has been extensively used and receives wide reputations (Eesley & Lenox, 2006; Friedman & Mason, 2004; Sharma & Henriques, 2005). Among the three salience attributes, stakeholder power is the most effective in evaluating stakeholders' potential influence (Roome & Wijen, 2006). And it is stated as the best predictors in stakeholder prioritization for organizational management (Parent & Deephouse, 2007). It determines "the degree to which managers give priority to competing stakeholder claims" (Mitchell et al., 1997, p.854). Therefore, in traditional stakeholder management research, power is taken as a criterion for managers to give priorities to conflicting stakeholder demands. However, in this study, power was extended to a vested property of stakeholders that determining responsibilities in dealing with social issues.

2.4.1.5 The deficiency of stakeholder power research (research gap 3)

Stakeholder power on social responsibility issues is the ability to define common goals and to influence the other stakeholders to engage in these initiatives (Onkila, 2011; Tang et al., 2012). The more power stakeholders hold, the more likely they can successfully resolve the social problems, and the more likely the other stakeholders will reply to their advocates (Azzam, 2010). There are some gaps that need to be further addressed in stakeholder power research:

（1） Stakeholder power is regarded as an attribute for managers to prioritize stakeholders; however, it is neglected stakeholders as individuals should take the corresponding responsibility that equals to their power.

（2） The usage of power in Mitchell's model is at an all-or-nothing stance, a stakeholder either have or do not have power, giving no distinction between one with a lot of power and the other one with little power (Mainardes et al., 2012).

（3） Most literatures analyze stakeholder power as a constant attribute, but the dynamics of stakeholder power has not been adequately addressed.

Research gap 3: Although stakeholder power has been taken as an important attribute in stakeholder salience model, research which addressing the connections between power and responsibility is still scarce. Stakeholder power, as a vested property of stakeholders, is needed to be associated with the responsibility that stakeholders should take in dealing with social responsibility issues.

2.4.2 Stakeholder influence

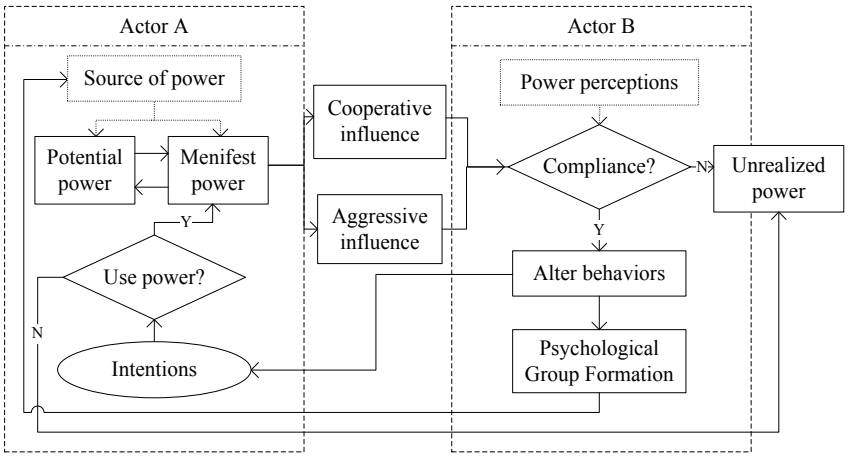
2.4.2.1 From power to influence

Although power has been extensively studied in sociology and management science since decades, research on stakeholder influence as the manifestation of power is in its

infancy (Somech & Drach-Zahavy, 2002). Power and influence have interrelationships. Power is the ability to influence, and influence is the exercise of power (French Jr & Raven, 1959; Pfeffer, 1992). Brass and Burkhardt (1993) argue that power with no manifestations should not be taken into considerations, because power has no impacts on targets if they are not aware of it. Influences can be exercised in different strategies to alter the behaviors of targets. The definition of stakeholder influence is:

Stakeholder influence *is stakeholders use their power to drive others to achieve their desired interests (Frooman, 1999).*

The general argument is that influence is the manifestation of potential power held by social actors. The power process includes the causal relation from power to influence (Pfeffer & Fong, 2005). Power, as the capacity to influence, is just one of the multiple steps. Besides, actions and results of power are also included. According toTurner (2005), the casual relation between potential power and influence is displayed in Figure 2-10. The starting point is the power holder, actor A's intentions to exert power, which is often motivated by the pursuit of its goals at others' resources. French Jr and Raven (1959) proposes the classical five bases of power including legitimate, referent, expert, reward and coercion. More power basis were gradually raised by researchers, for instance, the size of social entities (Snyder, 1996), social status (McGuirk, 2001), cope with uncertainty (Hickson et al., 1971), positions in networks (Cook, 1977). Then actor A can choose strategies to either aggressively or cooperatively influence actor B. When actor B perceive the power actions, decisions on whether to compliance or not is carried out (Dahl, 1957). Actor B either chooses to change its behavior in conformity with A's intentions, otherwise actor B does not yield to actor A's influence considering evaluation of costs and benefits of such changes. Additionally actor B will form shared social identity after submission to actor A, and this will in return enhance actor A's power.



**Modified by the author based on (Turner, 2005)*

Figure 2-10 the process between power and influence

2.4.2.2 Stakeholder influence strategies literature

Table 2-4 lists the existing research on stakeholder influence strategies. Stakeholder influence research has two separate concentrations. One stands on the side of organizations and try to craft strategies to cope with stakeholders' demands. The other stands on the side of stakeholders to investigate the strategies and tactics that stakeholders can use to achieve their interests. Based on Emerson (1976) resource exchange theory, Frooman (1999) proposes a stakeholder influence model including four strategies: direct usage/indirect usage, direct withholding/indirect withholding. He argues when stakeholders are at the powerful status and hold desired resources by organizations, they tend to use direct withholding strategy to influence target organizations, by threating to discontinue supply of resources. After six years, Frooman and Murrell (2005) extends the theory by experiments showing powerful stakeholders mostly choose coercive strategy (decrease benefit or increase cost), while stakeholders with little power choose compromise (increase benefit or decrease cost). According to the existing literatures, the determinant of stakeholder influence strategies is the relative power between stakeholders and organizations (Co & Barro, 2009; Somech & Drach-Zahavy, 2002).

The previous literatures focus on either stakeholder perspective or organization perspective in order to maximize individual benefits and minimize costs. However, few research address inter-influence among stakeholders for maximizing collective goals. In addition, upon the review on stakeholder influence strategy research, the majority of research focus on single stakeholders' strategies, while the holistic view of multiple stakeholders' influences and inter-connections is inadequately concerned.

Table 2-4 summary of stakeholder influence strategies

Author (year)	determinants	strategies
(Etzioni, 1975)	compliance	Coercive
		Utilitarian
		Normative
(Mendelow, 1981)	Dynamism/power	Continuous scanning
		Irregular scanning
		Periodic scanning
		NIL
(Savage et al., 1991)	Potential to threat or cooperate	Mix blessing
		Involve
		Defend
		Monitor
(Rowley, 1997)	Stakeholder network density/centrality	Compromise
		Subordinate
		Command
		solitarian
(Somech & Drach-Zahavy, 2002)	Relative power	Hard strategy
		Rational strategy
		Soft strategy

(Frooman, 1999)	Resource dependence	Direct withholding
		Direct usage
		Indirect withholding
		Indirect usage
(Maignan et al., 2002)	Resource dependence/communication skills/coordination ability	Normative (letter writing campaigns, protests, and negative publicity)
		Utilitarian (boycotts, lawsuits, new regulations)
		coercive
(Tsai et al., 2005)	Resource dependence/legitimacy of decisions	Direct withholding
		Direct usage
		Indirect withholding
		Conformity
(Frooman & Murrell, 2005)	Resource dependence	Coercive strategy
		Compromise strategy
		Indirect strategy
		Direct strategy
(Hendry, 2005)	Experiences and opportunity	Blockade
		Partnership; multi-stakeholder dialogue
		Boycott, litigation, lobbying
		Letter-writing campaign
		Shareholder resolution
(Olander & Landin, 2005)	Power and interests	Key players
		Keep satisfied

		Keep informed
		Minimal effort
(Polonsky & Scott, 2005)	Relative threatening potential/relative cooperative potential	Change the rules/collaborate
		Exploit/involve
		Defend
		Hold current position/monitor
(Co & Barro, 2009)	Trust level/sense of urgency/legitimacy	Aggressive strategy
		Cooperative strategy

** Collected and organized by the author*

2.4.2.3 Stakeholder influence on social responsibility issues

Because power does not definitely lead to effective influence, stakeholders' choices of influence strategies are also essential to get desired outcomes. However, the general stakeholder influence theories are deficient on predicting choices of influencing strategies regarding social responsibility issues. Instead of select one strategy, stakeholders often adopt mixed strategies simultaneously in order to impose their social responsibility advocacies. For example, NGOs and environmental organizations use lobby to concert with all the other strategies rather than only relying on individual strategies (Hendry, 2005). According to Frooman (1999), coercive strategies were more likely adopted if stakeholder is at powerful status to exert influences. But with regard to social responsibility issues, hard or coercive strategy adopted by powerful stakeholders is more like a bully rather than a collaboration, and tend to receive negative impacts (Boyd et al., 2007).

According to the special characteristics of stakeholder influence on implementing social responsibility issues, it can be assumed that stakeholders' choices of strategies

are not simply determined by stakeholder power (Maignan et al., 2002; Olander, 2007). The reason is because not only powerful stakeholders can influence, stakeholders with little power can also take actions to influence on social responsibility issues. In fact, every stakeholders has the indispensable role in promoting social responsibility issues. External stakeholders can set out problems, and internal stakeholders have ideas and knowledges to solve those problems (Roome & Wijen, 2006). Compared with powerful stakeholders, influences of stakeholders with limited power have also significant functions in organizational decision makings (Thijssens et al., 2015; Zietsma & Winn, 2007).

If stakeholders can adopt proper influencing strategies, the target organization would like to proactively involve in advanced social responsibility issues beyond simple compliance (Sharma & Henriques, 2005). However, inappropriate influencing strategies may lead to unintended effects. For example, buyer companies' monitoring program on their suppliers did not necessarily increase compliance to incorporate social responsibility, but damage stakeholder relationships (Boyd et al., 2007). Therefore, research on choices of stakeholder influence strategies is as significant and needs extensive focuses.

2.4.2.4 The deficiency of stakeholder influence research (research gap 4)

Although it is important for stakeholders to choose proper strategies to exercise influence, current research has deficiency in predicting stakeholder strategies adopted regarding social responsibility issues..

（1） The majority of literatures focus on stakeholder strategies under commercial environment that need precise evaluations of individual benefits and costs, however, research is scarce on investigating influencing strategies on social responsibility collaboration, where collective benefits are addressed.

The motivation of stakeholders' influence on social responsibility issues is to promote collaborative efforts to improve overall social value outputs. Under such conditions, hard strategies as often adopted in commercial environment are unlikely to receive desirable performance, because such strategies is too aggressive and hostile, which is against the principle of collaboration. More research is needed to address how stakeholders choose their strategies when they aim at improving social benefits instead of maximizing individual benefits.

（2） Stakeholder influence research mainly focuses on individual stakeholders, but the holistic view of influence structures among multiple stakeholders has not enough attentions.

Because social responsibility collaboration is an "emergent organizational arrangement that through which organizations collectively cope with the growing complexity of their environments" (Gray, 1989, p. 236), forces are needed from different stakeholders to facilitate such arrangement. The existing study only focuses on individual stakeholders, such as NGOs (Jamali & Keshishian, 2009; Jonker & Nijhof, 2006), policy maker (Doh & Guay, 2006), or mass media (Apostol & Näsi, 2013). But no studies have explored, especially in construction projects contexts, how the whole internal and external stakeholders can influence social responsibility collaboration, and what strategies and tactics they use to influence (Elijido- Ten et al., 2010). The research question arises as to investigate how different stakeholders use their power to influence each other in order to achieve social responsibility collaboration in construction projects.

2.5 Theoretical framework

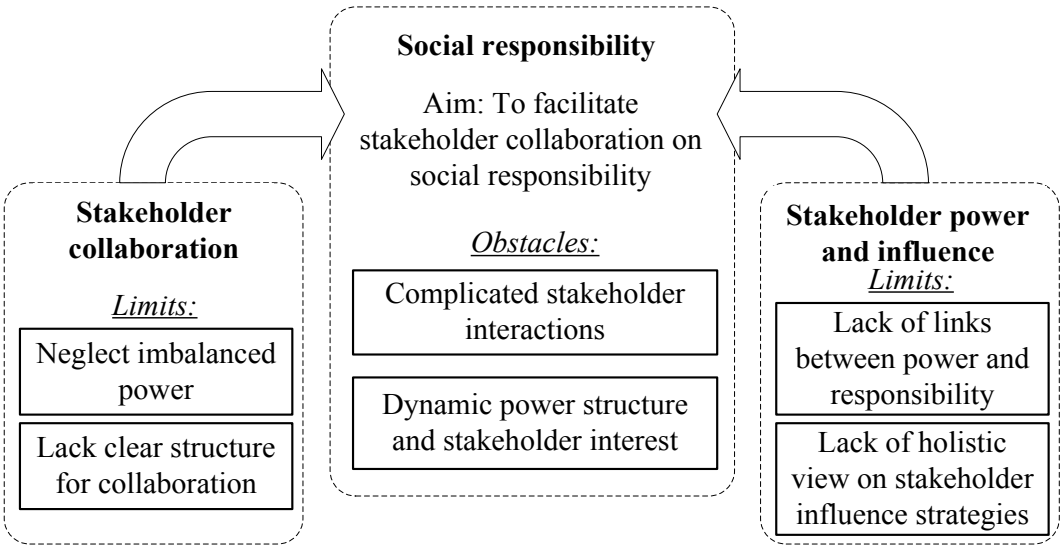
The theoretical framework of this study was formed by integrating three fields of theories from social responsibility, stakeholder collaboration, and stakeholder power and influence (see Figure 2-11). Initially, the aim of this study was to facilitate

stakeholder collaboration on social responsibility issues in construction projects. Through reviewing the social responsibility literatures, it was found that existing literatures mostly focus on individual organizations, while stakeholder collaboration on social responsibility is rarely addressed. However, the complicated stakeholder interactions and dynamic power structures in construction projects make it difficult to realizing stakeholder collaboration on social responsibility.

Stakeholder collaboration literatures were reviewed to find the effective approach to enhance social responsibility collaboration under complicated stakeholder environment. It was revealed that the imbalanced power and responsibility is overlooked in collaboration research. In order to achieve stakeholder collaboration, the research gaps must be bridged between stakeholders' responsibility and power. The collaboration roles and structures of stakeholders can be clarified through evaluating stakeholders' heterogeneous power and influence.

Power and influence theories were integrated for revealing the different abilities and strategies of multiple stakeholders to influence on social responsibility issues, as well as addressing the problem of imbalanced power and responsibility. The investigations on stakeholders' power and their influence on social responsibility issues is the starting point for achieving stakeholder collaboration. It was noted that current research has no references on stakeholder dynamic power on dealing with social issues. In addition, the research on influence strategies adopted by multiple stakeholders on social responsibility issues is also scarce.

The roadmap of this study was generated based on the theoretical framework. At first, the project stakeholders' power on social responsibility issues in construction projects was identified to clarify their responsibilities distribution. Then the strategies adopted by stakeholders were also investigated. Finally this study developed a framework for stakeholder collaboration on social responsibility issues based on the findings from the investigations.



**Developed by the author*

Figure 2-11 the theoretical framework of the study

2.6 Summary of the Chapter

This chapter presents the literature review on three important fields of theories: social responsibility, stakeholder collaboration, and stakeholder power and influence. Through discussions of the existing theories in these fields, the fundamental concepts that adopted in this study were defined for avoiding the inconsistency, including social responsibility and social responsibility issues (see section 2.2.1), stakeholders (see section 2.3.1.2), internal and external stakeholders (see section 2.3.2.1), stakeholder collaboration (see section 2.3.3), stakeholder power (see section 2.4.1.1), and stakeholder influence (see section 2.4.2.1).

The development of social responsibility literatures from the consciousness-raising, the action-translating, to the effectiveness-improving stages was revealed and demonstrated by the author. The development process showed the increasing demands on collaborative rather than individual social responsibility. The research direction was set out that the current problem for social responsibility in construction industry is no longer whether or not companies should implement social responsibility, but

becomes how to implement social responsibility more effectively by stakeholder collaborations.

Reviews on social responsibility specific in construction industry revealed the inadequate attentions on project level analysis. However, social responsibility in construction project level is significant and necessary because: 1) Social responsibility should be incorporated as an ultimate goal in project management because of the adverse impacts caused by construction project lifecycle. 2) Construction industry is featured with multi-level operations, social responsibility should be implemented not only within organizations but also in projects; 3) construction projects lack pre-agreed framework for dealing with social issues, self-sufficient stakeholders tend to not voluntarily take the responsibility; 4) the highly emergent and dynamic nature of construction projects requires social responsibility in project level.

Stakeholder collaboration was found as essential to social responsibility in construction projects. However, it is difficult to realize because project stakeholders have heterogeneous interests and are unlikely willing to share critical resources and information. In addition, the dynamic stakeholder power structures and interactions in construction projects are also the obstacle for successful stakeholder collaboration.

Regarding to the problems, reviews were conducted on the literatures about stakeholder collaboration. It was found that balancing stakeholder power and responsibility is the key factor for stakeholder collaboration, which currently lack enough studies. And the literatures also showed the lack of research on stakeholder collaboration structures.

For dealing with the identified research gaps, the author also reviewed literatures on stakeholder power and stakeholder influence. Currently, research on stakeholder power mostly focused on organizational perspective. Stakeholder power was simply used as an attribute showing degree of saliences to organizations. The dynamic and

complexity of power were also neglected in current research. It was found that very limited research has mentioned the connections between stakeholder power and responsibility, and no efforts had been carried out to balance them. Compared with stakeholder power research, stakeholder influence received less academic attentions. It was found that choices on stakeholder influence strategies are important to successful exercise of stakeholder power. Because influence strategies on social responsibility issues have unique characteristics, the general theories could not explain and predict stakeholders' choices of strategies. The current theories of stakeholder influence are inadequate for guiding stakeholder collaboration on social responsibility issues.

This chapter provides the main arguments that form the research inquiries. The theoretical foundation was established on which the whole study was built. For filling the research gaps identified in this chapter, the research design, research actions, and main findings are presented in the following chapters.

CHAPTER 3 RESEARCH DESIGN

3.1 Introduction

Research design is an important guidance for researchers to answer the initial research questions unambiguously (De Vaus, 2001). This chapter illustrates the philosophy, strategies, methods, instruments, and detailed processes that this study employed to achieve the research aim and objectives. To begin with, the natures of the research questions were discussed in Section 3.2. Next, the scheme of Creswell (2013) for research design was adopted and is introduced in section 3.3. The key elements in the research design scheme include alternative knowledge claims, research strategies, and detailed methods. In this study, the pragmatic philosophy was adopted as the basic knowledge claim. According to the pragmatism, any research methods that can serve research questions can be adopted. This study employed five research strategies, including literature review, questionnaires, interviews, design science, and case study. The detailed methods of data collection and analysis under each strategy are elaborated from section 3.4.3.1 to section 3.4.3.5. Informed by these research elements, mixed qualitative and quantitative approach was formed in the study. Finally, the roadmap of research processes was developed in section 3.6 showing the logical connections among the research activities.

3.2 Nature of the research questions

Research design depends on natures of research questions, including explorative research, descriptive research, and explanatory research (Lewis & Saunders, 2012). Explorative research is often conducted when there is no much understandings about the phenomenon. And it tends to probe on the formulation of research problems and searching the theoretical foundations on the topic through methods such as interviews, observations, or literature reviews. While explorative research provides a rough profile

of the research problem, descriptive research provides more empirical information through conducting a series of data collections and descriptions. Descriptive research extends our understandings on the research problem and clarifies the realistic situations. Explanatory research focuses on "why" questions by providing causative, correlative or predictive explanations about research problems (De Vaus, 2001).

In management research, only to explore, describe, and explain are not enough, debate is ongoing as to whether the knowledge produced is relevant to practice (Van Aken, 2004). Compared to the focuses of traditional explorative, descriptive, or explanatory research, Van Aken (2005) proposes that prescriptive knowledge should be produced to design solutions for real problems in management. Like in medical and engineering research, management research also calls for practicable knowledge to achieve improved performance or other desirable outcomes. Prescriptive research is designed to resolve "unsolved and important business problems" and to produce "knowledge linking an intervention or artefact with expected outcomes or performance in a certain field of application" (Van Aken, 2004, p. 23).

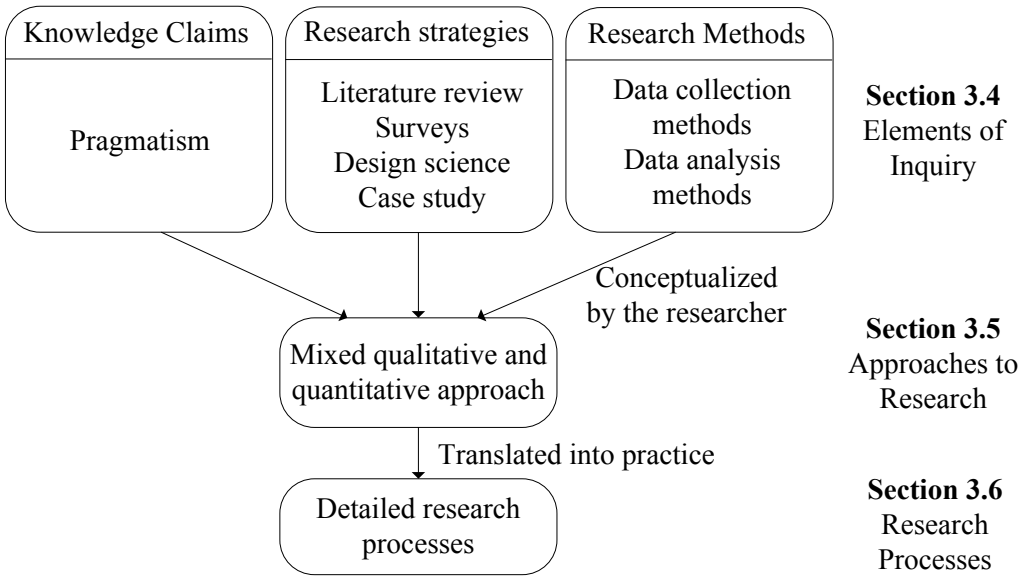
This study was a combination of explorative, descriptive, and prescriptive research. According to Chapter 1, the research questions answered in this study were: 1) What are the major factors to promote social responsibility collaboration in construction projects? (Explorative research) 2) What is dynamic stakeholders' power on different social responsibility issues like over project lifecycles? (Descriptive research) 3) What strategies do multiple stakeholders use to influence each other? (Descriptive research) 4) What management methods can be adopted for facilitating social responsibility collaboration in construction projects (Prescriptive research)?

The first research question is explorative in nature, aiming at seeking main factors which influence stakeholder collaborations in construction projects. The second and third questions were answered by descriptive research, using empirical quantitative and qualitative research to describe the situations. The fourth question was a

prescriptive research. A managerial framework was developed and validated in practice, in order to provide the common solution for the problems that construction projects face in implementing social responsibility.

3.3 Scheme for research design

Research design does not simply equal to research methods. Instead, it is a systematical framework containing all facets of research. A general framework suggested by Creswell for research design was employed in this study to compose the research design (See Figure 3-1), including three components: elements of inquiry, approaches to research, research process (Creswell, 2013). According to Creswell (2013), the research design should contain "philosophical assumptions about what constitutes knowledge claims; general procedures of research called strategies of inquiry; and detailed procedures of data collection, analysis, and writing, called methods (p.3)". The formulation of these core elements in research design led to the identification of research approaches. At last, the research approaches were translated into the detailed research processes. These three steps show the formation of research design by hierarchical decisions from general elements of inquiry to detailed research processes.



**Modified from (Creswell, 2013, p. 5)*

Figure 3-1 the scheme for research design

3.4 Elements of research inquiry

3.4.1 Alternative knowledge claims

Alternative knowledge claims means the epistemologies that the research inquiries are informed, which implies the basic philosophical assumptions that researchers choose to believe and use to generate knowledge (Creswell, 2013). Four schools of knowledge claims are discussed in Creswell's book, including post-positivism, constructivism, advocacy/participatory, and pragmatism. Knowledge in post-positivism is determined by whether careful observations on reality could positively support or refuse the hypotheses. Constructivists hold assumptions that knowledge from research could be obtained through individuals' subjective interpretations on the world around them. Advocacy/Participatory knowledge claims are often adopted in politic or public research for example inequality, oppression, domination, and etc. In the stance of these claims, knowledge can only be generated by exerting actions to target groups and involving marginalized individuals in research process. Pragmatism is a philosophy

which opens the door for mixed-method research, which advocates any applicable research strategies or methods could be used if it could serve for finding solutions to the research problems. The father of pragmatism Charles S. Peirce introduces this maxim as:

> "Endeavoring to formulate what he so approved, he framed the theory that a conception, that is, the rational purport of a word or other expression, lies exclusively in its conceivable bearing upon the conduct of life… if one can define accurately all the conceivable experimental phenomena which the affirmation or denial of a concept could imply, one will have therein a complete definition of the concept…" (Peirce, 1905, p. 162)

The choices on the goals and means of the research are driven by the conceived consequences of pragmatic research (Cherryholmes, 1992). Pragmatists do not aim at seeking out "reality", instead their interests are what is workable for our needs and practices and through what actions the anticipated consequences can be arrived (Cherryholmes, 1992). For judgments of this "workable" or "applicable" , two criterion are commonly focused in pragmatism: epistemological (the credibility and reliability of the information), and normative (will it helps to advance the research) (Wicks & Freeman, 1998). These pragmatic assumptions are encouraged to be involved in future organization studies as a productive and promising field (Wicks & Freeman, 1998). Based on the research questions, this study is mix-method research in nature, which needed a "workable" philosophy as overall guidance. Therefore, this study adopted pragmatic knowledge claims to inform the whole research approaches and research processes.

3.4.2 Strategies of inquiry

Following the assumptions under the chosen knowledge claims, operational strategies should be produced which indicate specific procedures of research (Creswell, 2013).

According to the pragmatic philosophy, research strategies can be selected based on the usefulness for research inquires. In order to answer the research questions, this study adopted five research strategies, including literature review, questionnaire survey, interview survey, design science, and case study. Three general ways to arrange research strategies in pragmatic research are proposed in Creswell's book, including sequential procedures, concurrent procedures, and transformative procedures (Creswell, 2013). This study chose sequential procedures to connect the five research strategies following the logics of research process. First, literature review was employed to seek the main factors that may influence stakeholder collaboration in construction projects. As the results, stakeholder power and their influence were identified as significant factors. Second, questionnaire survey was conducted to investigate dynamic stakeholder power over social responsibility issues occurring in construction projects. Third, interview survey was employed to find out the influencing strategies that multiple stakeholders use to influence each other on social responsibility. Fourth, based on the findings from questionnaire and interview surveys, an operational framework was developed by design science to facilitate stakeholder collaboration on social responsibility. Fifth, case study was finally used to validate the framework in a real construction project.

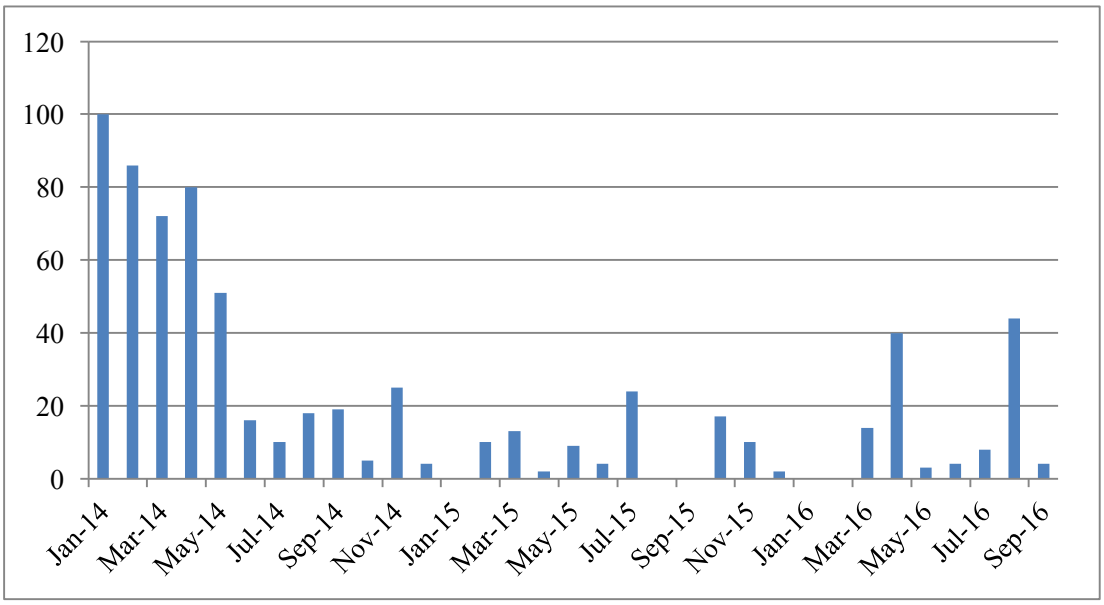
3.4.3 Research methods

For implementing the research strategies proposed, detailed methods and instruments were designed, including methods of data collection and data analysis (Creswell, 2013). The research methods adopted in each research strategies are elaborated from section 3.4.3.1 to section 3.4.3.5.

3.4.3.1 Literature review (Chapter 2)

- Sources of literatures

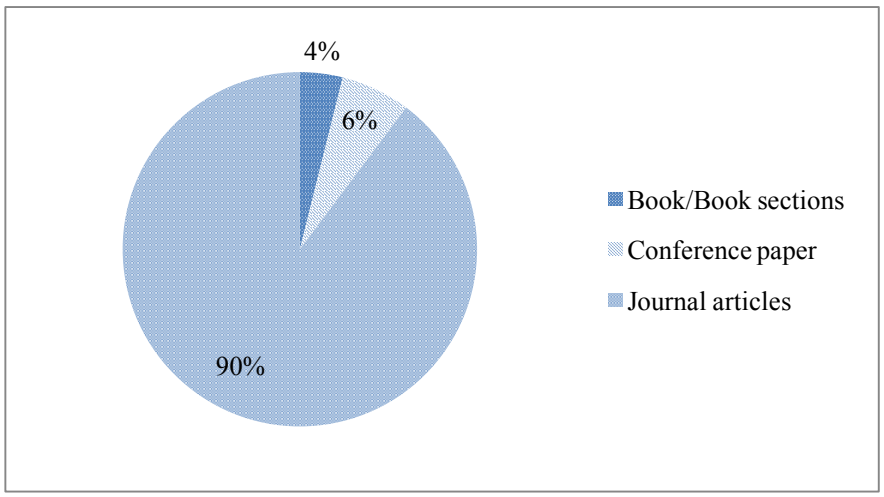
The literatures searching process continued throughout the PhD study period after the topic was settled in Jan 2014. Figure 3-2 shows the number of literatures searched in each month along the three-year study progress. The total number of literatures is 694. The main literature search was conducted from January 2014 to November 2014 during which the theoretical foundation was formed. Initially, from Jan to March 2014, the literatures were searched by the topic of "Social Responsibility" from 1970 to 2014 in the database of Web of Science, including journal articles and conference proceedings. These literatures were reviewed for finding out what are the key factors to achieve stakeholder collaboration on social responsibility in construction projects. The review findings pointed out that stakeholder, power, and influence theories were important for dealing with the research problems. Next, from March to November 2014, literatures were again searched by the topic of "stakeholder management", "stakeholder power", and "stakeholder influence" using the search engine Google scholar. More literatures were collected gradually through tracing the references, significant authors, influential journals, and alternative keywords. In the year of 2014, in total 486 literatures on social responsibility, stakeholder, power and influence, were collected and reviewed. This stage formed the solid theoretical foundation for the whole study and provided guidance for designing research strategies and methods. Afterwards, literature reviews were continuously conducted along the data collection and analysis process in 2015 (91 literatures) and 2016 (117 literatures). At this stage, the literature searching was strategic and motivated by the problems that came across during data collection/analysis. More specific scopes of literatures were searched, for example, stakeholder collaboration, stakeholder power on social issues, sustainable construction projects, two-mode social network analysis, or supply chain integration etc.



**Developed based on author data collection*

Figure 3-2 literature searching progress during the study period

The distribution of literatures' natures is shown in Figure 3-3. The 694 literatures consisted of 90 percent of journal articles, 4% of book or book sections, and 6% of conference paper. In addition, the key journals of the reviewed journal articles were summarized in Table 3-1. The sources include many remarkable journals in general management and construction/engineering management fields, so it reflects that the quality of the literatures was reliable.



**Developed based on author data collection*

Figure 3-3 the distribution of literatures

Table 3-1 the key journals of the searched literatures

Journal name	Number of literatures
Journal of business ethics	68
Academy of management review	26
Social network	23
International journal of project management	20
The academy of management journal	14
Business and society	12
California management review	12
Journal of cleaner production	11
Journal of management studies	11
Construction management and economics	10
Strategic management journal	9
British journal of management	8
Corporate social responsibility and environmental management	8
Organization science	8
Corporate governance: an international review	7
Engineering economics	7
Journal of management	7
Administrative Science quarterly	6
Building research and information	6
Business ethics quarterly	6
Business strategy and the environment	6
American journal of sociology	5
Baltic journal of management	5
Business and society review	5
Journal of business research	5

Journal of marketing	5
Management decision	5
Organization studies	5
Public relations review	5

**Developed based on author data collection*

- The purposes of the literature review

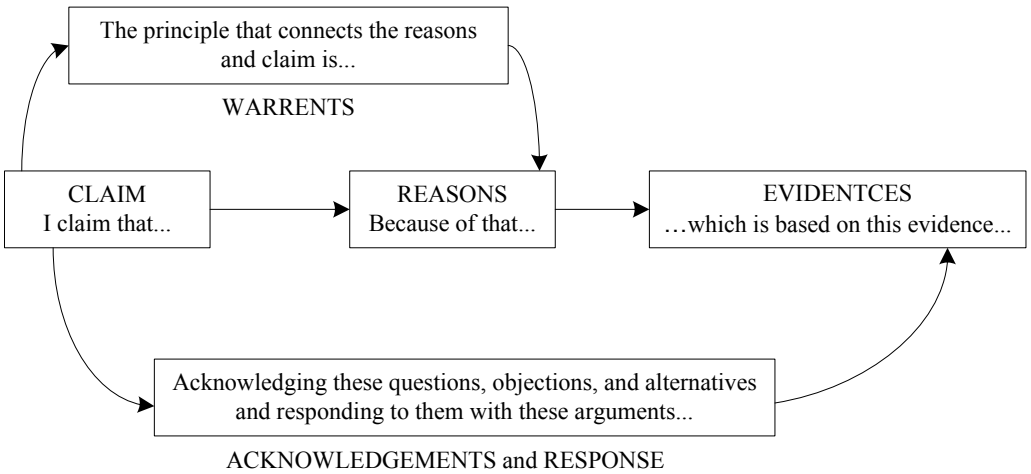
Literature review is indispensable in any scientific research: it helps create firm foundations for advancing knowledge, clarifies the current research progress, and discloses the research gaps where new studies are needed (Webster & Watson, 2002). Boote and Beile (2005) asserts the importance of literature review should be valued especially in doctorial study. In this study, literature reviews aimed at basic objectives including to define concepts, review theories, discuss previous findings, identify research gaps, define research questions, make plans for methodological issues (Whittemore & Knafl, 2005).

- The literature review methods

Because the literature review in this study contains theories from three different fields: social responsibility, stakeholder, power and influence, integrative review was employed to bridge different theories towards the research inquires. Compared with other review methods such as meta-analysis, systematical review, and qualitative review (Whittemore, 2005), integrative review innovatively synthesizes evidences from diverse sources through several stages including problem identification, literature search, data evaluation and analysis, and presentation of results (Whittemore & Knafl, 2005).

Levy and Ellis (2006) proposes a systematic approach for literature review including inputs, process, and output stage. Input stage is the search of literature which constitutes the foundations of the whole research, which directly determine the quality

of literature review. Literature search started from the leading journals and continued by keep going backward and forward on searching the relatively complete census of relevant literature (Webster & Watson, 2002). Processing stage included: know, comprehend, apply, analyze, synthesize, and evaluate literature. Finally, literature review output was argumentation theories logically induced from the existing literatures. In this study, the argumentation theories generated through a reasoning process as Figure 3-4 shows.



**Developed based on (Booth et al., 2003)*

Figure 3-4 the argumentation model

3.4.3.2 Questionnaire Survey (Chapter 4)

- The purpose of the questionnaire survey

From the literature review, it was found that understanding dynamic stakeholder power on social responsibility issues is important for stakeholder collaboration. The quantitative data collected from questionnaire survey can be easily analyzed and interpreted. Therefore this study employed questionnaire survey for investigating the perceptions of stakeholder power on diverse social responsibility issues over project lifecycles. The projects in this survey represent general types of projects including but not limited to infrastructure projects, commercial projects, public housing etc.

- Instrument development

Questionnaire is an instrument using fixed design questions to collect data from respondents (Robson, 2011). The design of questionnaire is vital for accurately translating the research constructs into fix-designed questions. The well-designed questionnaire should: provide accurate measures for main variables; gets cooperation from respondents, and elicit the accurate information (Robson, 2011). Table 3-2 shows some main considerations need to be clarified in questionnaire design.

Table 3-2 the key issues for questionnaire development

Considerations	Key issues
What will the questionnaire measure?	Knowledge
	Attitude/Beliefs/Intention
	Cognition/Perception
	Emotion
	Behavior
What types of scale can be used?	Frequency
	Thurstone
	Rasch
	Guttman
	Mokken
	Likert scale
	Multiple choice
How do I generate items for my questionnaire?	Ensure relevance of items?
	Wording issues
	Which response format is best?
	Which types of question are possible?
	Free text options?
	Does your measure have subscales?
	Questionnaire layout

**Modified from (Rattray & Jones, 2007, p. 236)*

At first, the purpose of the questionnaire, as it was mentioned above, was for measuring the perceptions of construction practitioners on different stakeholders' power over social responsibility issues in construction projects. Therefore, the most important task before questionnaire design was to identify the important social responsibility issues that under practiced in construction projects, as well as the

related stakeholders. The identification of the social responsibility issues for questionnaire design had three steps. First, the author extracted 80 social responsibility issues closely related to construction projects activities from literatures. The sources of the literatures fell in three categories: academic literatures, publications by international organizations, and corporates reports. (Details see Table 3-3). Because 80 issues were too many for a questionnaire, the author then invited 20 experts (13 construction management scholars and 7 industrial project managers, all with more than 10-year experiences in construction project management) to combine or remove the social responsibility issues that they considered as overlapping or unimportant. A preliminary questionnaire (see Appendix A) was used in this screening. Meanwhile, the experts were also asked to nominate the stakeholders they think are related with these social responsibility issues. At last, a list of the 35 social responsibility issues and the 7 stakeholders was finalized for designing the questionnaire.

Table 3-3 the sources for identifying the social responsibility issues

Categories	Sources
Academic research studying social responsibility in construction context	(Barthorpe, 2010), (Petrovic Lazarevic, 2008), (Jones et al., 2006), (Shen, Tam, et al., 2010), (Brown & Dacin, 1997), (Zhao et al., 2012b), (Martinuzzi et al., 2011)
Publications by the international organizations	GRI G4 sustainability reporting guidelines launched by Global Reporting Initiative in 2013
	ISO 26000 social responsibility guidance launched by International Standard Organization in 2010
	UNEP Greening the building supply chain launched by United Nation Environmental Planning in 2012
	CSR guidelines launched by Construction Excellent in 2004
	BRC project building responsible competitiveness launched by European commission in 2010
	CSR index reports launched by Hong Kong Quality

	Assurance Agency in 2008
Annual reports of world leading construction companies	annual sustainability/CSR reports publicized by Gammon Ltd., Leighton Ltd., and AECOM Ltd from the year of 2005 to 2014

**Developed based on author data collection*

The 35 social responsibility issues can be categorized in three project lifecycle stages: 1) initiating and planning stage, 2) execution stage, 3) controlling and closing stage. In each stage, the issues fall in seven dimensions according to the ISO 26000: 1) organizational government (OG), 2) human rights (HR), 3) labor protection (LP), 4) environment (En), 5) fair operation (FO), 6) customer issues (CI) and 7) community involvement and development (Co). The 7 stakeholders are main contractors, developers, end users, governments, consultants, NGOs, and district councils.

The second consideration was to choose the scale to measure stakeholder power perceptions. The questionnaire was formulated as a matrix using the 35 social responsibility issues as row titles and the 7 stakeholders as column titles (see Appendix B). Because 5-point Likert scale is broadly used in management and sociology research for measuring perceptions/cognitions/attitudes, this study adopted this scale for evaluation of the degree of power and the degree of interest. For each social responsibility issues, respondents were asked to 1) evaluate their organizations' interests on this issue from 1 (no interest) to 5 (extremely interested), 2) their perceptions of 7 stakeholders' power from 1 (not at all influential) to 5 (extremely influential). The word "influence" was substituted for "power" due to their similarity in daily usage and the negative connotation associated with the word "power" (Brass & Burkhardt, 1993).

The third consideration was the wording of questions, which is a linguistic art. The questionnaire contains three parts. The first part is a letter to the respondents. The second part asks about respondents' background information. And the third part, the main body of the questionnaire, is a matrix evaluating stakeholders' power 35 social

responsibility issues. The wording should be clear and simple to specify the concept, and avoid misleading, ambiguous, or threatening words (Sudman & Bradburn, 1982). The questionnaire was finalized and translated into three versions, including traditional Chinese, simplified Chinese, and English versions (see Appendix B).

- Pilot study

All the three versions of questionnaire were pre-tested with a small group of pilot sample containing native speakers of English, Cantonese, and Mandarin. The respondents in pilot study were invited from personal networks who worked in construction industry in Hong Kong. They were asked to examine whether the questions are simple, clear and unambiguous. Based on the feedback from the pilot study, some changes on wordings of the social responsibility issues were made to improve the intelligibility. In addition, one problem reported by the respondents was that "to fill in numbers in all blanks in the matrix is too time-wasting and annoying". In the questionnaire, respondents needed to fill in a number from 1 to 5 in each blank of the matrix which is indeed time-consuming. Therefore, in order to reduce the complexity, the author made some changes in the finalized questionnaire for formal survey: if respondents think the stakeholder is not influential at all on the issue, they can just leave it blanked.

- Questionnaire distribution and collection

Several main data collection approaches could be considered in questionnaire survey, including self-completion (internet/mail) and face-to-face (Robson, 2011). The choice of approaches depends on various criterion including cost, complexity of questionnaire, data quality requirement, response rates, and sensitivity of questions, etc. Due to the complexity of the concepts and the requirements for high quality data, face-to-face questionnaire was used in this study. The paper-based questionnaires were distributed to the part-time students participated in construction professional courses and

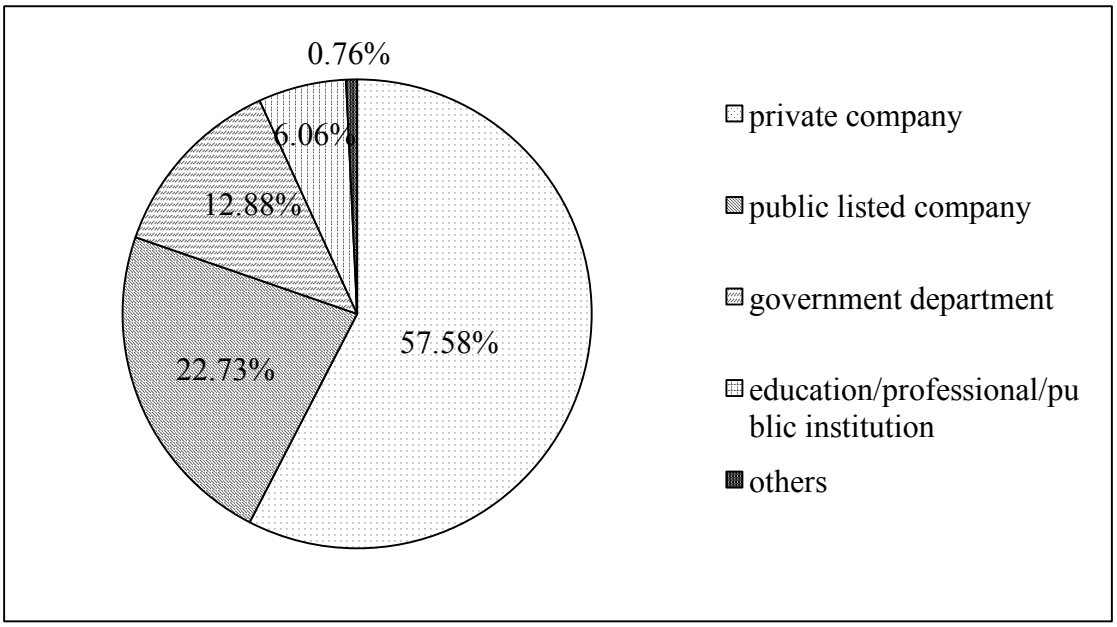
workshops held in the university from the academic years of 2014/15 to 2015/16. The questionnaire distributions and collections were conducted face-to-face after the students finished their lectures/workshops/tutorials. For ensuring the quality of the data, the author first explained the questionnaire purpose. During respondents were completing the questionnaires, the author also kept standby for answering the confusions and queries. Once collected, the author examined the questionnaires and disposed which invalid. The data in the valid questionnaires were input in the computer for analysis. The data collection and storage procedures follow the ethical regulations of the university. All questionnaires were anonymous without identifications of respondents' personal information.

- Questionnaire sample

A non-probability sampling was employed for the condition that it was impossible for any construction practitioners with the same probability to be selected in samples (Robson, 2011). As it was introduced, the participants were volunteers from the part-time construction professional courses in the university; therefore, most of them were practitioners working in construction organizations in Hong Kong. Because of the subjects of the courses were about project management and technical practices, therefore most of the respondents have work experiences in construction projects. In order to ensure the variety of sample from diverse stakeholder groups, in this study, the stratified sampling was needed for selecting units from different sub-populations of construction organizations, such as developer companies, contractor companies, design and consultant companies, subcontractor companies, government departments, NGOs, professional organizations etc. When inviting the participants, it was addressed that practitioners from all types of construction organizations, especially developers, governments, and NGOs were preferred.

The number of questionnaires collected in the academic year of 2014/15 and 2015/16 was 120 and 78 respectively. At last, the valid sample size was 132, at valid return

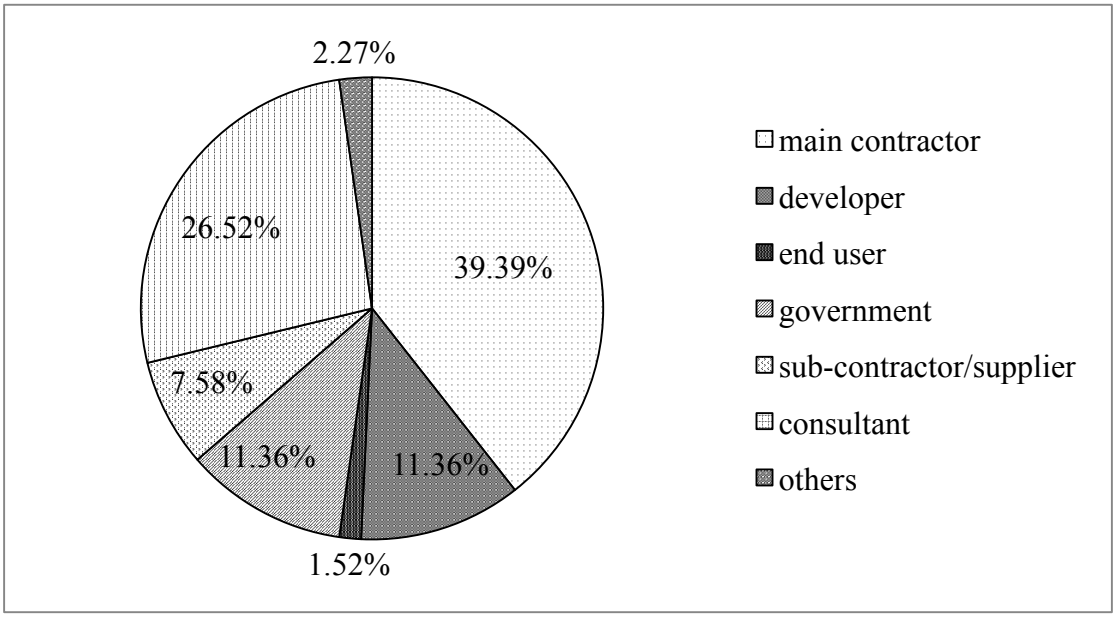
rate of 66.67%. The Cronbach's alpha was 0.98 indicating the questionnaire adopted has high reliability, but it also shows the amount of the items were excess of need. But the amount of the items could not be reduced because the variations of the social responsibility issues were important for analyzing the dynamics and multiplicity of stakeholders' power.



**Developed based on author data collection*

Figure 3-5 the organizations' nature of the respondents

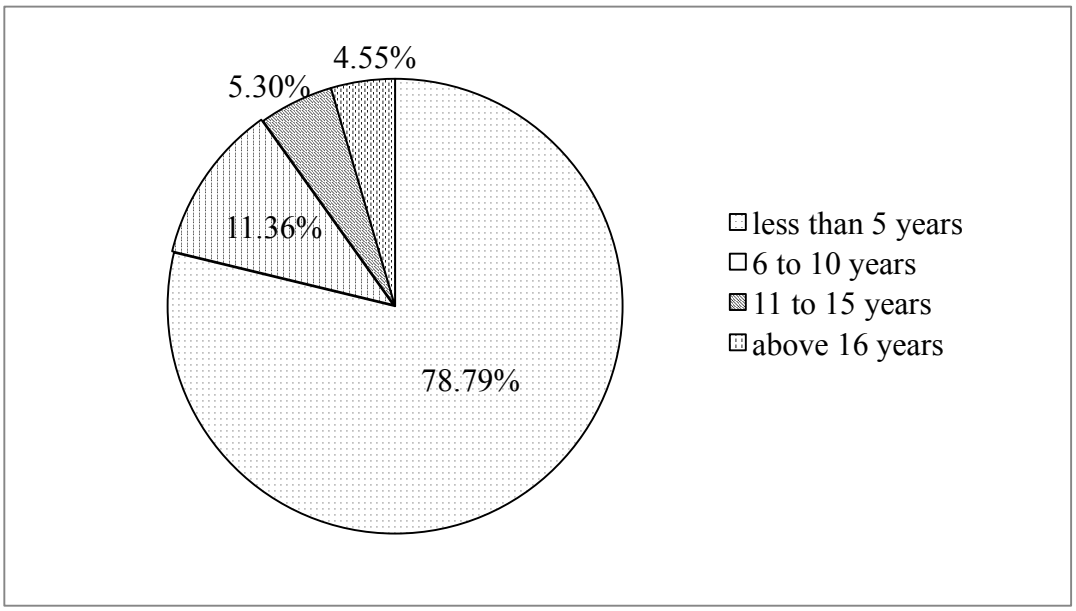
Figure 3-5 shows the diverse nature of respondents' organizations. 57.58% came from private companies, whose social responsibility is the most demanded to be improved. 22.73% of the respondents were from the public listed companies. These companies are required to publicize their social responsibility performance annually and are under great pressures from shareholders. 12.88% were from the government department. The rest came from educational/professional/public institutions and other organizations.



**Developed based on author data collection*

Figure 3-6 the stakeholder groups of the respondents

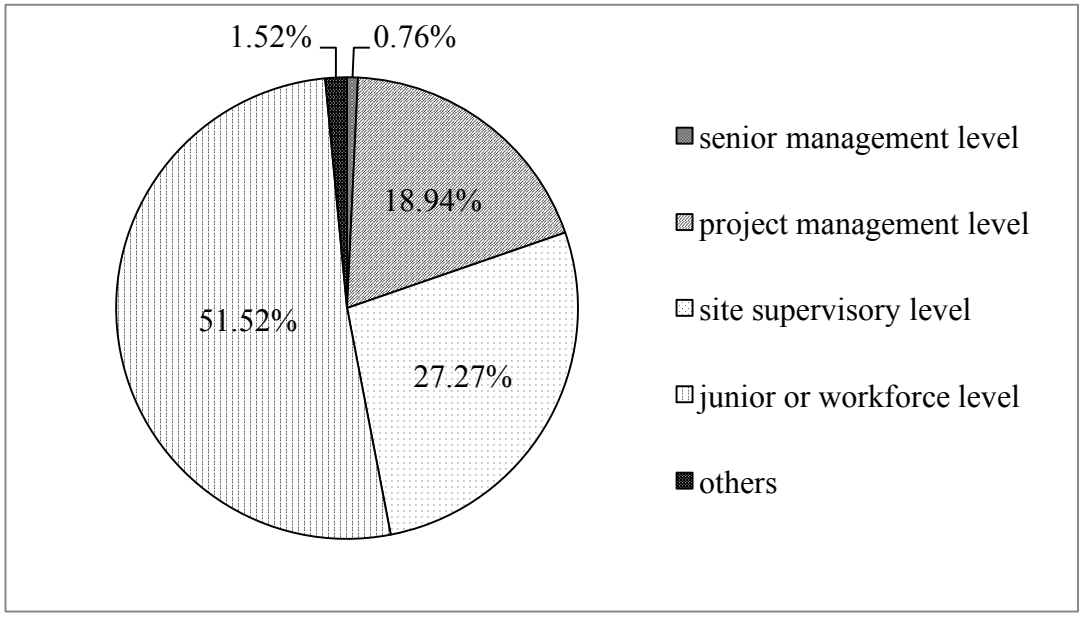
The distribution of stakeholder groups that the respondents belong to is shown in Figure 3-6. The respondents' backgrounds were diverse in the valid sample, including main contractors (n=52， p=39.39%), developers (n=15, p=11.36%), end user (n=2, p=1.52%) government departments (n=15, p=11.36%), subcontractor/supplier (n=10, p=7.58%), consultants (n=35, p=26.52%), and others (n =3, p=2.27%). Although the stratified strategy was used in data collection, the majority of the respondents were from contractors organizations. The unbalanced distribution of subsamples may cause over-representation of the contractor groups, and under-representations of the other stakeholder groups. Therefore, the data were reweighted to balance the opinions from different stakeholder groups before data analysis.



**Developed based on author data collection*

Figure 3-7 the distribution of respondents' working experiences

The work experiences reflected the degree of familiarity that the respondents had in construction projects practices, as well as the reliability of their responses. Figure 3-7 shows among the overall valid sample, 21.21% had more than 6-year work experiences in construction industry, containing 4.55% with over 16-year experiences. In addition, the relative high positions of the respondents in their organizations also enhanced the reliability of the data. As it is shown in Figure 3-8, 0.76% of the respondents were senior managers, 18.94% were project managers, and 27.27% were site supervisors. The work experiences and positions demonstrated that the data collected in this survey is reliable for analysis.



**Developed based on author data collection*

Figure 3-8 the distribution of respondents' positions

- Reweight of the data

From the sample description, the numbers of representatives from different stakeholder groups were imbalanced. In order to reduce the over- or under-representations resulting from the disproportionate numbers from the different stakeholder groups, the data were re-weighted using the adjustment coefficients before analysis. For getting the impartial results, it was assumed the number of representatives from these stakeholder groups should be the same in the target population. The data from end user and others groups were not changed because their numbers were too small and it may cause bias after reweight. Apart from end user and others groups, there were five stakeholder groups whose response data need to be reweighted, including main contractor (n=52), developer (n=15), government (n=15), subcontractor/supplier (n=10), and consultant (n=35). The formula for the reweight coefficient is:

$$\pi_k = \frac{N_k / N}{n_k / n}$$

In the formula, the N_k/N represents the proportion of the stakeholder group k in the target population, which was equals to 1/5. And the n_k/n represents the proportion of this stakeholder group k in the sample. The overall sample size n is 127 excluding the end user and others group. If the coefficient is smaller than 1, it means the stakeholder group was over-represented. If it is larger than 1, it means the stakeholder group was under-represented.

Therefore, the reweight coefficients for each stakeholder groups were: main contractor (π=0.488), developer (π=1.693), government (π=1.693), subcontractor/supplier (π=2.540), consultant (π=0.726). After reweighted the average stakeholder power over the social responsibility issues were calculated for further analysis.

- Two-mode social network analysis

After reweighted, using the 7 stakeholders and the 35 social responsibility issues (SRIs) as nodes, and the average power perceptions between the stakeholders and social responsibility issues as the weighted links, a stakeholder-SRI network was built for analyzing stakeholder power structures on diverse social responsibility issues. This study employed the concepts, measures, and analysis tools from two-mode social network analysis (SNA), as potential methods for analyzing the stakeholder-SRI network.

SNA was introduced as a graph theory for linking micro and macro levels of sociological theory (Granovetter, 1973). It has been broadly used as an effective tool for mapping complicated stakeholder relations (Boutilier, 2007; Rowley, 1997; Vance-Borland & Holley, 2011). The focuses of SNA are the interdependence of actors and how their positions in networks influence their opportunities, constraints, and behaviors (Wasserman & Galaskiewicz, 1994). This systematic analysis method has

various measures such as centrality, density, benevolence, structure holes, transitivity, reciprocity of ties and brokerage, etc. (Freeman, 1978). And multiple analysis levels, including actor level, dyadic level, triad level, sub-group level, and network level analysis (Prell, 2012). SNA has been taken as a promising research instruments for construction projects management, with which many fruitful insights are produced from the perspective of network structures (Ruan et al., 2013). Emerson (1962) indicates that "through treating both persons and groups as actors in a power-network, the door is opened for meaningful analysis of complex power structures." New characteristics can emerge from the macro view on the whole power network.

However, most SNA methods are designed for simple binary situations, with only one set of vertices, and ties are either present or absent (Opsahl et al., 2010). In this study, the network is a typical two-mode weighted network, which consists of two sets of nodes, and between which are links attached with values. This type of network is considerably complicated, so general SNA methods are mostly inappropriate. The analysis of weighed two-mode networks is merely noted in the existing literatures.

The analysis of two-mode networks, otherwise known as affiliation networks, describes relations between two different groups of entities, such as actor-movie network, company-board network, and author-paper network (Latapy et al., 2008). Generally there are two approaches for analyzing two-mode network data (Borgatti & Everett, 1997). One is to convert two-mode to one-mode using projection or bipartite matrix, after which all the fundamental measures designed for one-mode network are available to use. However, it may lead to the loss of information because there are only links between nodes in separate groups, but no links between nodes within one group in two mode network. While the other approach is to find some measures that can be directly used in two-mode network. Borgatti and Everett (1997) contributes for this approach, and designed alternative measures for two-mode networks. On the basis of Borgatti's work, this study integrated the techniques from weighted networks, and built

the suitable measures that can be directly used in two-mode weighted network.

The network centralities are mainly used for evaluating stakeholders' power status. The three centralities proposed by Freeman (1978), degree centrality, closeness centrality and betweenness centrality, were used for analyzing stakeholder power status on the social responsibility issues. These three network centralities have received many academic credits (Borgatti, 2005; Faust, 1997; Freeman et al., 1991; Opsahl et al., 2010). However, some modifications need to be done before they can be employed in the two-mode weighted network. Degree centrality was originally defined as the number of the adjacent links to a node (Freeman, 1978). For weighted network, it is extended to the sum of weights of the adjunct edges (Opsahl et al., 2010). For two-mode network, because nodes can only be connected to the other set of nodes, the sum of weights should be normalized by the number of nodes in the opposite set. Therefore the degree centrality in two-mode weighted network, which stands for stakeholder power status on social responsibility issues, was calculated using the following formulas:

$$d_i^* = \frac{d_i}{n_2} \quad i \in V_1$$

$$d_j^* = \frac{d_j}{n_1} \quad j \in V_2$$

d_i^* and d_j^* stand for the degree centralities of node i and j; d_i and d_j stand for the sum weights of edges connected to nodes i and j; n_1 and n_2 are the sizes of node sets V_1 and V_2.

In weighted network, closeness centrality is the inverse sum of shortest paths from one node to all the other nodes (Opsahl et al., 2010). Carter and Jennings (2002) propose the shortest path algorithm. The length of each edge is inversely to the edge strength, because the stronger links means nearer distance between two nodes (Newman, 2001).

According to the definitions of closeness centrality, high closeness centralities of stakeholders not only mean that the sums of power over all the social responsibility issues are high, but also shows that the stakeholders have nearer relationships with other powerful stakeholders. Based on the work of Borgatti and Everett (1997), the closeness centrality in two-mode weighted network was normalized in this study:

$$c_i^* = \frac{n_2 + 2n_1 - 2}{c_i} \quad i \in V_1$$

$$c_j^* = \frac{n_1 + 2n_2 - 2}{c_j} \quad j \in V_2$$

c_i^* and c_j^* stand for the closeness centralities of node i and j; c_i and c_j are the sum of lengths of shortest paths from node i and j to all the other nodes.

Betweenness centrality is designed for revealing how many shortest paths pass through a given node originally. It represents the important intermediary role of the stakeholders because high betweenness centrality means the stakeholders are at the core positions that other stakeholders may seek supports from. In two-mode weighted network, according to Borgatti and Everett (1997), the normalization of betweenness centrality was (in this case $n_1 < n_2$):

$$b_i^* = \frac{b_i}{\frac{1}{2}n_2(n_2 - 1) + \frac{1}{2}(n_1 - 1)(n_1 - 2) + (n_1 - 1)(n_2 - 1)} \quad i \in V_1$$

$$b_j^* = \frac{b_j}{2(n_2 - 1)(n_1 - 1)} \quad j \in V_2$$

b_i^* and b_j^* stand for the betweenness centralities of node i and j. b_i and b_j are the shares of shortest paths that pass through node i and j.

For the visualization of the stakeholder-SRI network, the spring embedding graph

layout algorithm proposed by Kamada and Kawai (1989) was adopted. It is designed for generating large-scale network visualization with the optimal layout of nodes and links, but the distance between nodes are difficult to interpret. The node sizes in the network show the centralities of nodes.

The visualization of the network were performed by the Netminer 4, a well reputed SNA software tool praised by network researchers (Maloni & Brown, 2006). Because currently Netminer 4 has limited functions on calculating centralities for two-mode weighted network, this study also chose R project to calculate the network centralities. The dataset of tnet package produced by Cruz (2009) was employed in R project for calculating two-mode and weighted networks. The centralities results output by tnet were normalized by the author using the formulas described in this section.

- Paired t-test analysis

Besides stakeholder power, the questionnaire also measured the interests of the respondents' organizations over the social responsibility issues. Because the stakeholder interest was subjective evaluation of the respondents, the subjectivity bias can be significant if the stakeholder representative numbers are too small. Therefore only four subgroups of stakeholders were targeted for power-interest comparison analysis, including main contractors (n=52), developers (n=15), governments (n=15), and consultants (n=35). The average interests of these four stakeholders over the social responsibility issues were calculated for analysis. Paired t-test is frequently used to test the significant difference between two observations in a group of subjects (Hsu & Lachenbruch, 2007). Therefore, the paired t-test method was adopted to analyze the gaps between stakeholders' power and interest data. In each subgroup, paired t-test

was adopted to test the differences between the stakeholders' interest and power.

3.4.3.3 Interview Survey (Chapter 5)

- The purpose of the interview survey

From the literature review, it was concluded that only acknowledging stakeholder power on the social responsibility issues are not enough, nevertheless, it is more important to learn about the strategies that stakeholders use to perform their power. Compared with stakeholder power, stakeholder influencing strategies are relatively difficult to quantify. Interviewing is a commonly used research method for collecting qualitative data through asking and answering questions. Therefore, interview survey was adopted to find out what strategies that multiple stakeholders can use to influence others on implementing social responsibility in construction projects.

- Interview protocol development

Based on the degree of standardization, interviews can be classified into fully-structured interview with fixed design questions and wording, semi-structured interview with planned list of topics, and unplanned interview that questions emerged from interview process (Robson, 2011). For the flexibility and multi-strategy research design, this study adopted semi-structured interviews for collecting qualitative data on stakeholder influence. The interview protocol (see Appendix D) was developed as the preparation for the interviews. The first part of the interview protocol is a brief introduction of the interview purpose, process, estimated time period, and ethical considerations. The second part consists of a set of questions, probes, and a proposed sequence for the questions. In this part, the starting 5 questions were about the interviewees' basic background information and their organizations' social responsibility policies. Next, the rest 15 questions are about how their organizations influence and be influenced by the other stakeholders on social responsibility. In order

to ensure the logic flows between questions, the questions are divided into two parts: the supply chain stakeholders and the external stakeholders groups. The supply chain stakeholders include upper echelons (builders, suppliers, subcontractors, consultants, advisors etc.) and lower echelons (developers, property management, end users, facility management companies etc.). The external stakeholders include governments, NGOs, communities, unions, public media, or other pressure groups. The third part is designed for recording pre- and post- interview notes by the investigator.

- Pre-test

In order to improve the content validity of the interview protocol, the pre-test was conducted before the formal interview survey. Two industrial practitioners were invited from the author's personal network who works in the construction industry. Based on their suggestions, some questions were revised and improved to be more clear, direct, and easy understanding.

- Interview processes

The interviews process lasted from March to May 2015. The interviewees were invited by email and/or telephone calls from the leading construction organizations, including construction companies, developer companies, consultant companies, NGOs, government departments, project investment companies, planning authorities. The potential interviewees were sent an invitation letter with a one page introduction (see Appendix C) about the interview objectives and ethical considerations for reducing their alerts about confidentiality. Most interviews were conducted under quiet environment (e.g. meeting room or private office) upon appointments. And only two interviews were conducted over telephone because of the tight schedules of the interviewees. For some of the interviews, supermarket coupons (valued at 50 HKD) were presented to the interviewees as a token of thanks. But because most of the other interviewees were at relative high positions therefore only oral thanks were delivered

rather than monetary incentives. In total 17 interviews were conducted in this study. And the interviews lasted from 22 minutes to 49 minutes. All interviews were recorded in high audio quality for further examinations and transcriptions.

- Interview sample

Unlike quantitative survey, the interview survey adopted a no representative stratified sampling (Trost, 1986). Instead of being statistically representative, interview sample should be with variations on the independent variables. Therefore, construction practitioners with heterogeneous backgrounds, positions, culture, ages, sexuality, and experiences should be invited in the interview survey.

The details for the interviews were recorded in Table 3-4. The interviewees were invited from the construction industrial practitioners in Hong Kong construction industry. Table 3-4 shows that the interviewees were from different backgrounds: governments (n=1), planning authority (n=1), NGOs (n=1), developer (n=5), investor (n=1), main contractor (n=6), consultants (n=2). The interviewees' average working experience in construction industry was 12 years. Among all interviewees, 9 out of 17 had worked for more than 16 years in construction industry, which represents the rich experiences of the interviewees on construction project practices.

Table 3-4 the backgrounds of the interviewees

No	Region	Backgrounds of the interviewees	Working experiences (years)	Positions	Time (DD/MM/YY)	Period (mins)
1	HK	government	6.5	Site supervisor	08/04/15	22
2	HK	Planning authority	16	Committee member	04/05/15	38
3	HK	NGO	4	N/A	28/05/15	27
4	HK	Investor	25	Investment director	29/04/15	33

5	HK	Contractor	4	Assistant engineer	07/03/15	37
6	HK	Contractor	16	Project manager	28/03/15	46
7	HK	Contractor	5	Vice project manager	24/03/15	29
8	HK	Contractor	20	Senior manager	13/04/15	24
9	HK	Consultant	4	Safety supervisor	30/05/15	22
10	HK	Contractor	18	Senior manager	14/04/15	30
11	HK	Consultant	6	N/A	13/04/15	23
12	HK	Developer	20	Commercial manager	08/05/15	22
13	HK	Developer	2	Planning officer	08/05/15	24
14	HK	Developer	20	Project manager	09/05/15	49
15	HK	Developer	20	Safety manager	08/05/15	25
16	HK	Developer	2	Designer	08/05/15	23
17	HK	Contractor	16	Quantity surveyor	28/04/15	46

**Developed based on author data collection*

- The transcription of interview recordings

With regards to the language usage, 13 interviews were conducted in English and the other 4 in Mandarin. Upon the examinations of the audio records, all interviews were transcribed into texts in English and saved as the format of Microsoft documents. The data collection and storage procedures strictly followed the ethical procedures, which exactly kept the interviewees' personal information confidential and unidentified. After

transcriptions, the full corpus contained 50,345 words.

- Semantic analysis by Leximancer

The transcripts were imported and analyzed by the computer-assisted qualitative data analysis tool (CAQDA) tool Leximancer. Qualitative data analysis is a flexible analytical method for analyzing text data in form of verbal, print, or electronic document obtained from narrative responses, open-ended survey questions, interviews, focus groups, observations, or print media. It aims at interpreting "the content of text data through systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005). The outcomes of qualitative data analysis are concepts or categories which could describe the phenomenon, for the purpose of "providing knowledge, new insights, a representation of facts and a practical guide to action" (Elo & Kyngäs, 2008). The adoption of appropriate CAQDA software can increase the rigor and efficiency of qualitative research. Leximancer is a text-mining software developed by the team led by Dr. Andrew E. Smith at the University of Queensland. Leximancer can use unsupervised machine learning algorithms to automatically generate concepts and themes based on word frequency and co-occurrence (Smith & Humphreys, 2006). Compared with other CAQDA tools like Nvivo and Atlas.ti, Leximancer can automatically identify concepts and interrelationships from the unified data without the premise of manual interventions, which decreases the subjectivity of analysis process (Sotiriadou et al., 2014).

The three stages semantic analysis was used by this study. In the first stage, the concept map was generated revealing the important stakeholders and their interconnections. In order to improve the meaningfulness of the concept map, some adjustments were made in the concept seeding. Because Leximancer has limits in eliminating daily use languages, seven concepts were deleted due to the lack of semantic meanings for the research topic ("things", "terms", "look", "guess", "example", "doing", and "probably"). Eighteen concepts have similar meanings were merged which bear the

same meanings ("issue/issues", "project/projects", "developer/developers/client/clients", "contractor/contractors", "company/companies", "client/clients", "building/buildings", "environment/environmental"). Two concepts "main" and "contractor" were compounded into "main contractor" to be more specific. In order to include all stakeholders mentioned in the interviews, some concepts that refer to important stakeholders of construction projects were manually defined. They are "consultants", "consumers", "employees", "investor", "manager", "NGOs", "representative", "planning authority", "residents", "subcontractors", "suppliers", "tenants", "workers". The thesaurus of each concept was coded manually, for example, the concept of NGOs includes six items including the names of NGOs and their abbreviations.

The second stage was to further explore and interpret the influence strategies and tactics that adopted by pairs of stakeholders. The interactive concept map was used to extract the textual segments that contain two stakeholder concepts. By clicking one stakeholder concept in the map and selecting the other stakeholder concept in the associated concepts list, the text segments that contain the two stakeholders concepts can be attracted from the transcripts. The researchers then interpreted the extracted segments based on the original contexts to identify the strategies and tactics adopted by stakeholders in that context. In this stage, not only the segments that contained the words of stakeholder names were retrieved, but also those contained the thesaurus that embedded under each concept. All textual segments were extracted with no interventions and analyzed based on the original contexts. Strategies and tactics that adopted by stakeholders were identified in this stage.

In the third stage, based on the identified strategies and tactics, stakeholders' roles on social responsibility collaboration were induced. How different stakeholders can influence each other in construction projects was depicted. The influencing flows and directions among internal and external stakeholders were visualized in a holistic

stakeholder influence map.

3.4.3.4 Design Science (Chapter 6)

- The purpose of the design science

As it was introduced in section 3.2, in management research prescriptive knowledge is required to be produced to design the interventions to practically improved performance or achieve desirable outcomes (Van Aken, 2005). From the prior research findings, the main obstacles in implementing social responsibility in construction projects are the unbalanced distribution of stakeholder power and unclarified stakeholder influence strategies. Design research method was used to develop the operational framework to facilitate social responsibility implementation in construction projects by effectively engaging multiple stakeholders. Since projects are heterogeneous and dynamic, the framework was designed to be useful in diverse contexts, including complicated mega projects, influential infrastructure projects, general commercial projects, etc.

- The procedures of the design science

This research adopted the practical rules and procedures of the design science approach proposed by Peffers et al. (2007). First, targets of design science research are to provide an effective intervention for the "unsolved and important business problems". In this study, the management problem planned to be solved was to facilitate stakeholder collaboration on social responsibility in construction projects. Next, the mechanism that can help to solve this problem was searched from literatures, which was grounded in the theoretical foundations in this study. The argument is that the key for social responsibility collaboration in construction projects lies in balancing stakeholders' responsibility and power, and helping stakeholders choosing proper influencing strategies. Third, design the framework procedures and activities. The

activity design was based on the regulative cycle proposed by Van Strien (1997) including five steps: 1) identification of the problem, 2) diagnosis of the situation, 3) plan of action, 4) intervention, and 5) evaluation of the new situation. This roadmap from psychological research can resolve the problem of the scientific rigor of the practical frameworks or interventions. At last, the designed framework needs to be validated through case studies following the design in the next section.

3.4.3.5 Case study (Chapter 7)

- The purpose of the case study

Case study is a research strategy to test the dynamics present within single settings, and it allows analysis on multiple levels simultaneously (Eisenhardt, 1989). Determining the purpose of case studies is important because it can provide direction for case data collection and avoid overwhelming data (Eisenhardt, 1989). In this study, case study was adopted for validating whether the designed framework can facilitate social responsibility collaboration in real construction projects.

- Case selection

The selection of cases relied on theoretical sampling rather than statistical sampling, because the purpose of case study is to test the framework in a specific setting in practice rather than represent a population (Glaser & Strauss, 2009). Therefore the case in this study was selected by the criterion including: 1) the project has needs to implement social responsibility issues; 2) the project involves multiple stakeholders; 2) the project has challenges to collaborate multiple stakeholders to implement social responsibility issues.

- The development of case study plan

Before entering the field, the preparations should be made including the definition of

the focus problem, the plan for procedures of activities, the instruments to collect data, and the expected participants. Communications with the coordinators/collaborators in the case project were essential for the success of the case study. Following the steps of the framework developed in Chapter 6, a detailed case study plan (see Appendix E) was developed as an instruction for the participants, as well as the guidance for the investigator (the author). Because data collection in case study can combine multiple methods (e.g. questionnaires, interviews, observations, and archival sources) to obtain both qualitative and quantitative data (McCutcheon & Meredith, 1993). In the case study plan, focus group, interviews, archival analysis were all adopted for collecting the quantitative and qualitative data from the case project. The details of the case study process are described in Chapter 7.

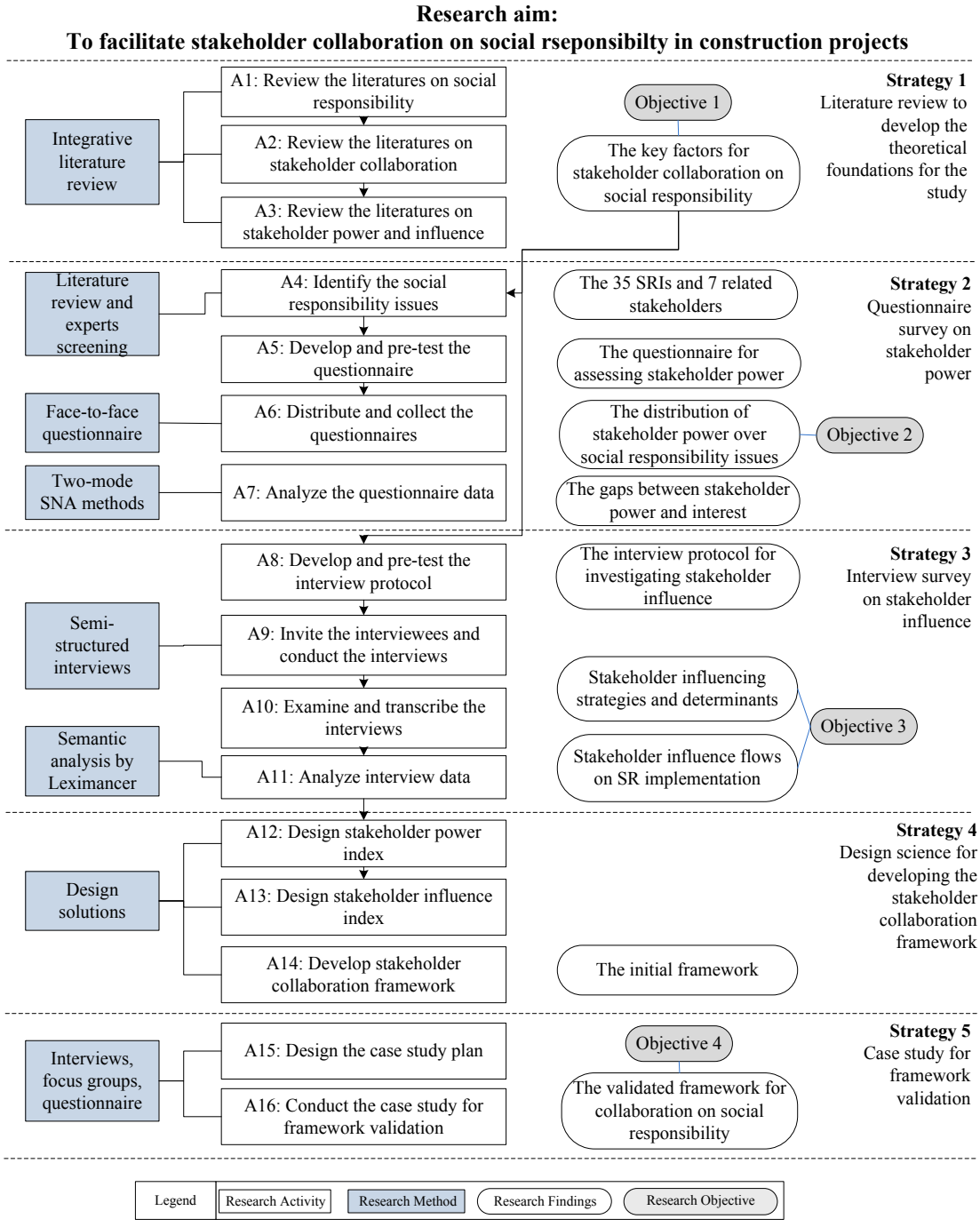
3.5 Approaches to research

The choices on three critical elements of research inquiry rationally led to the research approach. The pragmatic claims, the five sequential research strategies, and the mixed research methods all informed that rather than simple qualitative or quantitative approaches, this study adopted mixed research approach. Instead of individual quantitative or qualitative research approach, research of social and human science nowadays tends to apply mixed methods research approach which lies in the continuum between two traditional approaches (Creswell, 2013). This mixed methods approach could extend the research results from one method with another, which could promote the insight on research problems to a higher and broader level (Thomas, 2003).

3.6 Research process

Through the integration of elements of inquiry and the interpretation of mixed methods research approaches, the detailed research process was proposed in the end of the research design (see Figure 3-9). The whole research process originated from the

research aim to improve stakeholder collaboration on social responsibility in construction projects. The map of the research process shown in Figure 3-9 contains the five research strategies, the research activities, as well as the research findings corresponding to each research objectives.



**developed by the author*

Figure 3-9 the detailed research processes

Initially, literature review was conducted to develop the theoretical foundations as well as informed the following research to investigate on stakeholder power and influence. Towards the research aim, the existing literatures on social responsibility were firstly reviewed for finding out the difficulties for implementing social responsibility in construction projects (Research activity 1). The results found that the unbalanced stakeholder power and the unclarified influence strategies of multiple stakeholders need to be addressed to achieve stakeholder collaboration. Then the existing literatures on stakeholder collaboration and stakeholder power/influence were reviewed subsequently (Research activity 2 & 3). The research objective 1 was achieved by literature review to establish the theoretical foundation for linking power/influence with stakeholder collaboration on social responsibility.

Second, a questionnaire survey was carried out to find out the distribution of stakeholder power on the different social responsibility issues. For preparing a comprehensive questionnaire to assess stakeholder power distribution, the 35 social responsibility issues frequently occur in construction projects and the 7 related stakeholders were identified from literatures and experts screening (Research activity 4). Then the questionnaire was developed and improved by pilot study (Research activity 5). After the formal data collection, the questionnaire data was analyzed by the two-mode SNA methods performed by Netminer 4 and Tnet in R platform (Research activity 6 & 7). By illustrating the dynamic stakeholder power distributions, the results showed the powerful hierarchies of different stakeholders, as well as the fluctuations along project stages and over different dimensions (Research objective 2).

Third, an interview survey was conducted for investigating stakeholders' mutual influences on social responsibility implementation. The interview protocol was developed and pretested before formal survey (Research activity 8). Then 17 in-depth semi-structured interviews were conducted for better understanding what strategies

multiple stakeholders use to influence others (Research activity 9). After transcribing all the interview recordings (Research activity 10), sematic analysis by Leximancer was used to automatically generate insights from the transcriptions (Research activity 11). The results showed the strategies and tactics that different stakeholders adopted, as well as the determinants of these strategies. A stakeholder influence map on social responsibility was also depicted based on the findings from interview survey (Research objective 3).

Fourth, the operational framework for stakeholder collaboration in construction projects was developed by design research in this stage based on the findings from the questionnaire and interview survey. Assumed from the questionnaire findings, the stakeholder power index was designed as the determinant for stakeholder' involvement level in the SRIs (Research activity 12). Based on the interview results, the stakeholder influence index was designed as the determinant for the choice of influencing strategies on the SRIs (Research activity 13). At last, the framework steps were developed for integrating the two indexes for facilitating stakeholder collaboration on social responsibility (Research activity 14).

Fifth, a case study on real project was implemented to validate to what extent the framework can improve stakeholder collaboration on social performance. The case study plan was developed before entering the field (Research activity 15). After communicating with the coordinators in the case project, the case study was conducted following the case study plan (Research activity 16). At last, the framework was validated by the satisfactory results by the feedbacks from the participants (Research objective 4).

3.7 Summary of the Chapter

This chapter illustrates how the author develop the systematic research design including the philosophical foundations, the research strategies, and the detailed data

collection and analysis methods for arriving the research objectives proposed in Chapter 1. This research was explorative, descriptive, and prescriptive in nature and adopts mixed qualitative and quantitative research methods. Five research strategies adopted in this research form the whole research processes, including literature review (Chapter 2), questionnaire survey (Chapter 4), interview survey (Chapter 5), Design science (Chapter 6), and case study (Chapter 7).

CHAPTER 4 STAKEHOLDER POWER ON THE SOCIAL RESPONSIBILITY ISSUES

4.1 Introduction

The literature review revealed that stakeholder power structures need to be firstly clarified for achieving social responsibility collaboration. Therefore, a questionnaire survey was conducted among construction practitioners for investigating the stakeholders' dynamic power over the 35 social responsibility issues over the project lifecycle. This chapter elaborates the findings from analysis of the questionnaire data for illustrating the stakeholders' power distribution on different social responsibility issues. Initially, section 4.2 reports the overall power status of seven stakeholders by illustrating their network centralities. The degree centrality shows the direct power status possessed by stakeholders; the closeness centrality shows the appealing power to seek for supports from all the other stakeholders; the betweenness centrality stands for the intermediating role between other stakeholders. Next, the stakeholder-SRI network was visualized in section 4.2.2, as a mapping of stakeholder power distributions on different social responsibility issues. Based on the results, the seven stakeholders are categorized into five power hierarchies. Section 4.3 describes the dynamics and heterogeneity of stakeholders by analyzing the power fluctuation over project lifecycle, and power variations on different social responsibility dimensions. At last, section 4.4 presents the analysis of stakeholder power and interest gaps on social responsibility issues. Section 4.5 discusses the main findings from the questionnaire survey.

4.2 The overview of stakeholder power

4.2.1 The network centralities of the stakeholders

According to the two-mode network centrality formulas in Chapter 3, the centralities of the 7 stakeholders on the overall 35 social responsibility issues were obtained (see Table 4-1). In the table, the stakeholders are ranked from the highest degree centrality to the lowest. According to the classification of the internal and external stakeholder groups stated in section 2.3.2.1, the seven stakeholders can be divided into: 1) internal stakeholders: developers, main contractors, consultants, and end users 2) external stakeholder group: governments, district councils, and NGOs.

The analysis on the centralities showed governments had the highest scores in all three centralities, which implies governments have highest direct power (d.c. 3.850), as well as the most powerful to call for cooperation from other stakeholders (c.c. 1.195), and at the center role to intermediating between other stakeholders (b.c. 1.373). Among the external stakeholders, district council had the second highest centralities (d.c. 3.072). The rest of the external stakeholders all had low power on social responsibility issues, including NGOs (d.c. 2.927), and end users (d.c. 2.732).

Among the internal stakeholders, the network centralities of developers and main contractors were highest (d.c. 3.494 and 3.353), implying they have considerable power on implementing social responsibility issues in construction projects. Compared to them, consultants have relative weaker power (d.c. 3.001). For all the three centralities, the overall rankings of the stakeholders' power status were the same. Compared with the closeness and betweenness centralities, degree centrality is easier to interpret as stakeholder's direct power over all the social responsibility issues. Therefore, the following analysis used degree centrality to discuss the dynamic changes of stakeholder power status.

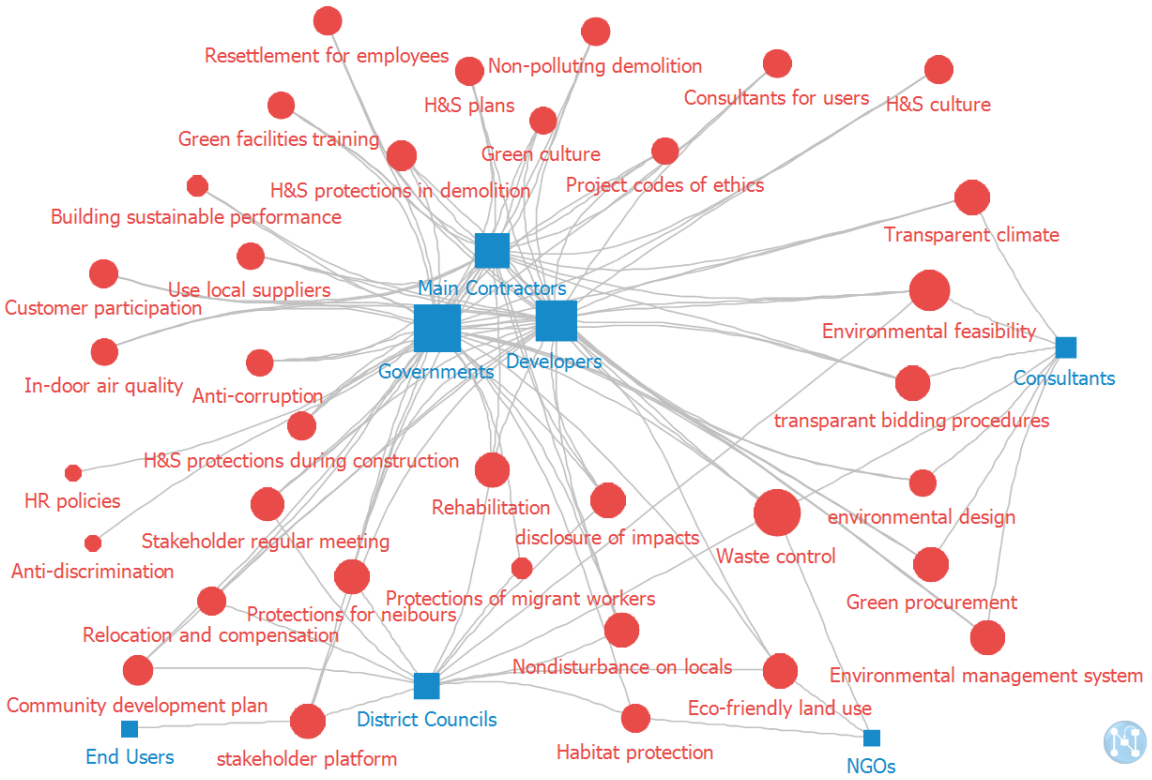
Table 4-1 the network centralities of the stakeholders

Stakeholders	Degree centrality (d.c.)	Closeness centrality (c.c.)	Betweenness centrality (b.c.)
Government	3.850	1.195	1.373
Developer	3.494	1.101	0.044
Main contractor	3.353	1.056	0.044
District council	3.072	0.984	0
Consultant	3.001	0.963	0
NGOs	2.927	0.943	0
End user	2.732	0.889	0

**Source from author data analysis*

4.2.2 Visualization of the stakeholder-SRI network

The stakeholder-SRI network was generated using the spring embedding graph layout algorism by Netminer as introduced in section 3.4.3.2 (Figure 4-1). The network displays the global view of stakeholder power distribution on the social responsibility issues. The nodes sizes represent the degree centralities of nodes. The red round nodes represent social responsibility issues, which sizes mean sum of stakeholders' power over them. The blue square nodes represent the stakeholders. The bigger sizes mean the stakeholders have stronger power status. The links are present between the stakeholder and social responsibility issues nodes, when the power relations are higher than the average score. The layout of the links and nodes was only produced for optimal visualized presentation, while the distances and locations had no meanings. The links were bundled to reduce the overlapping lines and enhance readability.



**Generated by Netminer based on author data analysis*

Figure 4-1 the two-mode stakeholder-SRI power network

According to Figure 4-1, governments, developers, and main contractors have power relations with almost all the social responsibility issues, which mean all social responsibility issues require the involvement of at least one of these three stakeholders. Among these three core stakeholders, the government node was exclusively associated with two social responsibility issues, which were developing human right policies and anti-discriminations. It showed that governments have exclusive power on human right issues. Apart from the three core stakeholders, the rest stakeholders each have different roles to collaborate on some special social responsibility issues. For example, waste control in projects was controlled jointly by the three core stakeholders, consultants, district councils, and NGOs. These stakeholders have their unique roles and resources on controlling the project waste in different ways. And habitat protection was linked with governments, district councils, and NGOs. It means

the collaboration among these stakeholders is essential for successful protections of natural habitat from the damage of construction projects.

On some of the social responsibility issues, stakeholders' power is higher than on the others, such as waste control, environmental feasibility, transparent climate, stakeholder platform, green procurement, environmental management system, eco-friendly land use, disclosure of impacts, and rehabilitation. These social responsibility issues mostly require the collaboration of multiple stakeholders, because most stakeholders have high power over them. Some issues are only controlled by several key stakeholders or single stakeholder, for example, the protection for migrant workers, the sustainability performance of buildings, and the human right issues.

4.2.2 The stakeholder power hierarchy

The stakeholder-SRI network provided not only the global view of stakeholder power distribution, but also the hierarchy of stakeholder power status. The three most powerful stakeholders in the center of the network—governments, developers, and main contractors—formed the core authority, had high power over almost all of the social responsibility issues. The remaining stakeholders, with relatively smaller nodes, had power with regard to limited scopes of the social responsibility issues. Table 4-2 shows the hierarchical power status of the stakeholders. The three core stakeholders constitute the first tier of powerful stakeholders, and they had power on all of the social responsibility issues. The second tier of powerful stakeholders contained district councils only. As representatives of communities, district councils have power on most community issues, including making community development plan, relocation and compensation, protections for neighbors, non-disturbance on locals, and rehabilitation after demolition. They also have power and obligations over some environmental and human right issues such as stakeholder platform, regular meetings, project impact disclosure, waste control, protection of migrant workers, and habitat

protection. Consultants belonged to the third tier of powerful stakeholders. They possess technical and professional knowledge to influence on environmental design, environmental management system, environmental feasibility, and green procurements. Meanwhile, consultants also have power on controlling transparent bidding procedures, and develop the transparent climate in projects based on their professional management knowledge and experiences,. The NGOs, at the fourth tier, were less powerful stakeholder. The social responsibility issues that NGOs have strong power over were mostly related to environment and ecology, including habitat protection, eco-friendly land use, and waste control. End users were at the fifth tier, representing the least powerful stakeholders on social responsibility issues. Their power lies only on driving the development of stakeholder platforms.

Table 4-2 the stakeholder power hierarchy

Power hierarchy	Stakeholders	The social responsibility issues that under power
1st Tier	Governments; Developers; Main contractors	All the issues
2nd Tier	District Councils	Community development plan; Relocation and compensation; Protections for neighbors; Non-disturbance on locals; Rehabilitation; Stakeholder platform; Stakeholder regular meeting; Protections of migrant workers; Disclosure of impacts; Waste control; Habitat protection
3rd Tier	Consultants	Transparent climate; Environmental feasibility; Transparent bidding procedures; Waste control; Environmental design; Green procurement; Environmental management system
4th Tier	NGOs	Habitat protection, Eco-friendly land use; Waste control
5th Tier	End users	Stakeholder platforms

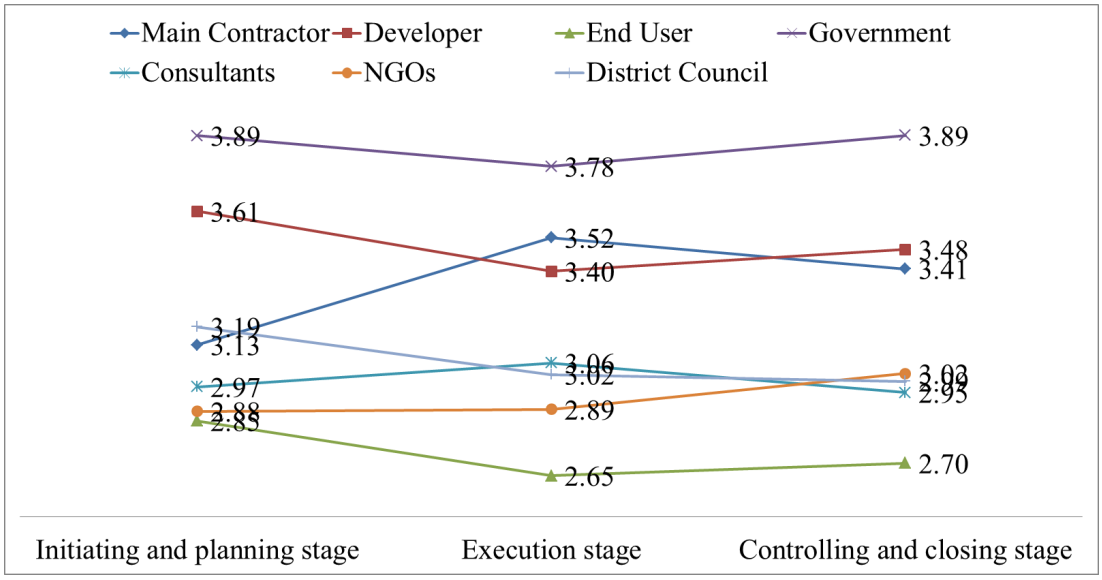
**Developed based on author data analysis*

4.3 The dynamic and heterogeneity of stakeholder power

4.3.1 from the perspective of project lifecycle

From the lifecycle perspective, stakeholders' power status fluctuated over projects' different stages (Figure 4-2). Mitchell et al. (1997)'s stakeholder salience theory supports the proposition that stakeholder power is not a constant variable. This changing power adds credibility to the arguments of Missonier and Loufrani-Fedida (2014) that the influence of stakeholders is emergent and dynamic over the life of a project. The social responsibility issues identified in this research were divided into three project stages, including project initiating and planning stage, execution stage, and at last, controlling and closing stage. The fluctuations of stakeholder power were found by analyzing the stakeholders' degree centralities over the social responsibility issues in these three project stages. Among the three core stakeholders, governments and developers had highest power during the project initiating and planning stage. This result corroborates the conclusion of Shen, Tam, et al. (2010) that governments and owners play significant roles during a project's inception and design stage. Governments are recognized as powerful in determining project approvals and establishments. Developers have the power to incorporate social responsibility requirements in the design and tendering stages. However, governments' and developers' powers gradually decreased after construction stage begins, while main contractors became the most dominant stakeholders in the project execution stage. Main contractors are the commanders in the construction process and they control the operations on site, executing the project and coordinating many of the most important resources. Among the powerless stakeholders, district councils held relatively more power than the others because they act as the communication bridge between the government and the local residents. District councils are able to effectively raise demands on behalf of their residents during the early stage when the government dominates. It is interesting to note that the power of NGOs gradually increased as the

power of the district councils decreases, thereby showing a complementary effect between formal and informal community powers. This complementary relationship also disproves the proposition that the power of all the weak external stakeholders decreases as the project proceeds (Aaltonen & Kujala, 2010). The power lines of consultants and end users revealed large gaps during the project execution stage. Consultants are powerful on safeguarding end users' rights. They can avoid possible risks of harm in project designs and to supervise the construction process. End users average power was ranked at the bottom. One possible reason is because the public in Eastern countries is less likely to participate in construction projects owing to the traditional culture of compliance (Li et al., 2012).



**Developed based on author data analysis*

Figure 4-2 the fluctuations of stakeholder power over project lifecycle

4.3.2 from the perspective of social responsibility dimensions

According to section 3.4.3.2, the 35 identified social responsibility issues also fell into seven social responsibility dimensions including: organizational government (OG), human rights (HR), labor protection (LP), environment (En), fair operation (FO), customer issues (CI), and community involvement and development (Co). The

stakeholders' different profiles of specialties and weaknesses were revealed by analyzing the stakeholders' network centralities over the social responsibility issues under the seven dimensions (see Figure 4-3). According to Figure 4-3, governments had the exclusive power over human rights issues, which is a weak spot for all the other stakeholders. Except for governments, only district councils and NGOs have slight advantage on the human right dimension. Because district councils take charge of protecting benefits of communities, they also have power advantages on the community dimension. As the defender for the public and natural environment, NGOs' profile showed strength on environmental protection dimension.

Among the internal stakeholders, contractors exhibited prominent strong power advantage over labor protection dimension. Compared with other stakeholders, developers had superior power on almost all dimensions, particularly on community development and organizational governance, fair operation, and environmental issues. As the provider of technical knowledge, consultants had higher power on the environment issues, fair operation, and organizational governance. At last, as the end consumers, end users have power advantage on customer issues.

Comparing the power profiles with the stakeholder interest matrix built by the World Business Council for Sustainable Development (WBCSD), several gaps were detected between stakeholders' interests and the areas they have power over. For example, government interest in business operations was weak; however this study revealed it had supreme power on organizational governance dimension. By contrast, NGOs have an interest in all social issues, but from the questionnaire data they have limited power on all the seven dimensions. The substantially powerful stakeholders, namely, developers, showed no interest in areas which they had power over, such as the environment, human rights, and governance. These gaps between stakeholders' interests and their power attracted the attention of author, which also informed the further explorations on comparison analysis in the next section.

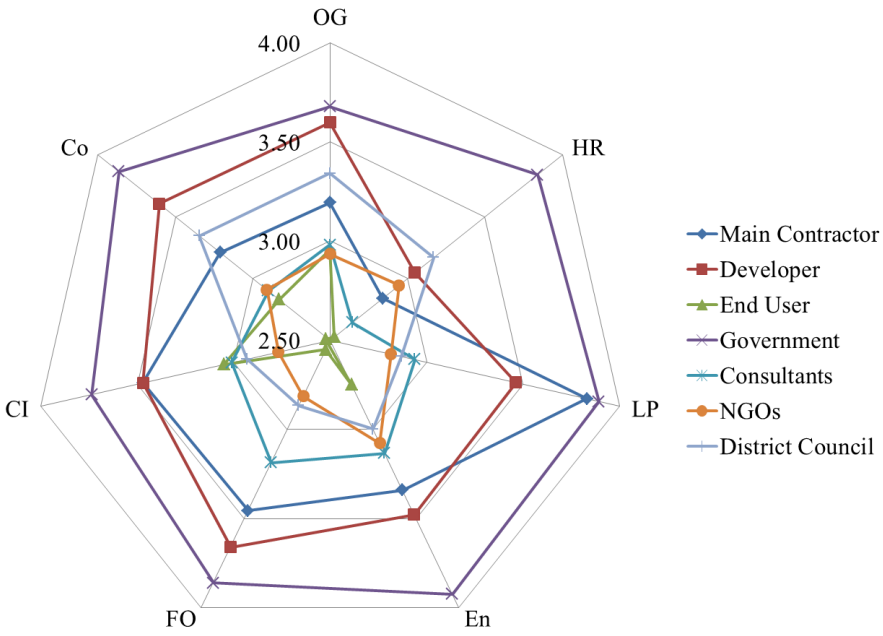


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Figure 4-3 the profiles of stakeholder power on different dimensions

4.4 The gaps between stakeholder power and interest

4.4.1 The comparison of the average power and interest

Besides discussing stakeholder power distribution, another question tackled in this questionnaire survey was whether stakeholders have same interests on what they are capable of. Figure 4-4 shows the comparisons between stakeholders' average power and interest. The blue area shows the degree of stakeholders' average interests. The purple area shows stakeholders average power. In general, the stakeholders' average interests were higher than the average power, indicating stakeholders have positive attitudes on social responsibility issues. However, the lack of adequate power implies most stakeholders with interests have not enough power to launch social responsibility initiatives. The stakeholders' interests on the 35 social responsibility issues reveals that much attention has obviously been devoted on the labor protection, environment issues, customer issues, and community development, whereas limited attention was devoted

on the organizational governance, fair operation, and human right. This result corroborates with that of an studying about UK construction companies, where health/safety and environmental issues are currently the social responsibility hotspot in construction organizations, whereas less concern are devoted on internal governance (Jones et al., 2006). The disparities between interest and power varied significantly among the seven social responsibility dimensions. The issues about labor protection, environment, fair operation, and customers had a significant gap between higher interest and lower power. The result is reasonable because HK government put construction health and safety as the top focus of industrial legislation. Moreover, HK is one of the leading transparent markets in the world (ranked 17th out of 175 countries in corruption perception index in 2014). This shows that the legislation of local government highly influences the construction organizations' emphasis on social responsibility. The high interest and low power demonstrate that these social responsibility issues are beyond the ability of individual organizations and require joint engagement of multiple stakeholders (Bendell et al., 2010; Savage et al., 2010). By contrast, there were some issues that stakeholders have more power compared with their interest, including disclosure of projects impacts, stakeholder meeting, employee resettlement after project closing, and environmental feasibility. On these issues, more concerns and resources should be invested because stakeholders have the abilities but currently neglect their responsibility on these issues. The neglect of responsibility is because these issues may cause extra costs and risks but without adequate paybacks. Some issues, like disclosure of project impacts, may also bring negative influences on organizations.

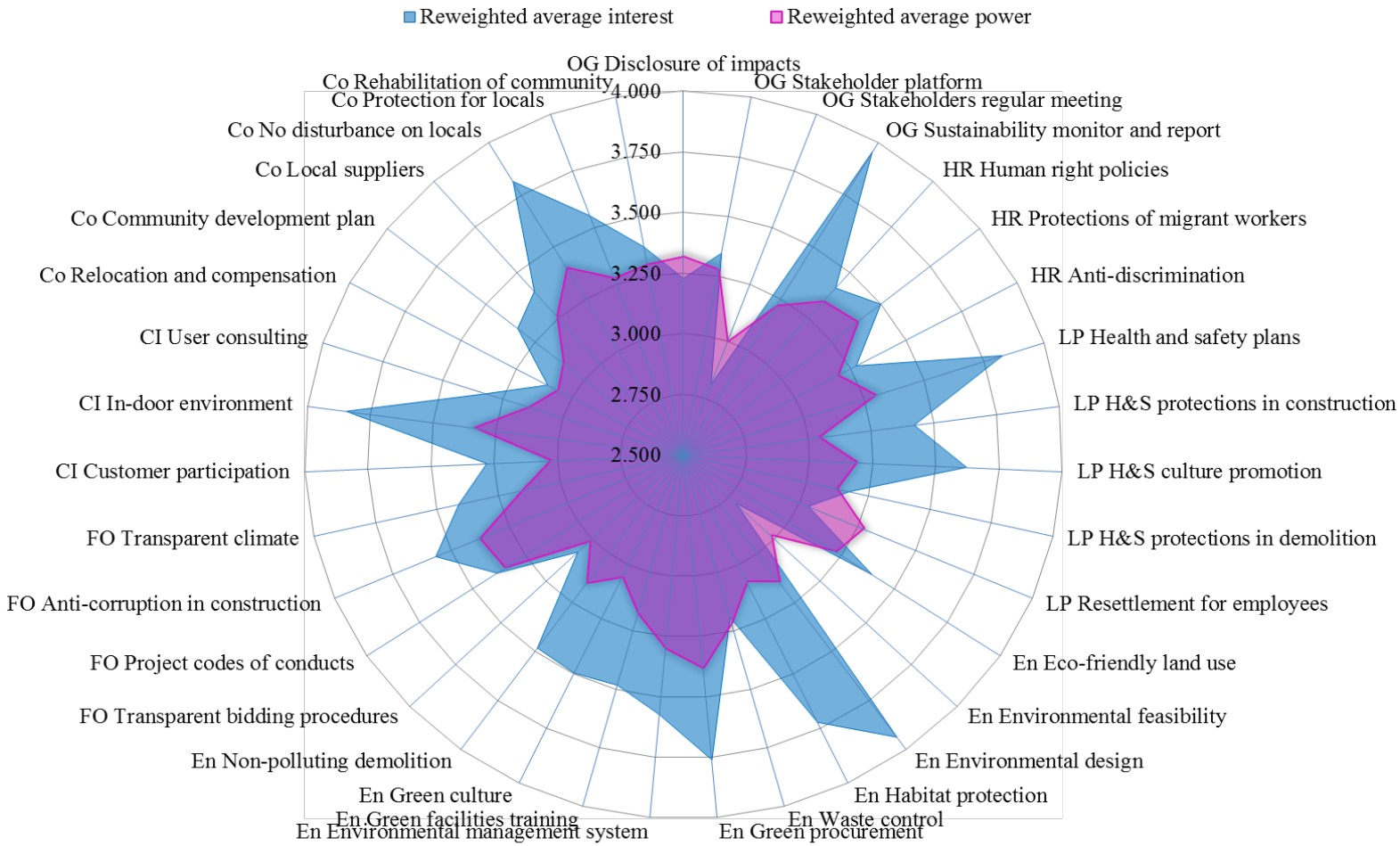

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Figure 4-4 the comparison of stakeholders' average interest and power

4.4.2 The power-interest gaps of four stakeholder groups

For revealing the detailed power-interest gaps, paired t-tests were employed to analyze differences between power and interest using the questionnaire data. Four stakeholder groups were mainly focused, including main contractors, developers, governments, and consultants. Table 4-3 shows the results of the paired t-test of power and interest of the four stakeholder groups.

The paired t-test showed that the difference between the main contactors' interest and power was statistically significant ($t = 0.130$, $p = 0.000$), indicating that the mean of main contractors' interest was significantly higher by 0.130 than the mean of the main contractors' power. Main contractors are one of the core project team members, and they take charge of the most essential processes in the project lifecycle. Most social responsibility issues in construction projects will not be successful without the effective engagement of the main contractors. However, this significant difference between power and interest shows that, in Hong Kong, although main contractors are important, their power is not enough to initiate and implement the social responsibility issues that they are interested in.

The result of the paired t-test on developers subgroup showed that the mean of developers' interest was not significantly different from the mean of their power ($t = -0.027$, $p = 0.574$). The developers' power is slightly higher (mean = −0.027) but not statistically significant. Developers generally play a powerful role in construction projects because they can directly raise their demands in bidding documents or contracts, as well as the social requirements of the construction outcomes. This finding indicates that developers' interest on social responsibility issues and their power are approximately consistent, which means developers are fully aware of their responsibilities and try to put efforts to fulfil them.

There existed a significant difference between the governments' interest and power ($t = -0.653$, $p = 0.000$). The mean of governments' power was higher by 0.653 than the governments' interest, indicating that the Hong Kong governments currently have insufficient concerns on social responsibility in construction projects compared to their power. Government departments set the baseline for social responsibility; therefore,

their power is undoubtedly high. However, this lack of attentions on social responsibility legislation possibly results in the lagging development of construction market in Hong Kong.

Fourth, the significant gap was detected between consultants' interest and power (t = 0.216, p = 0.000). Consultants' interest was greater by an average of 0.216 than their power, implying that consultant companies are more proactive and aggressive on social responsibility. Consultants possess the most advanced knowledge and techniques in improving project social performance. However, because consultants are normally under the command of their clients, implementing social responsibility initiatives without supports from developers is difficult. Consultants can only provide socially responsible alternatives for developers to decide, such as green building design or more resource efficiency techniques.

Table 4-3 the paired t-test gaps between power and interest

	Paired Differences interest-power					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Main contractors	0.130	1.373	0.032	0.067	0.193	4.028	1819	0.000
Developers	-0.027	1.087	0.047	-0.120	0.067	-0.562	524	0.574
Governments	-0.653	1.468	0.064	-0.779	-0.527	-10.199	524	0.000
Consultants	0.216	1.361	0.039	0.140	0.293	5.563	1224	0.000

**Developed based on author data analysis*

4.5 Discussions of the findings

4.5.1 Social responsibility need internal and external collaboration

Based on the proximity of stakeholders relationships with projects, stakeholders can be divided into the direct-internal-contractual and the indirect-external-public groups (Aaltonen & Kujala, 2010; Zeng et al., 2015). From the stakeholder-SRI network analysis, it can be concluded that all stakeholders have their unique power and the

corresponding responsibilities on implementing social responsibility issues. Therefore, all the internal stakeholders and external stakeholders who have abilities to influence should jointly participate in implementing social responsibility issues. The previous research mainly focused on internal stakeholders such as major contractors and developers companies, while underestimated the influence of external stakeholders (Huang & Lien, 2012; Jones et al., 2006). In contrast, it was found in this study that the external stakeholders had their indispensable power on some social responsibility issues. For example, district councils have power over most community issues, and many environment and human right issues. NGOs are main defenders in waste control, eco-friendly land use, and the habitat protections. End users have significant role to the success of stakeholder platform development. Besides the legitimacy associated with their roles of customers, end users also have the potential to withholding purchase as the source of power. Because social responsibility issues are mostly philanthropic and altruistic in nature, the driving power from external stakeholders is important and indispensable. The external pressures such as public policies and mass media are demonstrated as indispensable in facilitating social responsibility when companies shall not voluntarily engage themselves (Bovaird, 2005; Steurer, 2010). Lately literatures are also beginning to show the scholarly and political attentions for the collaboration among public and private sectors on social responsibility issues (Bendell et al., 2010; Bryson et al., 2006; McDonald & Young, 2012). Compared with intensive attentions putting on internal project stakeholders, the power and influences of external stakeholders are also important especially on the social issues (Aaltonen & Kujala, 2010; Aaltonen & Sivonen, 2009).

4.5.2 The distribution of stakeholder power

4.5.2.1 The core three stakeholders

There is a common misunderstanding in general perceptions that all internal stakeholders have strong power to influence project objectives. It is not the case of social issues because this research found that the most powerful stakeholders on social responsibility include both internal and external stakeholders. They are governments, main contractors, and developers. As external stakeholders, governments are the most powerful stakeholders to put forward social responsibility issues because they have

the direct institutional legitimacy to enact policies to encourage good behavior and penalize misconducts. Developers play a key role in initiating social responsibility issues because they possess the firsthand power to elicit requirements and bear the additional costs. Main contractors have power to put the social responsibility initiatives into practices because they control the coordination of resources and activities in construction process. The power of the three core stakeholders not only generate from their abundant resources, but also from their central positions in network to interact with others. Maignan et al. (2002) points out that the power of stakeholders on social responsibility is not only determined by resources, the ability of stakeholders to communicate with others to coordinate their advocacy is also vital. This explanation is in conformity with resource-dependence and structural power theories indicating that the sources of stakeholder power are from both critical resources and network positions (Emerson, 1962; Rowley, 1997).

However, the three core stakeholders' powers are not consistently high during project lifecycles, which conforms to the emergent and dynamic nature of construction projects (Aaltonen & Kujala, 2010; Missonier & Loufrani-Fedida, 2014). The results indicated that the governments and developers had the highest power in project initiating and planning stage. Their power decreased significantly in project execution stage. This result corroborates with the conclusion of Shen, Tam, et al. (2010) that governments and owners play significant roles during a project's inception and design stage. In contrast, main contractors had nearly no involvement in project planning stage, especially in traditional design-build projects. But they became the commanders in the construction stage because they control the operations on site, executing the project, and coordinating important resources. The specialty of contractors on health and safety issues in construction projects was also evidently observed from the results. This is because main contractors manage the most dangerous phase, the construction process; they have the vital role in preventing the employees, neighborhoods, publics from the health and safety risks emerging from construction activities. Consultants have advanced knowledge and valuable experiences on environmental design, sustainable materials, and advanced techniques, therefore have potential power to give advices from professional perspective. Although consultants have significant role on proposing advices in projects, they don't have adequate power to implement them in

projects because they need to obey the decisions of their clients (Othman, 2009).

4.5.2.2 The defender for the public benefits: District councils and NGOs

No research has shown attentions on the role of district councils on social responsibility in construction projects. District councils are regional consultant organizations representing for benefits of local communities in eighteen regions in Hong Kong. District councils are not governmental departments; they are comsisted of community committees. Community power has been addressed in previous literatures as an important part of external pressures for social responsibility (Boehm, 2002; Thornton & Leahy, 2011). District councils are obligated to defend the interests of local communities, so they have the legitimate power to supervise construction projects working under their regions. They act as the communication bridge between governments and local residents. The research findings showed that district councils have considerate power to advocate social responsibility issues in construction projects.

NGOs are regarded as one of the most important driving force for social responsibility introduction and implementation (Doh & Guay, 2006; Jamali & Keshishian, 2009; Thijssens et al., 2015). In Hong Kong, there are numbers of NGOs for almost every social issue with different scales and influences. However, it was noted from the results that NGOs in Hong Kong have generally limited power on social responsibility issues in construction projects. This may be due to the individual power of NGOs are small, but through lobbying governments and big corporates their claims can be strengthened (Frooman, 1999; Hendry, 2005). Another interesting point is the power of the district council decrease along project lifecycle, while the power of NGOs increases in contrast. Unlike secondary stakeholders' power often decreases along project proceed Aaltonen and Kujala (2010), district council and NGOs have complementary powers along project stages. District councils can raise the community and environmental concerns in project initiating and constructions stages. NGOs can continuously monitor the project social and environmental influences after key stakeholders exit from projects.

4.5.2.3 The inadequate end users' power

In social responsibility research in general management field, the roles of consumers

are regarded as significant (Alberg Mosgaard et al., 2016; Henriques & Sadorsky, 1999; Sharma & Henriques, 2005). Because they create demands for social responsibility products by using abilities to withdraw money for unsatisfactory performance (Henriques & Sadorsky, 1999). However, it was found from the results that end users were ranked at the bottom in power hierarchy in construction projects. It revealed that although in Hong Kong the public participation are highly emphasized by the governments, the public power is still inadequate to effectively express their requirements on social responsibility. Li et al. (2012) indicates that public in eastern countries is less likely to engage in project decision makings owning to the traditional culture of compliance. This calls for a development of communication channels or stakeholder platforms for project users to put forwards their demands.

4.5.3 The interest-power gaps

The project stakeholders' diverse interest and power have been noticed by some scholars (Olander, 2007; Olander & Landin, 2005), however, their attentions are mainly focused on giving priorities to stakeholder with high power and/or interest. According to (Olander, 2007), companies can make responding strategies, such as manage closely with the stakeholders with high interest and power, keep satisfied the stakeholders with high power and low interest, keep informed the stakeholders with high interest but low power, and keep monitoring the stakeholders without power and interest. This research used an innovative perspective to find out gaps between stakeholder interest and power.

The comparisons between stakeholders' average interest and power revealed that, generally, stakeholders' interests are higher than their power on social responsibility issues, showing the demands for collaboration and joint efforts. On some social responsibility issues, for example labor protection, fair operation, customer issues, and environmental issues, stakeholders had higher interest than power, which means stakeholders are already realized these challenges, but individual stakeholder's ability is not enough to successfully complete these issues. In contrast, on some other social responsibility issues, including disclosure of projects impacts, stakeholder regular meeting, the resettlement for employees after project closing, and environmental feasibility, it was found that stakeholders had less interest than power. It means the

project stakeholders are reluctant on implementing these issues, therefore, the incentives to motivate stakeholders are especially needed.

The results of paired t-test analysis showed that contractors and consultants had higher interest than power. Although their commitments to implement social responsibility are high, they have not enough competence to implement these issues. Developers, in contrast, have enough power and considerate interest on social responsibility issues, because no significant difference was found between their power and interest. However, as the most powerful stakeholder, governments were found with inadequate interest on social responsibility issues. Hong Kong governments should devote more legislation concerns on social responsibility issues in construction projects.

4.5.4 The determinants of stakeholder engagement levels: power and interest

Proper stakeholder engagement is beneficial on social responsibility issues. However, the key question to ask is how to decide the extent to which stakeholders should become engaged. A few studies have identified power as one of the dominant predictors of stakeholder's abilities to influence a project's objectives (Leung et al., 2013; Prado-Lorenzo et al., 2009). With sufficient power, stakeholders can "alter social and political forces, as well as their capacity to influence project objectives, obtain resources from the community, and maintain social relationships" (Leung et al., 2013, p. 2).

However, it was found from the questionnaire analysis that stakeholders do not have the equivalent power and interest on the social responsibility issues. Based on the foregoing, the engagement levels of stakeholders in implementing social responsibility should be related to their power, because power represents the capacity of stakeholders to raise the initiatives and influence others to follow. Stakeholder interest, as the intrinsic intentions, should also be considered. Interest stands for the probability that stakeholders would like to put the social responsibility issues into practices (Bourne & Walker, 2005). It is depended on different organizations types, commitment to society, leadership styles, organizational cultures, backgrounds, management strategies, etc.

Due to the identified gaps between stakeholders' interest and power, it can be assumed

that the engagement levels of stakeholders cannot be only determined by power or interest only. It is commonly agreed that the interested stakeholders may not have enough power to exert their wills, while the powerful stakeholders can be reluctant to fulfil their responsibilities. Therefore, based on the discussion, the proposition can be obtained in this study:

Proposition 1: stakeholder engagement levels on social responsibility issues in construction projects are determined by both stakeholder's power and interest over the issues.

4.6 Summary of the chapter

This chapter reports the analysis results of the questionnaire data. The findings and discussions in this chapter provide a better understanding on dynamic stakeholder power on complicated social responsibility issues. By this point, the second research objective has been achieved. The related research gap was also filled about no empirical findings has been obtained for evaluating the stakeholder dynamics in construction projects. Because the findings in this chapter show stakeholders have different power on dealing with different SR issues, which provide empirical evidence to the argument that collaboration among multiple stakeholders is indeed needed. Because the gaps were found between stakeholder power and interest, the demand was revealed that stakeholders need to be advised on which social responsibility issues they should put in priority. The findings showed that due to the different power, unique roles are associated with internal and external stakeholders on implementing social responsibility issues. It informed the following study on how stakeholders with different power can exercise their influences on each other. Moreover, the first proposition in this study was proposed in this chapter from the discussing of questionnaire data.

CHAPTER 5 STAKEHOLDER INFLUENCES ON SOCIAL RESPONSIBILITY

5.1 Introduction

After investigating the dynamic power of stakeholders, the next question to be answered is what behavioral strategies and tactics that stakeholders use to influence others on social responsibility issues. According to the literature review, current stakeholder influence research mostly concentrates on dyadic stakeholder relationships around a focal organization. In this chapter, an interview survey was conducted to reveal multiple stakeholders' inter-influence flows on social responsibility in construction projects. The collection and analysis of interview data were described in Chapter 3. This chapter reports the analysis results by the text mining software Leximancer. First, in section 5.2, the concept map automatically generated by Leximancer was presented, using which the identified themes and their relationships were explained. Next, in section 5.3, using this interactive concept map, the excerpts that related to stakeholder influence were extracted and interpreted. Section 5.4 concluded and discussed the main findings from the analysis of the interview data: 1) Stakeholders' influencing strategies and tactics were revealed from the interviews. 2) A stakeholder influence map including all the internal and external stakeholders was developed to provide a holistic picture of stakeholder influences. 3) The determinants that stakeholders choose aggressive and/or cooperative strategies to influence were identified.

5.2 The concept map by Leximancer

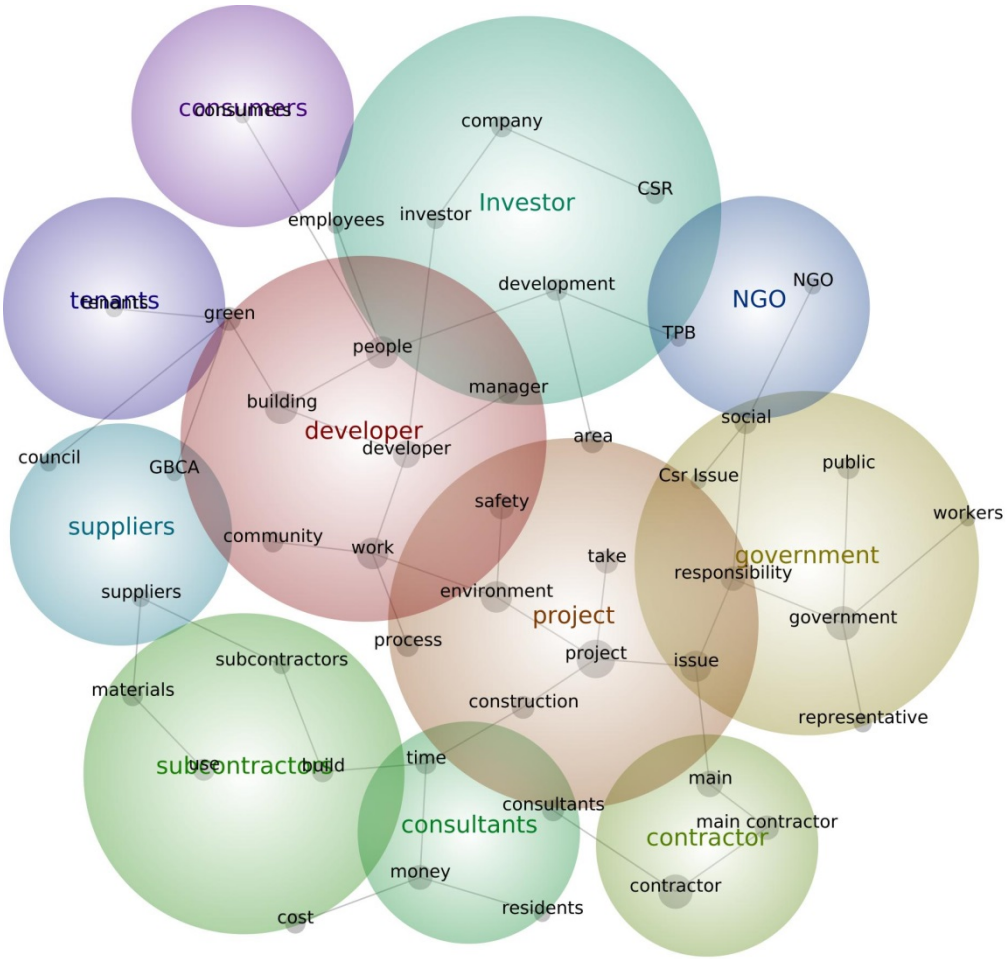
The concept map generated by Leximancer is shown in Figure 5-1, in which 14 themes are automatically clustered based on the algorithm of concepts' frequency and co-occurrence. The links and distances in the concept map stand for semantic relationships between two concepts. The list of all themes, and the included concepts, appear on the concept map are listed in Table 5-1. The intensity of the themes means

the frequency the interviewees mentioned the concepts included in the themes. From the different color of the themes from the concept map, the theme of project is the most heated themes in the map, following by the themes of government and main contractor, consultant, project, and public. It can be found that the government and main contractor are the most frequently mentioned stakeholders during the interviews. Some stakeholders are rarely mentioned in the interviews, for example, the tenants, residents, workers, and consumers. But for obtaining more comprehensive map of stakeholders' influences on social responsibility implementation, these stakeholders are also included for further interpretations. The connections between different themes also shows the semantic structures embedded in the interview transcriptions. For example, the theme of developer is associated frequently with cost, investor, subcontractor and supplier themes. The government and main contractor theme is surrounded by the consultant, project, and public themes. And the theme of NGOs is near community, residents themes.

Table 5-1 the themes and concepts identified from interview transcripts

Themes	Concepts	Intensity
Project	Project; environment; take; construction; issue; process	263 hits
Developer	Developer; building; people; manager; community; work; green	259 hits
government	Government; responsibility; public; representative; CSR issue; social; issue, workers;	221 hits
Contractor	Contractor; main contractor; main	182 hits
Subcontractor	Subcontractors; materials; use; build; cost	166 hits
Consultant	Consultants; money; time; residents	164 hits
Investor	Investor; company; development; CSR; employees	97 hits
Supplier	Suppliers; GBCA; council	53 hits
NGO	TPB; NGO	40 hits
Tenants	Tenants	38 hits
Consumers	Consumers	18 hits

**Developed based on author data analysis*



**Generated by Leximancer based on author data analysis*

Figure 5-1 the concept map generated by Leximancer

5.3 The interpretations of the interview excerpts

5.3.1 Communities and the public

From the interviews, the awareness of communities and the public on social responsibility issues arises when their benefits are at risks, such as threatening their health and safety problems, pollutions, noises, and other risks. Communities or the representative organizations often organize multi-party meetings to discuss these concerned issues regarding the projects activities. Stakeholder collaborations can be achieved by gathering all parties in one room and putting the issues on the table for discussion.

"Sometimes they (the community representatives) call for a meeting. It often

include the government party, then our engineering representative, the main contractor, they all sit down with them, talking about the issues, what they want. But at such moment, the main contractor will keep quiet. Because they would like to listen to the governments' decisions." (Inter.8, developer)

When the issues become urgent and the benefit of communities or the public are under major threatens, communities and the public's legitimacy to raise their complaints are also increased. Under such occasions, the strategies that are applied to draw attentions from governments or project leaders are more aggressive, for example complaint, report, or protests.

"They (community representative) probably go for the telephone numbers around the site where you can just make a call and complain or raise their concern directly. The government will come back and say okay we've received these complains, what are you going to do about it?" (Inter.7, contractor)

"Near our project is a village, sometimes they have assigned just a village representative to complain the project is too noisy and dusty. They just only the representative come to our site and shouts all their complaints." (Inter.8, contractor)

5.3.2 Non-Governmental Organizations (NGOs)

NGOs possess expert resources including their professional knowledge and experiences regarding the focused issues. However, they need the collaborations from the governments to put their visions in practice by enacting relevant laws and regulations. Besides, the interdependency of NGOs and companies becomes increasingly important. In one hand, NGOs reply on companies' abundant resources, on the other hand NGOs can offer complimentary capacities, such as professional knowledge, experiences, network, and community trust, which can be critical in coping with the emerging social responsibility issues (Jonker & Nijhof, 2006). Therefore, under most conditions, NGOs adopt soft and cooperative strategies and for the share of scarce resources from governments or companies to realize their social objectives, such as lobbying, visit, emails, etc.

"Sometimes we receive emails from NGOs, sometimes they visit in person. They talk about donations, sometimes charity plans to build a school or care center. Here is a case. Once we collaborate with NGO to build a school in Malaysia. They propose the plan and we provided the design, workers, materials, and equipment. Some of our subcontractors they also offer what they have." (Inter.6, contractor)

Some initiatives launched by NGOs regarding their focused issues can inspire the industry to participate. The reason that companies are voluntarily involved is because they can networking and share experiences on sustainability with other industrial leaders. Meanwhile the value that the organizations delivered in such initiatives can also inspire the companies to show their commitments to the society.

> *"We've got a strong education program in environment sustainability and we still have a lot of events. So we have an annual conference. We have practices, launches, evening drinks, networking where we showcase what's working really well in the environment and provide opportunities for the industry to learn from their peers as well as safety in doing amazing work and then potentially being able to replicate with any new companies." (Inter.3, NGO)*

Cooperative strategy can also be found that NGOs voluntarily provide professional advises to developers, such as providing sustainable options and demonstrating the profitability of such options. They also provide training services in order to help developers marketing their buildings with green features.

> *"When green star community is launched we'll work with their developer to train their sales team around the messages that they could be talking about for the benefits that the green star ready is providing the people who buy the individual homes within that community." (Inter.3, NGO)*

However, when the issues become urgent, for example severe environmental pollution and ecological disturbance, NGOs gain urgency and legitimacy from their obligations to safeguard the society and environment. They will choose aggressive strategy to force governments and contractors to take desired actions or change misconducts. Contrast to Frooman and Murrell (2005)'s model that NGOs tend to pursue indirect strategies when the target organization is not dependent on their resources, NGOs still adopt direct strategy to push companies or governments when they have less economic power but more legitimacy and urgency on their advocacy.

> *"NGOs sometimes put some pressures on the government; they usually have not enough knowledge about the projects or constructions. They just come to the office wave the figures and ask why it is so much pollution." (Inter.1, government)*

Because of the week bargaining power in negotiation, coalitions with other powerful stakeholders are also a common tactic adopted by NGOs (Frooman & Murrel, 2003). Sometimes indirect influence may be more effective than direct strategy when the

influencing targets have no dependency on the NGOs and the communication channel is absent (Frooman, 1999). Through ally with powerful stakeholders, NGOs can obtain the power to exert aggressively propose their legitimate and urgent requests.

"Normal public or NGOs complain to government, and we tell the contractors to do the protections. We will bear the external pressures." (Inter.15, developer)

"NGOs often come together with representatives from district council, and sometimes the journalists. So it was big problems for us. If the NGOs have any problems, they will directly complain to the district council or government. Or they will directly complain to the head office on the project." (Inter.1, government)

5.3.3 Governments

Government is the most powerful stakeholder in regulating the market and sanctioning irresponsible behaviors. The legitimacy and authority to safeguard the environment and society are embedded in governmental departments through institutionalization. Governments can use aggressive strategy such as legalization and regulations to enforce some necessary measures in construction projects, for example, requiring environmental and social assessment, noise provisions, social responsibility report.

"For example in the shopping mall or shops the disabled access should be provided. With the regulations the investor will do according to the regulation Otherwise you can see a lot of old buildings in Hong Kong there are no disable access. Yes and the reason is they will have a disable access or toilet because of they need to do according to the law or regulations." (Inter.17, contractor)

"The government they set out regulations and rules and other stakeholders like developers and contractors they will follow the rules and do more than the baseline sometimes." (Inter.6, contractor)

"I know that housing department from several years ago enacted a regulation that all public housing projects must use BIM. In this way we push the application of BIM by contractors." (Inter.1, government)

"You know government want to know, the governments now have you regulatory reporting requirements and you need to show you're thinking of all those elements, health and safety, community, environment and your people." (Inter.9, consultant)

To coordinate complex stakeholders' interests and demands, and balance the benefit of local and the whole society, governments need to adopt cooperative strategies with

public and communities to alleviate the conflicts. Compensations and intermediation are normally the jobs of government departments to pacify communities and local residents in order to prepare for the projects. Sometimes conflicts will also happen after projects commencement, governments need to respond to those complaints, investigate the situation, negotiate with different parties, and intermediate the tension relationships between community and the projects.

> *"Government will also use NGOs to communicate with local people. NGOs will ask whether they have any problems or need any help. Like there is a NGO for old people care in area we plan to develop. Many old people they don't want to move away from their home. Then government and developer decide to build a modern and cozier recreational center for them to host some elders and hold activities in another place. Then NGO help the government and developer to communicate with the elders in the community." (Inter.2, Planning authority)*

Construction projects, especially in urban area inevitably exert influences on local lives. In view of the holistic urbanization plan, construction projects may bring long-term benefits to people and social development. In order to consider public demands in projects, government often holds public engagement gatherings to negotiate and balance the benefit of multiple parties.

> *"We hold public engagement workshops many times since 2008 involving NGOs, stakeholders, and community representatives." (Inter.1, government)*

> *"Government they don't mind a regular meeting to be set up monthly or half year. Then let the representatives talk to them any improvement or any suggestion… They can hear their voice, what they want, is it can be executed or not, if not, explain to the representative why. Then the representative can have understanding on their suggestions and complaints are reasonable or not." (Inter.17, contractor)*

5.3.4 End users

The purchase behavior of end users can drive social responsibility collaboration in projects. Because their demands will become the motivations for developers to incorporate the social responsibility in project design, and transfer to contractor and subcontractors in construction supply chain.

> *"So they create the demands for green. I only want to be in green building. When you've got that, then the developers have to react to that, when the developer reacts to it, then the suppliers have got to react to it , and all the*

way through." (Inter.16, developer)

Sometimes if the companies' irresponsible behaviors are severe, aggressive strategies like protests and boycott were adopted by consumers. In construction projects, if the projects cause serious pollutions and have bad reputations, end users can exert the influence by refusing to buy or rent the building.

"Many tenants just wouldn't come to a building that didn't make the highest standard impacts because they want to be seen as achieving their obligations and their duties as well." (Inter.4, Investor)

"Build a big building on simple I think you need to make at least five stars because you want to attract the right type of tenants." (Inter.12, Developer)

5.3.5 Developers and Investors

Because developers and investors possess the most significant resources, they have the power advantage to manipulate the behaviors of contractors and subcontractors. They can easily drive contractors to consider social responsibility in projects by listing the issues in investment criteria or showing interests on the issues.

"Usually the client is a symbol for the client owns that community relationships…If we came to do something that client is not okay with and we wouldn't go ahead unless they wanted to as well." (Inter.11, consultant)

"These documents we've developed, so at the design phase when we engage in our architect and other consultants, we provide copies of all these and we entrench it contractually in the contracts to say, you know when you're designing this for…you must meet these requirements." (Inter.14, developer)

"The only influence that we can really have at the moment is with our contractor and the consultants. So, with the consultants, their main job for us on our projects is basically to incorporate ESG measures within their design. When this is specified materials making sure that they are you know comfort to the environment that the energy for showing them license and then designing a center that is going to work efficiently, and natural environment you know, the electrical lights and sort of things…We incorporate the ESG requirements there and in terms of its own practices and in terms of sourcing materials." (Inter.4, investor)

When confronting with urgent issues, developers and investors can use aggressive strategy by withholding the money to force their contractors and subcontractors to change the unsatisfied situations.

"When there are some social responsibility issues, the developer said we

need you to fix them. There's an opportunity to fix if they don't. Then the results might be withholding money or doing it ourselves and again sort of withholding money. With a lot of the work we're trying to negotiate rather than going into that high tender, because when you go into that high tender, that's when a lot of these things develop because everyone is dollar driven." (Inter.10, contractor)

5.3.6 Main Contractors

Main contractors dominate the implementation of most social responsibility issues because they are at the position to control the whole construction process. One cooperative strategy is through Green procurement behavior in the supply chain. Subcontractors would like to incorporate social responsibility if in return they can gain the competitiveness in main contractors' selecting pool. In this way the social responsibility commitments can be diffused in the supply chain echelons by purchase behaviors.

"That pressure obviously goes down the line and then we'll squeeze process from suppliers and then from subcontractors and that just ends up with everyone having these sorts of issues." (Inter.17, contractor)

"I guess part of the strategy is working hard to have the good relationships and then it does help us. So I guess with our marketing to be able to say to the clients that we do have a good pool of resources that can help us build their buildings." (Inter.10, contractor)

Because of the increasingly networked society, partnerships become an important cooperative strategy on social responsibility collaboration. Subcontractors and suppliers are keen on maintaining good relationships with main contractors, so they would like to follow their social responsibility practices. Main contractors can use relationships establishments to draw attentions from their subcontractors to collaborate on their initiative. It is rational because subcontractors and suppliers can gain benefit from the relationships in the long run.

"I mean a lot of it is relationship driven and when we come to supporting the community and making donations I think a lot of the subcontractors that we work with, they are a big supporters of the things that we support as well. So that helps with the relationship and I think that when I understand we're about, they also came to be a part of our thing." (Inter.10, contractor)

"A lot of construction projects at the moment, well let's say a lot of the infrastructure projects in Hong Kong I know are generally trying to foster a sense of partnership and cooperation to get the job done. So with that spirit

then generally you try to avoid having a conflict when you're working together. So partnership and partnering seems to be quite a common objective for clients and contractors to adopt." (Inter.7, contractor)

Main contractors have the power to coordinate different parties in construction projects; therefore, they also have the power to call for supports on raising money or doing charities. Because main contractors usually receive requests from NGOs and public, and they know what are their demands. Contractors can use their power to appeal supports from all stakeholders, and to call for collaboration from both internal and external stakeholders.

"They are house care providers; they have one the big issues with house cares are social isolation. So we have 3 golf days to raise money. We raise about $100,000 to help them combat social isolation." (Inter.17, contractor)

"We won a lot of work with the council and so what we did was we sort of set up a training program, where with the local junior soccer, we build four under cover shelters for them and we supply the materials but we collaborated I guess with suppliers to donate the materials." (Inter.10. contractor)

Because of the inevitable disturbance on local environment, sometimes, internal stakeholders also need the supports and cooperation from the community. That is the reason that they need to get "license to build" from the local residents. This is the needs of developers, but contractors are often the one who face the pressures. Main contractors tend to use cooperative strategies, such as site exhibition, community engagement activities to communicate with local people. In these activities, contractors deliver information about what are the objectives of the project, how the project will benefit localizations and the society, and what measures are undertaking to guarantee safety, health and environmental protection.

"Sometimes we set up some like a tour or sidewalk for primary school or secondary school students to understand what the site we are doing, we got to promote like this where we take some photos and put on the leaflets. Then we let the children name the machine like "afur abour" or other names. We let them enjoy the event and let them take some participating in our work. We let the residents understand the site area, what will happen and what we are thinking about and what we are doing." (Inter.8, contractor)

Main contractors sometimes confront some complaints about their workers' abusive behaviors and damages on environment. Contractors can immediately use aggressive way to stop such harassment, for example turn to external regulations.

"We have to rely on the regulations, so we just have meetings even with that government departments. The conclusion is they will have some officers come down to the road during the off duty times like 5 o'clock to 6 o'clock and they will make some charges on those workers who are misbehaving." (Inter.5, contractor)

5.3.7 Consultants

Consultants possess the professional knowledge and management experiences to help the developers and contractors to carry out their social objectives. Cooperative tactics such as professional advices and demonstrating the potential financial returns and cost benefits are often adopted by consultants to promote innovative social responsibility techniques and knowledge.

"We do it through advice; we do it through advising developers. For example I might sit on a consultancy with the developers looking to create a new office. It starts with being creative in him a desire to want to embrace a Green Star because he thinks it will be a good image…so we are using the commercial reality of enticing him to have a Green star…They have got to see this demand that's the commercial reality. There is demand for recycle material they will do it, so I'm here, I create the demand by advising people to use it. Then they say, we want to use it that creates the demand if the demand's there, then people wil produce it. So that's the influence." (Inter.11, consultant)

Sometimes consultants need to operate and maintain the project on behalf of developers, so they are vested the legitimacy to ensure the other project participants follow developers' social responsibility objectives. Consultants as supervisions can use aggressive strategy like providing written instructions and monitoring the project progress to accomplish this mission.

"Sometimes, we might have the operations and the maintenance contract for a mine for example. So, if that's the case, if we're responsible for running that mine and we bring in other contractors we would definitely expect them to follow our processes and protocols. And we would induct them or provide them with written instructions around those." (Inter.9, consultant)

"Both of those are supervisors they are running the building. They have been careful with waste, they are compelled a little bit with not being able to control what's coming in for materials. But they can look at how they dispose of all their waste, and how they do it responsibly. So that part of it they are influencing directly with the contractors. With the materials coming in, the builder has more the control there, because the builder has signed a price for the developer." (Inter.11, consultant)

5.3.8 Subcontractors and employees

Subcontractors and suppliers have relatively rare resources to do philanthropy. However, if main contractor can initiate the issue and donate the large proportion, the subcontractors and suppliers are likely to follow the good behaviors.

> *"A lady from the kidney foundation came and saw us and said that, she always came for some prices to that and for a sensor, for a fundraiser…So when she left on her run, 5 of our subcontractors that we work with all the time and sort of said, look this is the situation, I mean actually it was 6 because the 6 of them all putting in $1,000 and then we put into $2,000 and that was the $8,000. So I was able to ring her the next hour…I mean again having that good relationship with suppliers and subcontractors helps us do that." (Inter.10, contractor)*

Employees also show commitments to their companies' social responsibility program. Their attitudes can be influenced by the organizational culture and leaderships' preference. Employees would like to follow the social responsibility initiatives if companies establish a culture to give back to society.

> *"I think my experience is most companies have voluntary weekends and they try to get the young guys involved to go and clean up a beach or something like that. There are joint venture partners and other companies that we work with or we worked with in the past also have regular voluntary service to go and see the old people in their homes or go to beach or go to the country park do some social responsibility." (Inter.7, contractor)*

> *"Every employee gets one day off volunteer leave. One day off you have that we'll pay for it, but you go and volunteer someway. We think that helps get spread the world." (Inter.11, consultant)*

5.4 Discussions of the findings

5.4.1 The stakeholder influencing strategies and tactics

From the findings in Chapter 4, governments, developers, and main contractors were the three most powerful stakeholders on social responsibility issues, while the other stakeholders including district councils (representative for communities and the public), consultants, NGOs, and end users were relative powerless. Power only decides the capacity to influence, the behavioral strategies and tactics that stakeholders use to influence are critical to the success of the implementation of social

responsibility. This chapter adopted Co and Barro (2009)'s classification to categorize stakeholders' influencing strategies and tactics: 1) aggressive strategies in coercive manner to change targets' behaviors by threaten to decrease benefits or increase cost; 2) cooperative strategies in reciprocal manner to change targets' behaviors by commit to bring benefits or decrease cost.

The strategies and tactics adopted by the internal and external stakeholders were revealed from the interpretations of the interview excerpts from section 5.3.1 to section 5.3.8. The stakeholders included 1) external stakeholders: communities and the public, NGOs, and governments 2) internal stakeholders: end users, developers and investors, main contractors, consultants, and subcontractors and employees. Table 5-2 shows the summary of all stakeholders' influencing strategies and tactics on social responsibility collaboration.

As it was found from the questionnaire, the most powerful one among the external stakeholders is governments. Governments have the leverages over developers and main contractors to promote social responsibility issues in projects; meanwhile they mediate and negotiate with communities and the public. The influence of communities and the public (district councils) are often targeted on the three core stakeholders. NGOs' influences were also pointed to the three core stakeholders, as well as to communities and public. It was noted that the external influences mostly directed to the three core stakeholders: governments, developers, and contractors. Among the internal stakeholders, the influences flows were inside the construction supply chain. End users can use the purchase potential to drive developers and investors to implement social responsibility. Developers can use their strategies to influence main contractors and consultants. The holistic influence flows and structures among external and internal stakeholders were discussed in the next section in details.

Table 5-2 stakeholder influencing strategies and tactics induced from the interviews

Stakeholders		Targets	Aggressive	Cooperative
External stakeholders	Communities and the public	Governments	Hotline, complain	Multi-party meeting
		Developers and investors		
		Main contractors		
	NGOs	Governments	Protest, pressure, ally	Lobby, letter, email, visit, training, advice, industry initiatives, forum
		Developers and investors		
		Main contractors		
		Communities and public		
	Governments	Developers and investors	Legalize, regulate	Stakeholder platform, mediation, negotiation, compensation, balance conflicting interests
		Main contractors		
		Communities and public		
Internal stakeholders	Developers and investors	Main contractors	Money withholding	Selecting criteria, tendering requirements
		Consultants		
	Main contractors	Subcontractors and workers	Contract conditions, External force	Green procurement, partnering, cultural influence, community engagement, donation raise
	Consultants	Main contractors	Provide written instructions, monitor	Technical advice, financial evaluation
		Developers and investors		
	End users	Developers and investors	Refuse to buy or rent	Demands

**Developed based on author data analysis*

5.4.2 The stakeholder influence map

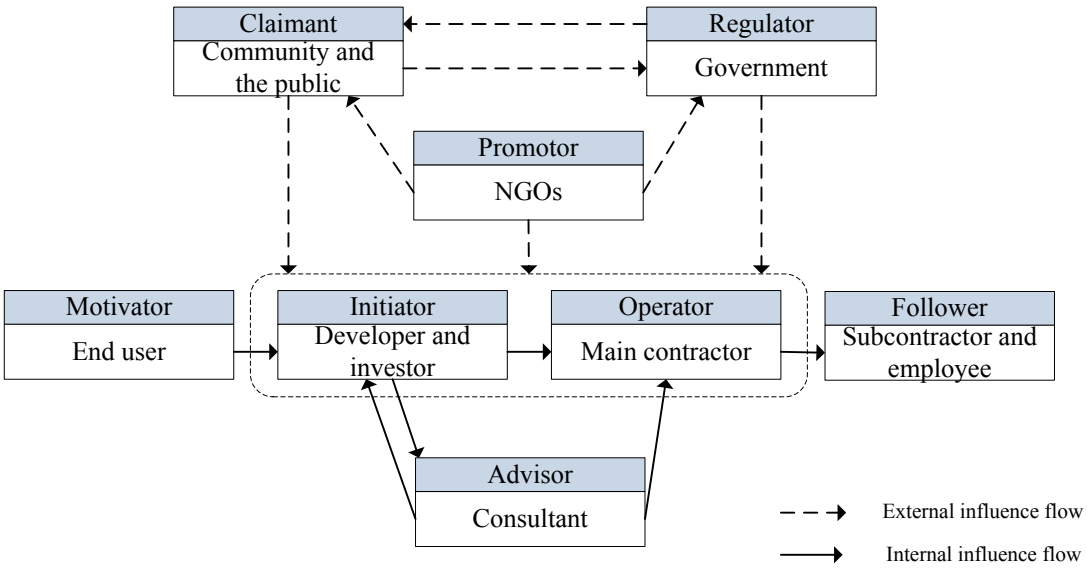
Stakeholder influence map on social responsibility collaboration are displayed in Figure 5-2. Based on the influences identified from the interviews, the stakeholders can be categorized in eight groups, including the claimant, the promoter, the regulator, the motivator, the initiator, the advisor, the operator, and the follower. Unlike the traditional stakeholder classifications, this stakeholder map provides the clarified roles and responsibilities of stakeholders in social responsibility collaboration. It shows a holistic view of the diffusion of social responsibility values among internal and external stakeholders.

Among the external stakeholders, communities and the public is the claimant in social responsibility collaboration. They are the effected groups and have legitimacy to make requests to governments and project leaders about their concerned social responsibility issues. The role that NGOs play is the promotor. It is corroborated by Deegan and Blomquist (2006) that NGOs are one of the important sources of pressures to promote environmental and social practices. On legitimate and urgent issues, NGOs can use aggressive strategies, such as protests or coalition, to put pressures on the related stakeholders to responds to the problems caused by projects. It is also supported by Hendry (2005) that protests and complaints are direct strategies that NGOs commonly used to draw immediately attentions. The experiment of Frooman and Murrel (2003) also adds evidence that environmental organizations are more inclined to use ally as indirect influence strategy due to the lack of efficient resources. When NGOs intend to raise their initiatives that need other stakeholders to provide resources, cooperative tactics such as lobby, letter, email, visits are often adopted. Hendry (2005) indicates that NGOs often pursue lobby with all the other non-lobbying tactics because it is a non-specific and soft strategy to influence the targets. The expertise and specialized skills held by NGOs are critical to developers especially when these resources are costly, inefficient, and time-consuming from external sources (Peloza & Falkenberg, 2009). NGOs also launch industry initiatives and value transmission programs regularly to encourage proactive engagements in social responsibility issues. Deegan and Blomquist (2006) also concludes that initiatives launched by NGOs can drive the industry to revise codes of conducts as well as influence their sustainable reporting

behaviors. In addition, NGOs can organize forum or education programs to transmit social responsibility knowledge and value to community and the public to motivate them to defend the environment and society. Governments are the regulator to legalize the practicable proposals, enact regulations, and set benchmarks. Governments also have the authorized power to provide incentive policies, such as tax reduction and green labels, to drive project leaders to consider social responsibility issues. Actually in most time, governments act the role as conflict resolver instead initiating social responsibility issues (Olander, 2007). Governments need to coordinate with communities and the public to facilitate stakeholder communication, mediate conflicting interests, compensating and pacifying the affected residents.

The influences among internal stakeholders flow along the construction supply chain. First, end user is the motivator. The demands of end users are the original driving force of social responsibility collaboration. End customers' demands for the information of sustainability, green certificate, and report for social responsibility practices can directly attract companies' reactions (Henriques & Sharma, 2005). When come across urgent issues, end users can also coerce developers to change their misconducts by refusal to buy or rent the buildings. Investors and developers play the role of the initiator. In order to gain competitiveness, developers will incorporate social responsibility features in projects planning, and diffuse commitments to contractors and subcontractors. The general tactics they often adopt are putting their requirements in selecting criteria or tendering documents. When contractors did not fulfil these requirements, developers have the legitimacy to withhold payments or give sanctions based on consented contract conditions. Boyd et al. (2007) also document such tactics that buyers use in their supply chain, including social labels, socially responsible investment, and codes are influencing tactics. In the influence between developers and main contractors, consultants act as the advisor to propose social responsibility plans to their clients and supervise main contractors to implement them. Consultants have professional experiences and knowledge on issues such as green materials and sustainable technics. They can influence by convincing developers and investors to peruse such innovative approaches by demonstrating the technical feasibility, the benefits to society and environment, and the estimated returns and cost savings. Othman (2009) also highlighted the responsibility of consultants to provide successful

cases to convince their clients that social responsibility programs can be achieved within their cost planning. Consultants are authorized with legitimacy to monitor the implementation of social responsibility issues in projects. Main contractors, as the operator of social responsibility collaboration, can coordinate resources for implementing the social responsibility issues. Main contractors use procurement strategies and partnerships to motivate subcontractors to provide social responsibility materials or services. Social responsibility in procurement behaviors means not only the environmental features of the productions, but also other social goals such as human right, labor protection, community issues should also be addressed (Maignan et al., 2002). In addition, contractors can also organize voluntary social services and build culture to give back to society, in order to bring employees to participate in social rseponsibility collaboration.



**Developed based on author data analysis*

Figure 5-2 Stakeholder influence map on social responsibility collaboration

5.4.3 The determinants of stakeholder influencing strategies

The existing research states that the determinant of influencing strategies is stakeholder power (Frooman, 1999; Somech & Drach-Zahavy, 2002). However, it was

found from the interviews that all stakeholders, no matter powerful or not, adopt both aggressive and cooperative strategies in different occasions to influence social responsibility issues. It led to the question that if power is not the determinant, then what are the determinants for stakeholders to choose from the influencing strategies? For example, governments were identified as the most powerful stakeholders in Chapter 4. According to Frooman (1999), powerful stakeholders tend to adopt coercive strategies and using their power to force others. However, it is found from the interviews that cooperative strategies were employed most frequently such as incentive polities, stakeholder communications, and mediations between community and project leaders. The reasons may be due to social responsibility has the intrinsic nature of voluntariness and altruism. When stakeholders want to influence others to follow their good will, it implies the inter-dependence, trust, and sharing the understanding that collaboration will bring benefits to all. As found in Chapter 4, end users and NGOs are the most powerless stakeholders, while aggressive strategies can be chosen when their benefits are at risks or major threatens. Therefore, this study propose that power can only imply the ability of stakeholders to influence, nevertheless legitimacy and urgency are the important attributes to determine what strategies stakeholders may use.

Tsai et al. (2005) find that institutional legitimacy is also an important determinant. They point out that when firms' actions have high legitimacy that meets social norms and expectations, most stakeholders tend to adopt compromise or conformity instead of coercive strategies. In addition, the degree of urgency of the issues proposed by stakeholders is also an important attribute. Aggressive strategies are often adopted by stakeholders when the issues are perceived as urgent (Co & Barro, 2009). In Mitchell's salience model, urgency is reflected in two dimensions: 1) whether the issue is time sensitive; 2) and whether the issue is considered as critical by the stakeholder.

To conclude, this study proposes that stakeholder power can only decide stakeholders' capacities to exert influences, nevertheless, the legitimacy and urgency are significant attributes that determine what strategies stakeholders may use. Thijssens et al. (2015) corroborates this statement by empirical results that orientations of firms' social responsibility disclosures have significantly positive relation with stakeholders' legitimacy. Stakeholders tend to choose aggressive strategies, with the sense of urgency

on the issues, difficulty in conveying legitimacy, and lack of faith that all stakeholders will do their share. In contrast, stakeholders can choose cooperative strategies when they are mutually dependent, share the urgency to collaborate and understanding that the collaboration will bring benefits to all (Co & Barro, 2009). The three attributes, power, legitimacy, and urgency are interrelated according to Mitchell et al. (1997). Stakeholder legitimacy can be gained by seizing stakeholder power that perceived by the target organization, and as well as putting forward urgent and critical issues. Therefore, the determinants of stakeholder strategies need to be extended to the other two stakeholder attributes, legitimacy and urgency. Based on the above discussion, the following proposition was obtained in this study:

Proposition 2: the determinants of stakeholder influencing strategies are the legitimacy and urgency that the stakeholder has on the social responsibility issues.

5.5 Summary of the chapter

The third research objective to explain stakeholders' different influences on social responsibility collaboration was achieved in this chapter. The findings from interview survey identified the heterogeneous strategies and tactics that adopted by both the external and internal stakeholders to influence each other. The influence flows among multiple stakeholders are the impetus that drives the implementation of social responsibility issues in construction projects. The influence map presented in this chapter clarifies the roles and responsibilities of stakeholders in social responsibility collaboration. Through analyzing the interview transcriptions, it was also interesting to find that stakeholders' strategies were not determined only by their power; however, it was determined by the legitimacy and urgency of issues. This chapter extends the significance of this study by providing the stakeholders with practicable approaches to practice their power. It also proposes a potential way for project participants to predict what strategies and tactics that stakeholders may use to influence, in order to prepare or avoid the likely aggressiveness. In addition, same as in Chapter 4, the proposition induced in this chapter is the key for the design of the stakeholder collaboration framework in this study.

CHAPTER 6 STAKEHOLDER COLLABORATION FRAMEWORK ON SOCIAL RESPONSIBILITY IMPLEMENTATION

6.1 Introduction

The design science strategy was employed in this chapter for developing the stakeholder collaboration framework for implementing social responsibility in construction projects. Design science strategy can be used for crafting resolutions for the current management problems by using the existing theories or empirical evidences. In this study, the empirical investigations in Chapter 4 and Chapter 5 prepare the theories for designing the framework. First, two indexes were developed to be used in the framework: the stakeholder power index (SPI) and stakeholder influence index (SII). Second, the stakeholder collaboration framework containing five steps was elaborated to provide detailed instructions for practitioners of the operation of this framework. At last, the author compared the framework with four other stakeholder models including Mitchell's salience model, power/interest matrix, stakeholder circle, and Rowley's network model. The value and advantages of this framework were explicated by the comparisons and discussions.

6.2 Stakeholder power index

For designing an operational way to determine stakeholders' engagement levels, the stakeholder power index (SPI) is designed as a quantifiable attribute of stakeholders, based on the proposition obtained in Chapter 4:

Proposition 1: stakeholder engagement levels on social responsibility issues in construction projects are determined by both stakeholder's power and interest over the issues.

From proposition 1, it was stated that stakeholder engagement levels are depended by

stakeholders' power and their interest on the social responsibility issues. In risk management, risks are assessed by the product of potential impacts and probabilities. Similarly, stakeholder power is the capability to engage in the social responsibility issues, while stakeholder interest is the probability that the stakeholder will engage. Therefore, this study used the product of stakeholder power and stakeholder interest, as SPI for determining the levels of engagement in the social responsibility issues. The integration of stakeholders' power and their interest has been employed in several previous literatures. Bourne and Walker (2005) propose the vested interest impacts index to evaluate stakeholders' potential influences on projects. Olander (2007) uses the product of stakeholders' interest and power to assess stakeholders' impacts levels. This study made a minor improvement. SPI is the geometric mean of power and interest minus the geometric mean of stakeholders' average power and interest over the given social responsibility issue.

The formula of SPI is described as follows:

$$SPI_{ij} = \sqrt{\frac{(pwr)_{ij} \times (int)_{ij}}{5 \times 5}} - \sqrt{\frac{\frac{\sum_{i=1}^{n}(pwr)_{ij}}{n} \times \frac{\sum_{i=1}^{n}(int)_{ij}}{n}}{5 \times 5}}$$

SPI_{ij} stands for the SPI of the stakeholder i over the SRI j; $(pwr)_{ij}$ is the power of the stakeholder i has over the SRI j; and $(int)_{ij}$ is the extend of stakeholder i's interest of the stakeholder i has on the SRI j. n is the total number of the related stakeholders.

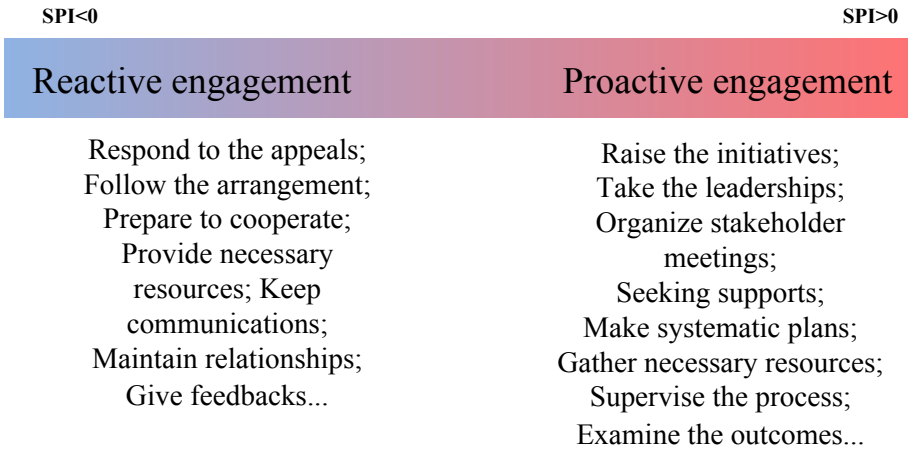
If $SPI_{ij} > 0$, it means stakeholder i have high power index, therefore have relative high interest and power on the SRI j.

If $SPI_{ij} = 0$, it shows the stakeholder i has the average power index with moderate power and interest on the SRI j;

If $SPI_{ij} < 0$, it means the stakeholder i has low power index, therefore have limited interest and power on the SRI j.

According to the range of the SPI, stakeholders engagement levels can be located on a

continuum from proactive engagement to reactive engagement (see Figure 6-1), adapting from the Clarkson (1995)'s scale of proactive-reactive engagement in social responsibility. High SPI means the stakeholder has both high probabilities and capacities to implement the social responsibility. Therefore stakeholders with high SPI should take proactive engagement in the social responsibility issue no matter for obligatory or strategic reasons. The proactive engagement informs active attitudes and leading responsibilities on the social responsibility issues. If the stakeholders' SPI is high, the proactive engagement can be suggested including putting forwards the initiatives, taking the leaderships, organizing stakeholder meetings, seeking supports, making systematic implementation plans, gathering necessary resources, supervising the implementation process, and examining the outcomes. Low SPI means the stakeholder has neither willing nor abilities to implement the social responsibility issues, therefore, the reactive engagement can be adopted. The reactive engagement informs "doing what that is required" attitude. The gestures under the reactive engagement include responding to the appeals, following the instructions, preparing to cooperate, providing necessary resources, keeping communications with other stakeholders, maintaining stakeholder relationships, giving feedbacks.



**Developed by the author*

Figure 6-1 the continuum of reactive-proactive stakeholder engagement

6.3 Stakeholder influence index

The stakeholder influence index (SII) was designed for predicting what strategies stakeholders may adopt based on the proposition from Chapter 5:

Proposition 2: the determinants of stakeholder influencing strategies are the legitimacy and urgency that the stakeholder has on the social responsibility issues.

From proposition 2, it was asserted that stakeholder influence strategies can be determined by the stakeholders' perceived legitimacy and urgency on the social responsibility issues. Similarly, SII was developed by integrating stakeholders' legitimacy and urgency on the social responsibility issues to forecasting stakeholders' choices of strategies towards construction projects. As it was discussed previously, the existing research mostly uses power as the determinant of strategies, while neglecting that the legitimacy and urgency that are more important for the choice of influencing strategies on social responsibility issues. In institutional theory, legitimacy means the extent to which the behaviors are accepted or expected by social conventional norms (Tsai et al., 2005). In this study, stakeholder legitimacy means the rationalities that stakeholders have to raise, initiate, or implement the social responsibility issues in construction projects. Urgency stands for the times sensitivity and criticality of the social responsibility issues perceived by the stakeholders (Mitchell et al., 1997). Therefore, the value of SII represents: 1) the degree of appropriateness that the stakeholder initiate or implement the social responsibility; 2) the degree of the time sensitivity and criticality that the stakeholder perceives that the social responsibility issues have. The higher the SII value is, the more possibilities stakeholders have to adopt the aggressive strategies.

The formula for the SII is presented as following.

$$SII_{ij} = \sqrt{\frac{(lgt)_{ij} \times (urg)_{ij}}{5 \times 5}} - \sqrt{\frac{\frac{\sum_{i=1}^{n}(lgt)_{ij}}{n} \times \frac{\sum_{i=1}^{n}(urg)_{ij}}{n}}{5 \times 5}}$$

SII_{ij} stands for the SII of the stakeholder i on the SRI j; $(lgt)_{ij}$ is the legitimacy of the stakeholder i has on the SRI j; and $(urg)_{ij}$ is the value of urgency of stakeholder i on the SRI j. n is the total number of the related stakeholders.

If $SII_{ij} > 0$, it means stakeholder i have high influence index, therefore have relative high legitimacy and urgency to implement the SRI j,

If $SII_{ij} = 0$, it shows the stakeholder i has the average influence index with moderate legitimacy and urgency to implement the SRI j;

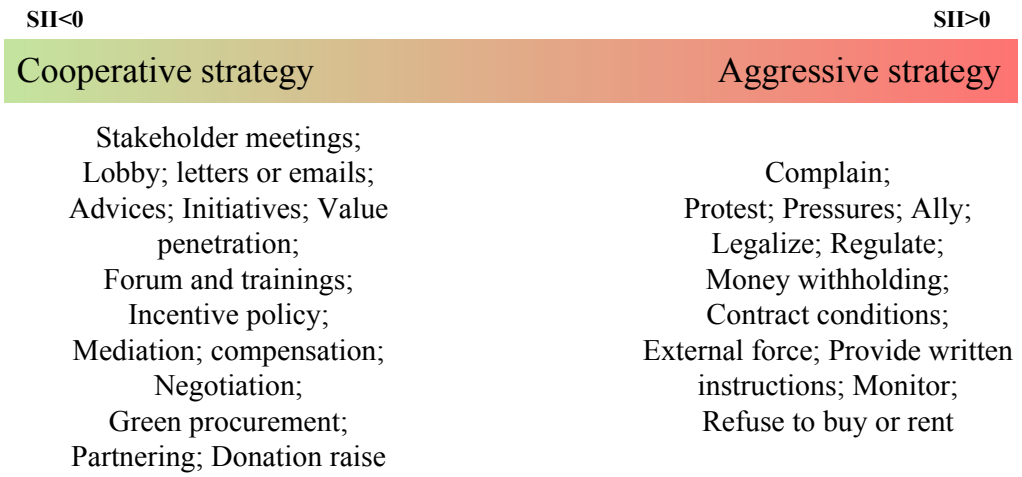
If $SII_{ij} < 0$, it represents the stakeholder i has low influence index, therefore have under-average legitimacy and urgency on the SRI j.

According to the findings from the interviews in Chapter 5, all stakeholders including the external and internal stakeholders can take aggressive strategy and/or cooperative strategy. Aggressive strategy means to force targets in coercive manner to change their behaviors by threatens; while cooperative strategy means to alter targets' behaviors in reciprocal manner by committing to bring benefits or decrease cost.

The value of SII decides the preferences of stakeholders' choices on the continuum from cooperative to aggressive strategies (see Figure 6-2). High SII value means the stakeholders have more possibilities to adopt aggressive strategy to influence other stakeholders on the implementation of the social responsibility issues. While the low SII value stands for the stakeholders would be inclined to the cooperative strategy. It is noteworthy that there are two characteristics of the stakeholder influencing strategy identified from the literature review and the interviews: 1) mostly stakeholders tend to choose mixed strategies instead of any single kind (aggressive or cooperative), so SII determines the emphasis of stakeholder influencing strategies; 2) cooperative strategies are practiced in most of the conditions because social responsibility issues are mostly voluntary and discretional. For example, NGOs use lobbying along with all the other strategies. Therefore, this study considered only when SII are extremely high, stakeholders may consider adopting aggressive strategies to coerce other stakeholders on social responsibility issues.

According to the former discussions, aggressive strategy is not totally negative in social responsibility implementation because it addresses the usage of the coercive power by stakeholders. Therefore, in the stakeholder collaboration framework, the stakeholders with high SII can be suggested with "hard" forces to push other stakeholders who may be reluctant to perform their responsibilities. When stakeholders have low SII, "soft" strategy with compromises and negotiations can be suggested. From the other side, project leaders can be warned that stakeholders with

high SII may act aggressively on the corresponding issues. They should take precautions and respond to their claims in order to avoid the potential aggressiveness. The stakeholders with high SIIs should also be paid close attentions for the reduction of conflicts and risks.



**Developed by the author*

Figure 6-2 the continuum of cooperative-aggressive influence strategy

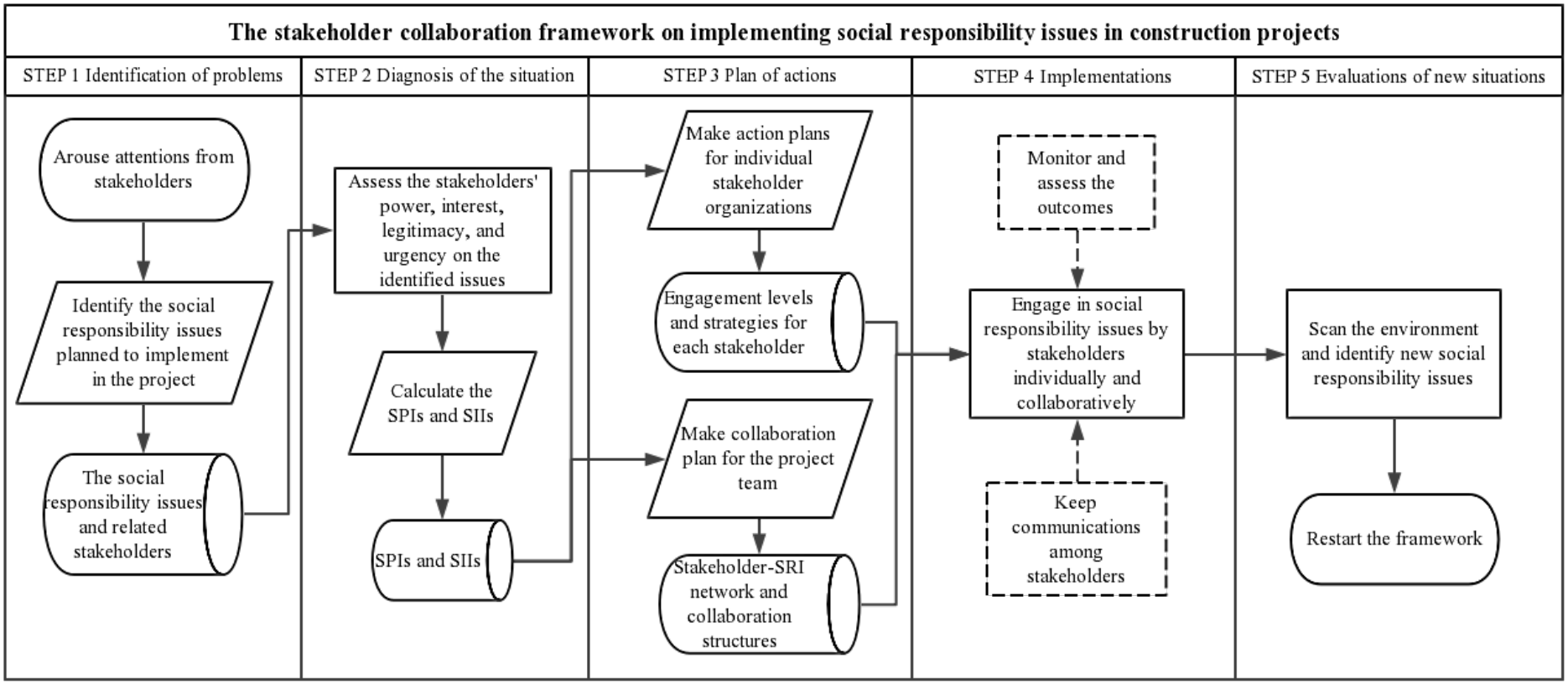
6.4 The procedures of the framework

Linking theoretical knowledge and professional practices in reality is essential to extend implications of theories (Montaño, 2012). In this study, the development of SPI and SII are the theoretical foundations for establishing the framework for stakeholder collaboration on social responsibility issues. As it has been discussed so far, the obstacles of social responsibility collaboration in construction projects are dynamic power structures and unclarified stakeholder influences. To provide a practical solution for these problems, a stakeholder collaboration framework is developed as a scientific way to clarify responsibility distribution and facilitate collaboration among stakeholders. This framework aims at improving the efficiency of stakeholders' collaborative framework, so the basic assumption is that the stakeholders are willing to share resources and knowledge for achieving social responsibility objectives collaboratively.

Because all management, operations, and decision makings in construction projects are conducted on two levels: the organizational and project levels. Therefore two

objectives were expected to be achieved by the framework: 1) at the organizational level: provide engagement plans for individual stakeholders to optimally allocate their resources. 2) at the project level: provide overall collaboration plans for organizing multiple stakeholders to jointly work on social responsibility issues.

Design science research was adopted for designing a general applicable solution for problem-situations under different conditions and individual backgrounds, based on problem-directed theories or experiences. Unlike the typical positivism empirical methodology, design science strategy follows the "paradigms of practices" as the problem-solving roadmap. According to section 3.4.3.4, Van Strien (1997)'s regulative cycle for design science research was employed. The stakeholder collaboration framework (see Figure 6-3) was developed containing five steps including: 1) identification of problems, 2) diagnosis of the situation, 3) Plan of actions, 4) Intervention, 5) Evaluation of new situations. The detailed instructions of each steps were illustrated in the following sections.



**Developed by the author*

Figure 6-3 the stakeholder collaboration framework on social responsibility issues

6.4.1 Identification of problems

The first step of the framework is finding out the social responsibility issues planned to implement in the projects, because common objectives are essential for stakeholder collaboration. Two action are involved in this step:

1) Arouse attentions from stakeholders
2) Identify the social responsibility issues planned to implement in the project

In this step, all project stakeholders especially the effected ones must be arouse attentions for collecting their demands and expectations. Social responsibility issues are generally related to the benefits of those "salient" stakeholders such as public, community, and employees. Because they have no awareness or channels to raise their voices, their benefits may be at risks to be overlooked or compromised in projects decision makings. Identification of the demanding social responsibility issues, which needed to be implemented in the project, is an important perquisite. Meanwhile, the related stakeholders to deal with these identified social responsibility issues should also be identified in this step.

The general practices for collecting stakeholders' opinions are project briefing, general meetings, value management workshops, public participations. Therefore, this step can be embedded in one of these events when the external and internal stakeholders are gathered. Moreover, consensus among multiple stakeholders with conflicting interests is the main difficulty in this step. It is not easy for stakeholders to agree on the responsibilities and roles they should take on the social responsibility issues. Therefore, in this move, stakeholders can just simply raise their concerns freely. Responsibilities can be distributed by further steps of the framework.

6.4.2 Diagnosis of the situations

This step is to estimate the current situations by collecting stakeholders' attributes on the identified social responsibility issues. Two actions are involved in this step:

1) Assess the stakeholders' power, interest, legitimacy, and urgency on the identified social responsibility issues
2) Calculate stakeholders' SPIs and SIIs

The collection of stakeholder attributes has two approaches, one is through subjective evaluations by third parties, and the other is by self-reflections. In this framework, the latter option is suggested because some attributes such as interest and urgency can have indispensable bias if evaluated by others. Therefore, the best practice is to send a questionnaire with a list of identified social responsibility issues to all the related stakeholders. The stakeholder representatives can evaluate their perceived interest, power, legitimacy, and urgency on the listed social responsibility issues (Sample of the questionnaire see Appendix F).

It is noteworthy that the genuineness and accuracy of stakeholders' self-reflections are essential. Some stakeholders with reluctant attitudes may provide inaccurate answers; therefore, measures should be taken to ensure the data validity. First, before filling the questionnaire, it should be explained to the stakeholders that the information is only for internal managerial and administrative purposes, no compulsory works will be forced. It should also be addressed that the aim of the framework is to improve overall project social performance, which will benefit all at last. Some powerful stakeholders can be reluctant to respond because they are clear that much of the responsibilities will be on their shoulders. In this way, it is important to let them notice that the framework is an effective way to cope with social risks and release the conflicts that may cause serious impacts on project goals. To sum up, providing a trustworthy and mutual beneficial environment can help to inducing stakeholders providing genuine information.

Second, the wording of the questions should avoid using confusing academic terminologies; in contrast, the use of daily languages is preferred for enhancing the intelligibility. For asking stakeholders' power, the question is "do you think your organization is influential on the social responsibility issue?" Because power sometimes has negative connotations, it can be replaced by the word "influential" in the questionnaire. Interest can be directly asked by "to what extend do you think your organization is interested in implementing the social responsibility issue?". As for legitimacy and urgency, the questions are "do you think your organization is the appropriate one to raise the issue?" and "to what extent do you think the issue is urgent?"

Third, increase the number of the respondents in each stakeholder organizations can

also increase the data reliability. The respondents can be representative persons in the organizations who are familiar with social responsibility or sustainability policies. For construction organizations, participants can be site supervisors, senior managers, or professionals from relevant departments (HSE, sustainability, public relations etc.). As for public institutions, participants can be government officers, community committee members, volunteers, NGOs directors etc.

After collecting data from all the related stakeholders' representatives, the SPIs and SIIs on the identified issues can be calculated following the formula proposed in section 6.2 and 6.3.

6.4.3 Plan of actions

The action plans for implementing the identified social responsibility issues are made based on the SPIs and SIIs. This step is to make the action plans for individual stakeholders and the whole project team.

1) Make action plans for individual stakeholder organizations

2) Make collaboration plan for the project team

For the organizational level, the action plans include suggestions on different engagement levels on different social responsibility issues, from proactively and reactive. These suggestions can help stakeholders to give priorities on various social responsibility issues and allocate their limited resources optimally. The potential influencing strategies from aggressive to cooperative are also provided to stakeholders, in order to support the decision makings on the usage of power.

For the project level, a stakeholder-SRI network is developed. The network nodes are the identified social responsibility issues and related stakeholders. The links between are weighted by the values of SPIs. The colors of the links are associated to the values of SIIs. Many social network software and plug-in programs can assist the visualization of the network. The network structures provides a holistic map of stakeholder collaboration on the social responsibility issues. The centralities of nodes provide information about stakeholders' roles and responsibilities. The collaboration plan includes the collaboration clusters of stakeholders (the stakeholders linked with a

particular social responsibility issue) and stakeholders' different roles (the network centralities). Stakeholders with bigger nodes (high SPI centralities) should be the leader on the issue. The color of the links show the SII values therefore can provide a sign for the project team that which stakeholders are likely to use aggressive strategies. In order to prevent the aggressiveness, these stakeholders should be primarily satisfied on the associated issues.

6.4.4 Implementations

After the action plans, the next step is to initiate the power and influence chains to implement the identified issues. Since the action plans are made in two levels, the implementations are carried out at both the organizational and project levels:

1) Engage in social responsibility issues by stakeholders individually and collaboratively

For all the individual stakeholders, they can voluntarily take actions according to the suggested plans. They can put emphasis on the social responsibility issues suggested to be proactively engaged. In this way, stakeholders can allocate their resources strategically on complicated social issues. In addition, suggestions on strategies can support the decision makings on whether aggressive/cooperative gestures should be used. For the whole project team, the stakeholder-SRI map provides an effective visualization map for stakeholder collaboration. Stakeholder collaboration can be organized based on the map structures. Stakeholders that are linked with particular social responsibility issues can be identified as a collaborative group. These stakeholders should communicate closely and provide complementary resources on implementing the issue. Sizes of stakeholder nodes show their roles. Stakeholders with bigger nodes should lead the issue using higher engagement level. Stakeholders with smaller nodes are suggested with lower engagement levels as subordinators or followers.

During the implementation, continuous monitor and communication are required. Social performance can be enhanced if the social responsibility behaviors are well communicated to the public and other stakeholders. For each involved stakeholder, communications about the social responsibility implementation are as important as the

implementation. Construction organizations are encouraged to use public media, periodical reports, internet, exhibitions, to publicize their efforts and outcomes on the social responsibility issues. The effected stakeholders have the responsibility to monitor and examine whether the outcomes disclosed are reliable. Stakeholders' social responsibility behaviors can be reinforced by assessing and feedback the improved performance. In addition, positive outcomes of stakeholders' joint efforts can enhance future commitments to collaboration. Instead of interventions, this framework is more of a mutual support process among stakeholders. From the framework, stakeholders can identify the real demands of the local community or broader society and then seek to develop an optimal plan to meet these demands. Stakeholders can work together to maintain effective communications, resources exchanges, and continuing feedbacks.

6.4.5 Evaluations of new situations

Because in construction projects, social responsibility is a continuous task, the last step is to scan for the demanding social responsibility issues gradually throughout the project lifecycle.

1) Scan the environment and identify new social responsibility issues

Given the dynamic project demands and changing stakeholder structures, the evaluation of the new situations should be carried out to identify the emerging social responsibility issues. Only through sustaining stakeholders' collaborations can social responsibility in construction projects be effectively achieved. Thus, instead of only being performed in the pre-construction stage, this framework should be implemented throughout the entire project lifecycle.

6.5 The value of the framework

Reviewing the obstacles of stakeholder collaboration on social responsibility (see section 2.2.3.3), this framework can facilitate stakeholder collaboration from several aspects. The first obstacle that was identified is that stakeholders have heterogeneous interests; it is difficult for them to share critical resources on social responsibility issues. The framework addresses this problem and provides solutions by clarifying

stakeholders' roles and responsibilities on each social responsibility issue. They can distribute priorities to various social responsibility issues and invest critical resources in those they have power and interest on. In this way, stakeholders' powers and responsibilities can be rebalanced. The conflicts can be reduced if all stakeholders devote to the areas that they have power and interest on. Even though self-efficient stakeholders wouldn't voluntarily engage themselves, the framework also has the purpose to reinforce the awareness of the effected stakeholders to use their power and influence.

The second obstacle that was identified for implementing social responsibility in construction projects is the complicated power structures and interactions. This problem is also addressed in the framework. The collaboration plans and stakeholder-SRI network can provide a holistic visualization and guidance on how stakeholders should collaborate with each other. The complicated stakeholder power structures and social responsibility issues are depicted in a map, associating with much useful information. From the network and collaboration plans, responsibilities and roles of multiple stakeholders are clarified.

In literature review about stakeholder collaboration (see section 2.3.4), the primary problem is the ignorance of the imbalanced power and responsibility, as well as the lack of a framework to direct stakeholder interactions. The framework developed in this chapter addresses on this gap by evaluating stakeholders' roles and responsibilities in collaboration. In some occasions, stakeholders are willing to collaborate on social responsibility issues. This framework provides a multi-level collaborative management tool to facilitate stakeholder collaboration under complicated and dynamic power structures.

6.6 Comparisons with other stakeholder tools

6.6.1 Mitchell's salience model

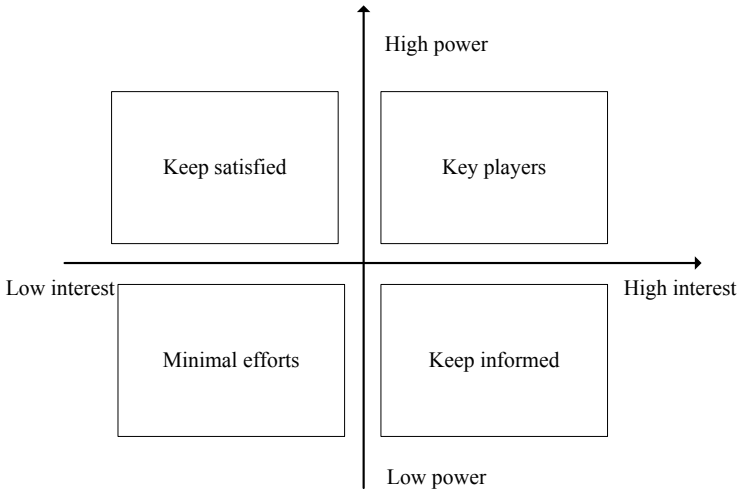
The three-attribute stakeholder salience model of Mitchell et al. (1997) was introduced in details in literature review (section 2.4.1.4). Referring to Figure 2-9, stakeholders can be categorized into seven groups, including definitive, dominant,

dangerous, dormant, dependent, discretionary, and demanding stakeholders, based on the three attributes: power, legitimacy, and urgency. This model has been broadly adopted since it provides an effective tool for managers to give priorities on their stakeholders based on their specific categories. Mitchell's model has its irreplaceable theoretical significance for the destruction of stakeholder salience into three underlying dimensions. Despite the theoretical significance, some deficiencies can be found in Mitchell's model compared with the stakeholder collaboration framework developed in this study. First, the analysis perspective is from the organization-stakeholder administration instead of stakeholder-stakeholder interactions. This stakeholder collaboration framework has its merits by transforming the purpose from only managing stakeholders for their satisfactions, to clarifying roles and responsibilities for stakeholders to jointly improve project performance. Second, the use of attributes are binary, either have or do not have power, legitimacy or urgency, giving no distinction between one hold a lot of salience and the other one with little (Mainardes et al., 2012). To overcome the shortfall of Mitchell's model, the three attributes are integrated and combined with stakeholder interest, into two quantifiable stakeholder measures: SPI and SII. Third, the analysis of stakeholders' attributes is based on general evaluations, ignoring the dynamics of stakeholders. In this framework, stakeholders are evaluated based on the specific contexts of the certain social responsibility issues. This framework also shows its implications by developing the stakeholder-SRI networks to visualize not only the relationships between stakeholders, but also the relationships based on the issues arenas.

6.6.2 Power/interest matrix

The graphic technique of matrix for categorizing stakeholders based on two dimensions is broadly adopted in traditional stakeholder management. Mendelow (1981) develops a matrix model for firms to cope with stakeholders' dynamic power. Divided by two dimensions of dynamism and power, stakeholders in the four quadrants require different coping strategies, from continuous scanning, irregular scanning, periodic scanning, to no scanning. Savage et al. (1991) use stakeholders' potential to threat or cooperate with organizations as dimensions to form the matrix with four types of stakeholders: collaborate, supportive, non-supportive, and marginal

stakeholders. The most widely used matrix tool for stakeholder management is the power/interest matrix proposed by Scholes and Johnson (2002). Olander and Landin (2005) introduce the power/interest matrix into project management for project managers making corresponding strategies towards multiple project stakeholders. As it is shown in Figure 6-4, stakeholders can be grouped into four categories based on the power and interest dimensions. The major flaw of this model is that by this classification, the effected stakeholders, such as communities, public, or NGOs, will be gradually marginalized by project management because they have less power but high interest on the projects. By this matrix, these stakeholders are just kept informed rather than satisfied or paid attentions by project teams. The original purpose of stakeholder management is improving companies' management over risks or threatens regarding multiple stakeholders. By using this matrix model, the social responsibility issues related to the benefits of powerless stakeholders will not be responded because they cannot threaten the project existence or survivals. The framework developed in this study provides a way for powerless stakeholders to involve in the decision makings, and empowering them by identifying the potential of their aggressiveness. Another defect is that in this model, the evaluations of stakeholders' attributes are based on absolute value rather than relative value. Absolute value is simpler for calculation, but it is insufficient in cross-cases comparisons because the ranges of power/interest value vary in different cases. The collaboration framework developed in this study used relative value, using stakeholders' power/interest minus the averages, so it enhances cross-case comparisons and reduces scale preferences.

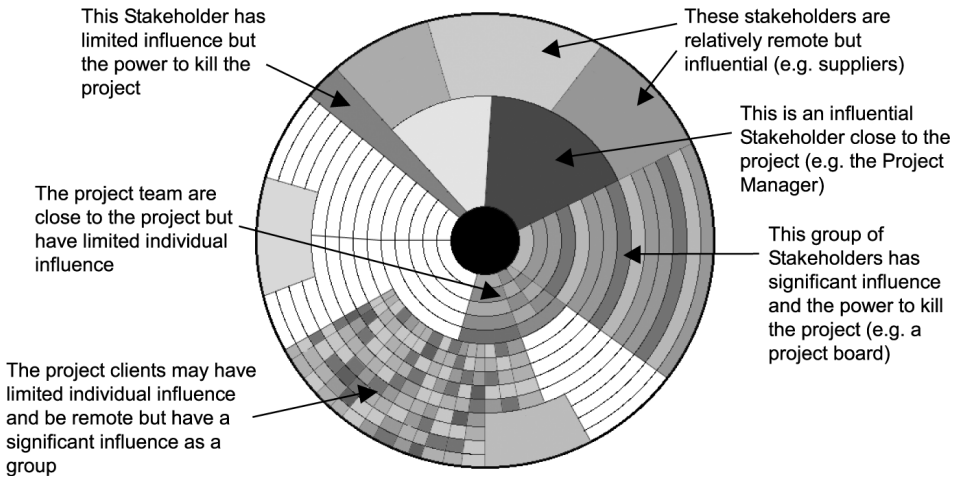


**Source from (Olander & Landin, 2005, p. 322)*

Figure 6-4 the stakeholder power/interest matrix

6.6.3 Stakeholder circle

Bourne and Walker (2005) develop the stakeholder circle to visualize stakeholders' influences on projects success or failure through five steps: identify, prioritize, visualize, engage, and monitor. The stakeholder circle was registered as a patent, and has been tested and refined based on several case studies and received positive feedback (Bourne & Walker, 2006, 2008). This model employs three stakeholder attributes to evaluate stakeholder influences, including urgency, power, and proximity of stakeholder-project relationships. A radial circle depicting all stakeholder influences on the project shows the stakeholders' scope of influences, degree of influences, and the distance of influences (the sample of stakeholder circle see Figure 6-5). Unlike the other models, stakeholder circle has its outstanding performance by using the radial graphic tool to precisely depict stakeholders' influences on the projects. However, the same problem of the stakeholder circle is that the attributes of stakeholders are general evaluations. For example, high stakeholder power is described as ability to "kill the project". However, stakeholders' abilities to "kill the projects" are under specific conditions，for example planning departments can put down projects in the approval phase but become less important once constructions begin. The framework developed in this study evaluates stakeholders' attributes based on the contexts of different social responsibility issues along the construction lifecyle, therefore, the dynamics of stakeholders is considered to make plans for stakeholder collaborations.



**Source from (Bourne & Walker, 2005, p. 656)*

Figure 6-5 the sample of stakeholder circle

6.6.4 Rowley's network

Rowley (1997) firstly introduces the network model in stakeholder management by discussing organizations' strategies under different network structures. He integrates social network concepts to analyze complicated stakeholder interactions rather than focus on single organizations. The network measures he employs are network density and centrality. The constraint ability of a stakeholder increases when the network grow. The defending ability of a focal organization to cope with stakeholders' pressures increases with its node centrality. Table 6-1 shows organizations' strategies under conditions of different network densities and centralities. Rowley's work transforms the research schema from taking stakeholders as independent individuals to a network interaction model. The focal organizations is not at the central points in a hub-spoke model, instead, they are also nodes interacting with many other stakeholders in networks. The framework developed in this study also employed the network graph, because it can provide productive insights on stakeholder structures. Comparing to this framework, Rowley's network addresses the network measures under simple stakeholder relationships, have no references to the issues that gather stakeholders together. As the argument in the literature review, stakeholders' heterogeneity and dynamics cause changing stakeholder power structures and interactions. The framework in this study provides a solution, the stakeholder-SRI network, which presents a better approach to visualize the relationships not only among stakeholders, but also between stakeholders and issues.

Table 6-1 the organization strategies in Rowley's network model

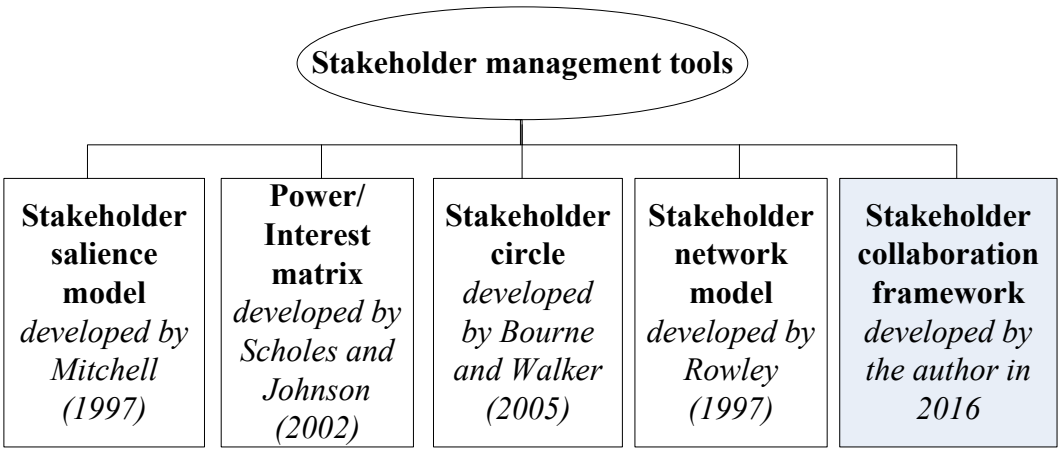
		Centrality of the focal organization	
		high	low
Density of the stakeholder network	High	Compromiser	Subordinate
	Low	Commander	Solitarian

**Source from (Rowley, 1997, p. 901)*

6.7 Summary of the Chapter

This chapter develops the stakeholder collaboration framework for resolving the

problems on implementing social responsibility issues under complicated stakeholder environment. The operational procedures and detailed instructions were described in this chapter step by step. Two indexes, SPI and SII, were developed as stakeholder evaluations to determine engagement levels and influencing strategies on different social responsibility issues. The stakeholder collaboration framework developed in this chapter is a valuable addition to the current stakeholder management tools (see Figure 6-6). Compared with the other four common stakeholder tools, the stakeholder collaboration framework has the following advantages: 1) attention on the balance of stakeholders' power and responsibilities rather than simply coping with stakeholder risks; 2) consider stakeholders as equal interactors rather than focus on the focal organizations; 3) develop quantifiable stakeholder evaluations to replace the binary attribute; 4) address stakeholder dynamics by evaluating stakeholders based on the issue arenas; 5) the relative value enables cross-case evaluations.



**Developed by the author*

Figure 6-6 the conventional and new stakeholder management tools

CHAPTER 7 VALIDATION OF THE FRAMEWORK

7.1 Introduction

This chapter validated the framework developed in Chapter 6 by a mega infrastructure project, the Hong Kong-Zhuhai-Macao Bridge. The basic backgrounds and the reasons for choosing the project were introduced in section 7.2, including the project scope, the significance, and the complicated stakeholder environment. The case study was conducted following the framework steps developed in this study. The detailed processes of the data collection in the case study were recorded in section 7.3. The outcomes from the framework including the identified social responsibility issues and action plans were illustrated in section 7.4 to section 7.6. From the framework, ten social responsibility issues were identified for implementation in the framework by a focus groups and individual interviews with representatives in the project team. Based on the evaluation of the related stakeholders, the action plans at the organizational and project levels that delivered to all the stakeholders were presented. To evaluate the effectiveness of the framework, feedback forms were collected from all the participants.

7.2 The case information

7.2.1 Backgrounds of the project[4]

The case for framework validation was locked on the Hong Kong-Zhuhai-Macao Bridge (HZMB), hereinafter referred to as the HKZB project or the project), which is a mega cross sea transportation infrastructure linking the Hong Kong Special Administrative Region (Lantau Island, Tung Chung, and the Hong Kong International Airport), Zhuhai of Guangdong province, and Macao Administrative Region. The

[4] The information in this section sources from http://www.hzmb.hk/eng/about.html, and http://www.hzmb.org/en/default.asp, as well as the archival data from the case study

project was planned since 2007, and the construction commenced from December 2009. The entire length of crossing was about 35.6 km. The main bridge in Guangdong territory was 29.6 km long including the cross-sea dual 3 lane bridge, the two artificial islands, and a 6.7 km under-sea tunnel. The main bridge constructions were successfully connected in September 2016, the estimated commissioning is in the end of 2017. Once the HZMB project completed, it will become world longest cross-sea highway with a combination construction of bridge and tunnel. The project will dramatically reduce the travel time between the three regions. The travelling time from Zhuhai to Hong Kong will be reduced to approximately 30 minutes, saving about two and a half hours compared with the current travel time between two places. The project will facilitate the economic co-prosperity of the three regions, and facilitate the economic integration and development through combining the competitiveness of the three regions. The main bridge cost about RMB 38.1 billion. Part of the money was jointly invested by the three governments, and the rest was independently financed by the HZMB authority. The HZMB project is mega-sized, far-reaching, and has a high degree of complexity in construction and management.

7.2.2 Why the project is selected

According to the research design, the selected case need to has three characteristics: 1) the projects have needs to implement social responsibility issues; 2) the project involves multiple stakeholders; 2) the project has challenges to collaborate multiple stakeholders to implement social responsibility issues.

For the first characteristic, social issues emerged continuously since the planning of the projects. One received most concerns was the protection of endangered species, the Chinese White Dolphin (CWD), because the noise and pollutions from the construction activities inevitably damaged the existing heritages. Another crisis that gained great social attentions was the protest from local residents in Tung Chung. The relationship with local communities was once tension. According to the China news[5] in 2010, a resident in Tung Chung raised her concerns for the environmental

[5] http://www.chinanews.com/ga/2011/09-29/3361633.shtml

influences and apply for the administrative reconsideration for the project. The public crisis caused great amount of monetary lost and unpredicted delay of the project schedule. Therefore, this project is suitable as the case study, because it has great demands and pressures to implement social responsibility programs on the project.

In addition, the project is well suited for second and third characteristics, because it involves complicated and dynamic stakeholder power structure and interactions. Different stakeholders are engaged in the projects for dealing with the enormous project demands and risks. The developer of the project is the HZMB authority who is assigned with duties on controlling the construction, commissioning, maintain, governance, and management of the project. The main contract was undertaken by the joint venture led by the China Communications Construction Company Limited (CCCC). The supervision, initial design, engineering, quality management, and surveying and design service are delivered to numerous subcontractors. And there are also large numbers of professional institutions that involved in different periods of the project. In addition, because of the significant influences of the project, some other governmental and social departments are also involved in the project.

7.3 The implementation process

Following the case study plan developed in research design (the development process see section 3.4.3.5, the case study plan see Appendix E), the case study was conducted in three steps. The activities and data collection processes were described in Table 7-1.

Table 7-1 the data collection process of the case study

process		activity	participants
Step 1	Identify the social responsibility issues and related stakeholders	1st interview	Project manager from the main contractor joint venture
		2nd interview	Senior engineer of the main contract
		3rd interview	Representative of the developer
		4th interview	Representative of the community
		The focused group	Five representatives from HSE department, sustainability department, green building department, project management

			team, and public relation team
Step 2	Evaluate the stakeholders and make action plans	Questionnaire distribution and collection	22 representatives from the developers, contractors, consultants, NGOs, Maritime authority, White dolphin protection authority, National planning and research institute
Step 3	Evaluate the outcomes of the framework	Feedback collection	All participants from the last two steps were filling the feedback form for validating the framework

**Developed based on author data collection*

The first step was for identifying the social responsibility issues that need to be implemented in the project and the related stakeholders. This step lasted from January to April 2016. Four in-depth semi-structured interviews and one focused group involving by five representatives of different departments were conducted for finding out what social responsibility issues need to be implemented in the project, and which stakeholders are related. The detailed plans and instruments used in the case study were presented in Appendix E. The interviews were conducted through on-line chat, telephone calls, and face-to-face conversations. All interviews lasted more than one hour. The focus group was conducted in April 2016 in the office on-site, which lasted about 30 minutes. In the interviews and focus groups, the participants were asked what social responsibility issues they think are needed to be implemented, and which stakeholders they think are related to these issues. The findings from the interviews and focus groups were recorded by the author.

The second step is for evaluating the stakeholders' attributes on the identified social responsibility issues. Questionnaire was used in this step. A sample of the questionnaire used in the case study can be found in Appendix F. The questionnaires were distributed to the 22 representatives invited from the identified stakeholders from April to May 2016. They were asked to evaluate their power, interest, legitimacy, and urgency, on each social responsibility issues using five-point scale. Among all the questionnaires, 9 were completed and collected face-to-face, and 13 were distributed in hand and collected afterward by scanning copy through email. Plan of actions for implementing the social responsibility issues were made based on the data collected.

A report containing an individual engagement plan and stakeholder collaboration plan that customized by the SPIs and SIIs was delivered to each stakeholder organization. The report includes three sections, 1) the introduction of all the identified social responsibility issues; 2) the suggested actions that the stakeholder is suggested to take for all the issues, including the different engagement levels and potential influencing strategies; 3) the stakeholder-SRI network, with explanations on the suggested collaboration structures.

The third step is for collecting the feedback from the participants for framework validations. The reports showing the suggestions were sent to all the participants through email one week after the data collection. Along with the reports, a feedback form was also delivered to them to collect their comments about the framework and case study outcomes. After communicating with the participants by emails and telephones, all feedback forms were collected by the end of June 2016.

7.4 The identified social responsibility issues

7.4.1 Disclosure of project impacts on China White Dolphins (CWDs)

Because the project crosses the Pearl River Estuary and waters of Hong Kong, the habitat of the endangered species the CWD is indispensable influenced. According to the news on the project website[6], the project participants have paid great efforts on protecting the CWDs, including regular trainings for the workers, dolphin observer, reduce underwater vibration and noises. However, after the project commenced from 2011, only one report in 2014 disclosed the decrease of 27 in numbers compared with 2012[7]. No data has been publicized since then. The monitors on CWD habitat are carried out regularly; however, the data disclosure is only occasionally. It is proposed that the project should consider disclosing the assessment reports of project impacts on CWD periodically, letting the public and relevant personals acquire the accurate

[6] http://www.hzmb.org/cn/default.asp

[7] http://www.hzmb.org/cn/bencandy.asp?id=2415

information.

7.4.2 Marine parks to reserve ecological diversity

Due to the project influence marine ecology, and for the approval of project environmental assessment, the HK government proposed to build a 10,000 m^3 marine park at the brothers of north Lantau Island. Fish will be released in the artificial reef for the reservation of marine habitat, as the compensation of the marine fishery resources. Referring to this measure, the project in Zhuhai can also consider building marine parks to reserve marine ecology.

7.4.3 Treatment of the construction waste and sewage

Most of the construction activities are carried out at the offshore construction platforms, the waste, slop, and sewage that generated from the construction process may cause irreversible damages on the marine environment and ecology. But due to the tight schedule, the implementation of waste management is not always prioritized by the project participants. It is proposed that all the construction waste should be treated and tested. It must be guaranteed that the treated waste will cause no pollutions on the marine environment and ecology, before it can be disposed or transported.

7.4.4 Environment monitor stations for data monitoring and disclosure

To meet the requirements of the Environmental Monitoring and Audit (EM&A) by the HK Government, the updated data on environmental monitoring including air quality, landfill gas, noise, water quality, and ecology are continuously disclosed and reported by the environmental project office[8]. The environmental assessment are conducted annually in Zhuhai project, however, no accurate environmental data was disclosed by the project. Referring to the EM&A practices, it is proposed the environmental monitor stations and sensors should be developed for reporting the real-time data of environment monitoring.

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[8] http://www.hzmbenpo.com/

7.4.5 Health care for the workers

Because the crucial working environment offshore, the project participants should take measures for the physical and psychological health of the construction workers. Regular measures should be arranged, such as entertainment activities, health examination, cooling measures in summer, improvement on working conditions, etc.

7.4.6 Safety management in the extreme weathers

Extreme weathers offshore occur occasionally on the sea, such as typhoons, thunderstorms, and intense heat. The employees working on the offshore platform face the health and safety risks under such conditions. It is proposed that on the project the safety management in the extreme weathers should be included as the routine works in health and safety management, including emergency plan and equipment, safety trainings, and security acts.

7.4.7 Public and community relationships

Although most of the construction activities are offshore, the public relations are intense because of the broad and far reaching influences of the project. In order to reduce the conflicts, it is proposed that community relationships can be developed and maintained by raise community development funding, support education and sports, organize open day for public visitors.

7.4.8 Public participation workshops

The project may encounter emerging social issues to make decisions during the long construction period, for example the delayed completion time, and the dilemma of social and economic performance. In order to enhance the project social performance, it is proposed that public participation workshops can be held periodically along the project. The workshops include communicating the updated information to the public and receiving public comments for project management on social issues. The workshops can also provide a public participation platform for joint decision making for project development.

7.4.9 Social philanthropy or volunteer activities

It is proposed that the project can organize philanthropy or volunteer activities, such as students visiting days, volunteers for picking beach trashes, raise money for charity, care for minorities, etc. These activities can not only build the reputation of the project, but also reinforce the organizational commitments of the employees.

7.4.10 Energy saving and emission reduction plans

Considering the enormous energy consumption of the project construction and operations, the project participant can choose to adopt the energy saving and emission reduction techniques, plans, materials, and management. It can reduce the project social and environmental influences over project lifecycles. The social performance can be also improved by taking such measures.

7.5 The organizational level: action plans for individual stakeholders

During the first step of the case study, nine stakeholders were identified as the related stakeholders associated with the social responsibility issues (see Table 7-1).

Table 7-2 the list of the related stakeholders in the case project

No.	Stakeholders	Abbreviation	Roles in the project
1	Hong Kong-Zhuhai-Macau Bridge Authority	HZMB authority	The developer
2	Hong Kong-Zhuhai-Macau committee	HZM committee	The government department
3	China communication construction Co. Ltd.	CCCC	The main contractor
4	Island & tunnel project department	I&T project department	The main contractor
5	China railway survey and design Co. Ltd	CRSD	The consultant
6	Zhuhai Lin Kee Waste Recycling Co. Ltd	ZLKR	The subcontractor
7	Maritime authority	MA	The government department

8	China White dolphin protection authority	CWD authority	The public institution
9	Sea planning and environmental research institute	SPER institute	The public institution

**Developed based on author data collection*

As the vital player, HZMB authority is the developer and the major manager in the project. The HZM committee represents the governments of Hong Kong, Guangdong province, and Macau, to perform the administrative duty in the project; therefore, it has important responsibilities to control the quality, environment, and health and safety. CCCC is the organizer of the main contractor joint venture. The main construction work is mostly undertaken by CCCC including the main bridge projects and island and tunnel projects. The I&T project department is the headquarter for directing the design and construction of the artificial islands and the subsea tunnel. I&T project department is affiliated to the main contractor company CCCC, but independently takes charge of the island & tunnel project management. It has relationships with multiple important stakeholders including the developers, consultants, and subcontractors and suppliers, therefore have superior power to coordinating sufficient resources. CRSD provides surveying and supervision services for the main bridge construction. It has the responsibility on monitoring and reducing the project risks and environmental impacts. ZLKR is the subcontractor for waste and material recycling in the project. This is a small professional company. The reason it was identified as related is because this company has important roles in waste control on site. MA is the governmental department that in charge of the safety and environment management of sea transportations in Guangdong province. Therefore the safety and environmental performance of the project is concerned by MA. CWD protection authority is the governmental institute who has the responsibility to protect CWD habitat. SPER is also a governmental institute who is responsible for the marine geology survey, environment monitor, and marine environment research.

According to the framework, action plans can be provided based on the evaluation of these stakeholders' SPIs and SIIs. The action plans for each stakeholder were displayed and explained with colored charts from section 7.5.1 to section 7.5.9. The charts displayed in each section are the figures that shown and explained to each

stakeholders. Some information was delivered by the colored charts: 1) the first column shows the social responsibility issues 2) The numbers in the second column are the values of the stakeholder's SPIs, and the colored bars suggest the engagement levels. The red bars mean proactive engagement, and blue bars mean reactive engagement. The lengths show the magnitude of proactive or reactive engagement. 3) The numbers in the third column are SIIs values. The color shows preferences for aggressive or cooperative strategies. The heated color (red) suggests the inclination for aggressive strategy; whist the cold color (green) shows the preference on the cooperative strategy.

7.5.1 Hong Kong-Zhuhai-Macau Bridge authority

Figure 7-1 shows the action plans for HZMB authority. It was suggested to take proactive engagements and lead the implementations of all the social responsibility issues (all bars are in red color). Priorities should be put on building marine parks and philanthropy & volunteer activities. It was suggested that the HZMB authority is eligible to adopt aggressive strategy to enforce philanthropy and volunteer activities in the project (most heated). The HZMB authority was also encouraged to develop community relationships, public participation workshops, energy saving & emission reduction plans, and waste management issues. For these issues, the HZMB authority was suggested to use cooperative strategies such as incentive policies.

HZMB authority

	Engagement level	Influence strategy
Information disclosure on CWD	0.03	0.10
Marine parks	0.29	0.14
Waste management	0.17	0.19
Environment monitor stations	0.10	0.11
Health care for workers	0.22	0.15
Safety management in extreme weathers	0.11	0.17
Community relationships	0.24	0.14
Public participations	0.21	0.13
Philanthropy & volunteer activities	0.28	0.25
Energy saving & emission reduction plans	0.22	0.19

**Developed based on author data analysis*

Figure 7-1 the action plans for the HZMB authority

7.5.2 Hong Kong-Zhuhai-Macau committee

Figure 7-2 shows the action plans delivered to the HZM committee. From the action plans in Figure 7-2, HZM committee was suggested to put priorities on energy saving & emission reduction plans. It should also proactively engage in philanthropy & volunteer activities, safety management in extreme weather, and building the environment monitor stations (the red bars). HZM committee was suggested that they had power to enable regulation to force the safety management in extreme weathers (intense heated color). HZM committee was also suggested to adopt aggressive strategy to promote labor health care and waste management.

HZM committee

	Engagement level	Influence strategy
Information disclosure on CWD	0.00	-0.07
Marine parks	-0.16	-0.22
Waste management	-0.04	0.02
Environment monitor stations	0.05	-0.05
Health care for workers	0.01	0.02
Safety management in extreme weathers	0.06	0.03
Community relationships	-0.14	-0.30
Public participations	-0.07	-0.26
Philanthropy & volunteer activities	0.06	-0.08
Energy saving & emission reduction plans	0.08	-0.05

**Developed based on author data analysis*

Figure 7-2 the action plans for the HZM committee

7.5.3 China Communication Construction Co. Ltd.

According to the action plans (Figure 7-3), CCCC was the key promoter on social responsibility issues in the project (most of the bars are in red). The priority should be put on the worker's health care. Regarding to this, the company should consider undertaking labor care programs such as health checks or medical services. CCCC can also need to put notice and proactively engage in some other issues such as public participation workshops, disclosing CWD information, waste managements, and etc. Overall speaking, CCCC was also suggested has the potential to adopt aggressive strategy on most issues (except for building marine parks which is the responsibility of the developer). If the subordinated stakeholders' performance is unsatisfactory,

aggressive strategy could be taken such as using written instructions to regulate their behaviors.

CCCC

	Engagement level	Influence strategy
Information disclosure on CWD	0.16	0.16
Marine parks	-0.16	-0.28
Waste management	0.15	0.09
Environment monitor stations	0.09	0.20
Health care for workers	0.20	0.05
Safety management in extreme weathers	0.14	0.07
Community relationships	0.15	0.09
Public participations	0.18	0.06
Philanthropy & volunteer activities	0.16	0.13
Energy saving & emission reduction plans	0.16	0.11

**Developed based on author data analysis*

Figure 7-3 the action plans for the CCCC

7.5.4 Island & tunnel project department

From Figure 7-4, it shows that the I&T project department should proactively engage in almost all of the social responsibility issues. The I&T project department was suggested to put their emphasis on public participations (the engagement level is high and aggressive strategy is intense). From the interviews, it was acknowledged that due to the complicated engineering conditions, the I&T project has major environmental and social influences. The I&T project department was suggested to organize the workshops or forums by inviting public and communities to participate. The I&T project department was also suggested to put resources in maintaining community relationships and initiating philanthropy or volunteer activities.

Island & tunnel project department		
	Engagement level	Influence strategy
Information disclosure on CWD	0.22	0.16
Marine parks	0.04	0.01
Waste management	0.15	0.15
Environment monitor stations	0.01	-0.06
Health care for workers	0.22	0.13
Safety management in extreme weathers	0.16	0.17
Community relationships	0.31	0.28
Public participations	0.38	0.30
Philanthropy & volunteer activities	0.28	0.25
Energy saving & emission reduction plans	0.16	0.13

**Developed based on author data analysis*

Figure 7-4 the action plans for the I&T project department

7.5.5 China Railway Survey and Design Co. Ltd

As it is shown in Figure 7-5, on all social responsibility issues, CRSD was suggested with proactive engagements. It was recommended that CRSD should put the priority the marine park plan. CRSD had the firsthand data about the marine environment and the potential impacts on ecological diversity, because it took charges of the survey and design. It had power to alter other stakeholders' attitudes by raising the criticality of the marine environment protection using the surveying data and professional knowledge. The second priority was suggested to be given on the health care for construction workers offshore. It could supervise the health & safety behaviors taken by the contractors and subcontractors. On marine park and health & safety issues, CRSD could take aggressive attitudes. On the other issues, it was suggested that CRSD adopts cooperative strategies such as like convincing the developer with the expected cost savings and returns for implementing energy saving techniques, providing advices on safety management or waste management, etc.

CRSD

	Engagement level	Influence strategy
Information disclosure on CWD	0.06	-0.11
Marine parks	0.24	0.15
Waste management	0.07	-0.04
Environment monitor stations	0.13	0.04
Health care for workers	0.22	0.15
Safety management in extreme weathers	0.16	-0.05
Community relationships	-0.05	-0.06
Public participations	0.06	-0.02
Philanthropy & volunteer activities	0.07	-0.05
Energy saving & emission reduction plans	0.02	-0.01

**Developed based on author data analysis*

Figure 7-5 the action plans for the CRSD

7.5.6 Zhuhai Lin Kee Recycling Co. Ltd

Figure 7-6 shows the action plans for ZLKR. It was suggested to take reactive engagements in all of the social responsibility issues due to the lack of enough interests and powers. Therefore ZLKR's role on social responsibility is the subordinator. Waste management in the project was suggested as the first priority and dominated area. The main strategy that was suggested is cooperation, such as responding to their appealing, offering necessary assistance, and participating the stakeholder meetings. Cooperative actions can be taken by ZLKR on philanthropy and volunteer activities, public participation workshops, environment monitor stations, etc.

ZLKR

	Engagement level	Influence strategy
Information disclosure on CWD	-0.52	-0.31
Marine parks	-0.36	-0.45
Waste management	-0.03	-0.24
Environment monitor stations	-0.36	-0.46
Health care for workers	-0.38	-0.45
Safety management in extreme weathers	-0.49	-0.38
Community relationships	-0.45	-0.38
Public participations	-0.34	-0.34
Philanthropy & volunteer activities	-0.27	-0.37
Energy saving & emission reduction plans	-0.58	-0.53

**Developed based on author data analysis*

Figure 7-6 the action plans for the ZLKR

7.5.7 Maritime authority

In Figure 7-7, MA should take proactive engagements primarily in public participation workshops and the information disclosure on CWD. For public participations, if the developer and contractor hesitated, maritime authority could change their attitudes and behaviors by using their legislative and regulative power. For disclosing CWD information, the maritime authority were suggested to take cooperative strategy such as provide monetary incentives or professional services. If the maritime authority had further plans for facilitating social responsibility in the project, waste management was suggested to promote for reducing pollutions on marine environment.

Maritime authority

	Engagement level	Influence strategy
Information disclosure on CWD	0.06	-0.20
Marine parks	-0.36	-0.20
Waste management	-0.03	-0.01
Environment monitor stations	-0.45	-0.29
Health care for workers	-0.33	-0.22
Safety management in extreme weathers	-0.06	-0.05
Community relationships	-0.05	-0.06
Public participations	0.15	0.18
Philanthropy & volunteer activities	-0.13	-0.08
Energy saving & emission reduction plans	-0.09	-0.01

**Developed based on author data analysis*

Figure 7-7 the action plans for the maritime authority

7.5.8 White dolphin protection authority

According to the Figure 7-8, CWD protection authority was suggested to put the priority on requiring the disclosure of information on CWD on the project website. It was suggested that if other stakeholders were reluctant, aggressive strategy such as exerting pressures or allying governmental power could be used. The next priority can be put on building marine parks and setting environment monitor stations for reserving and monitoring marine habitat. But on these two issues, relative soft tactics could be adopted because these issues were not very urgent. Cooperative tactics were suggested including organizing CWD protection initiatives, regular trainings and advices, giving presentations or forums on CWD protections, professional equipment

and techniques to investigate the habitat environment.

CWD protection authority

	Engagement level	Influence strategy
Information disclosure on CWD	0.18	0.20
Marine parks	0.07	-0.02
Waste management	-0.05	-0.18
Environment monitor stations	0.13	0.04
Health care for workers	-0.38	-0.40
Safety management in extreme weathers	-0.14	-0.23
Community relationships	-0.05	-0.06
Public participations	-0.26	-0.13
Philanthropy & volunteer activities	-0.33	-0.37
Energy saving & emission reduction plans	-0.18	-0.32

**Developed based on author data analysis*

Figure 7-8 the action plans for the CWD protection authority

7.5.9 Sea planning and environmental research institute

According to the action plans in Figure 7-9, the priority of SPER was suggested to be given on building marine parks to reserve ecological diversity. To some extent, this activity was difficult to be undertaken voluntarily because of the high cost, so the project participants would not be willing to do it unless it was required. In this way, if SPER could figured out the demands for building marine parks is urgent due to the damage on marine ecology by the project, aggressive strategy could be taken including imposing pressures on key stakeholders. Incentives and encouragements from governments should be proposed by SPER for example the tax reduction or other compensations for the cost on building marine parks. The next level of priority should be given on setting environment monitor stations, waste management, and health care for workers. On these issues, high engagement levels were suggested.

SPER institute

	Engagement level	Influence strategy
Information disclosure on CWD	-0.23	-0.20
Marine parks	0.33	0.24
Waste management	0.17	0.19
Environment monitor stations	0.25	-0.05
Health care for workers	0.22	0.15
Safety management in extreme weathers	0.16	0.07
Community relationships	-0.02	-0.03
Public participations	-0.34	-0.28
Philanthropy & volunteer activities	-0.02	-0.05
Energy saving & emission reduction plans	0.22	0.19

**Developed based on author data analysis*

Figure 7-9 the action plans for the SPER institute

7.6 The project level: stakeholder collaboration plans

The stakeholder collaboration plan was made based on the stakeholder-SRI network shown in Figure 7-10. It was developed by using the stakeholders and the social responsibility issues as nodes, and the value of SPIs as the weighted links (only links with high SPIs were visible). The blue square nodes were the stakeholders for collaboration, while the red round nodes were the social responsibility issues that were planned to implement. The node sizes represented for the degree centralities. Therefore, the larger size of the square node, the higher level of engagement should be taken by the stakeholder, and the higher responsibilities are associated with the stakeholder. The sizes of the round nodes showed the extents to which the social responsibility issues require stakeholder collaborations.

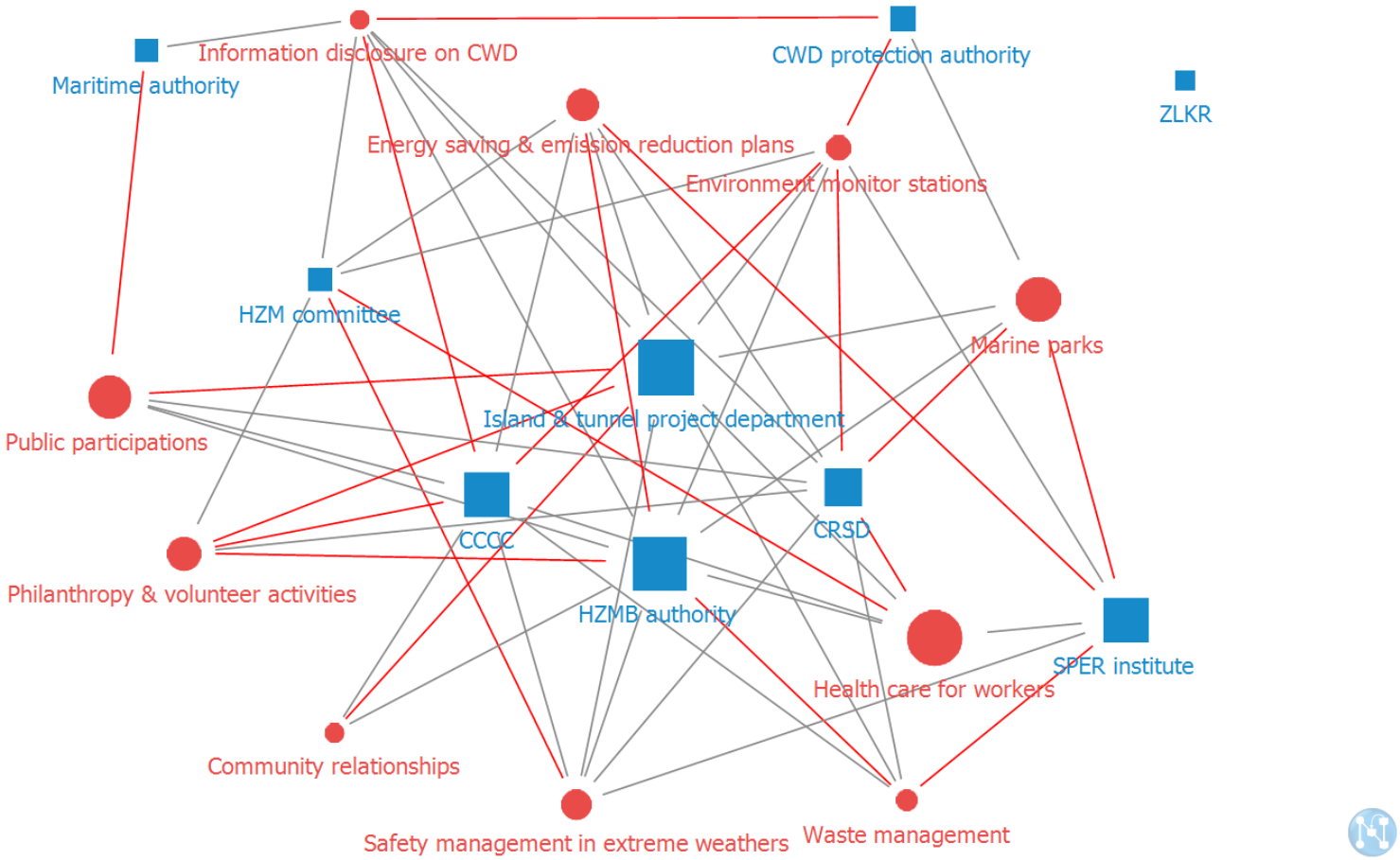
Figure 7-10 showed that in the middle of the stakeholder-SRI network, the HZMB authority, I&T project department, CCCC, and CRSD were the key responsible stakeholders on social responsibility issues. Their commitments to social responsibility implementation in the project were significant to the success of stakeholder collaboration. They should take the leader roles and initiate the social responsibility issues in the projects.

From the network, the social responsibility issues most in need of stakeholder collaborations were workers' health care, marine parks, public participations, and philanthropy & volunteer activities. Among these issues, building marine parks and public participations were most difficult to implement. They need necessary supports and proactive engagements of multiple stakeholders..

The stakeholder-SRI network also showed the complicated power structures and interactions among stakeholders and the social responsibility issues. The four key stakeholders in the middle should unite as the headquarter of stakeholder collaborations. They should interact frequently to share information, exchange resources, and discuss the implementation plans. The other stakeholders were required to collaborate on some of the social responsibility issues. They had specific emphasis due to the different professionality. For example, maritime authority should join on public participation and disclosing information on SWD.

Detailed information can be obtained from the stakeholder-SRI network for stakeholder collaborations at the project level. For each social responsibility issue, the stakeholders that need to be collaborated with can be easily identified. For example, the development of community relationships needed the collaboration among CCCC, the I&T project department, and HZMB authority. In order to facilitate the information disclosure on CWD, multiple external and internal stakeholders should collaborate, including maritime authority, CWD protection authority, HZM committee, HZMB authority, CCCC, and the I&T project department.

Moreover, the colors of links also showed potential influencing strategies adopted by the associated stakeholder. Red link means the stakeholders had high SIIs on the issues, so they had high possibilities to adopt aggressive strategy if they are not satisfied on the performance of the social responsibility issues. Project management should put primary focuses on these stakeholders and social responsibility issues that linked by “red lines”, for reducing the potential conflicts and aggressiveness. For example, in the case project, HZMB authority and SPER institute had red links on waste management in the project. Therefore, it was important to ensure the outcomes of waste control were reported to these stakeholders.



**Generated by Netminer based on author data analysis*

Figure 7-10 the stakeholder collaboration network in the case project

7.7 Feedback of participants

After delivering and communicating the action plans with colored charts the stakeholder-SRI network, all 22 participants were asked to fill in the feedback forms and return for the framework performance assessment. The sample of the feedback form is attached in Appendix G. In the feedback form, the participants were asked to assess the applicability and the effectiveness of the framework.

According to the results, the framework has received positive responses (agree or strongly agree) on the framework effectiveness. Eighteen out of 22 of the participants agreed that the framework can improve social responsibility implementation in construction projects. Sixteen participants thought that through implementing the framework, the project social performance can be improved. Fifteen among the participants perceived that the framework procedures help the stakeholders to communicate. The effectiveness of the framework on facilitating stakeholder collaboration was also supported by sixteen participants. Large proportion of the stakeholders (nineteen) agreed that this framework can assist their organizations to implement social responsibility by prioritizing different issues and clarifying the collaboration structures. The average score of the five questions on framework effectiveness was 4.3, therefore, it was validated that that the framework has great potential in assisting stakeholder on social responsibility issues.

With regard to the applicability of framework, there were six disagreements on the statement that the framework can be easily applied in construction projects management. This may be due to the concerns about the time consuming for the framework, difficulties on gathering attentions from all stakeholders, reluctant stakeholder participations, and stakeholders' resistant for avoiding extra risks and costs. However, the participants had favorable perceptions on the framework processes. About sixteen of the participants thought the framework steps were clear and easy to follow, and fifteen considered the results from the framework were easy to comprehend. Among all participants, seventeen said that their organizations would like to participate in this framework for implementing social responsibility. The results showed that although there are some concerns by the stakeholders on this new

framework, they still had positive attitudes towards it and had willingness to collaborate on social responsibility issues. The procedures of the framework were validated as clearly understood and easy to practice.

In response to the open-ended question on the feedback form, some suggestions were provided by the participants. Some comments addressed that the framework was well-organized and very useful in construction practices because the social issues are currently under-estimated by most construction organizations. One suggestion was that the framework should involve more stakeholders from society instead of focusing only several internal stakeholders. Another participant mentioned that the social responsibility issues suggested by the framework were conflicting with their tight schedule. Because the project progress had already been delayed due to the technical difficulties, and the delay cost is unaffordable for them and the society. Considering that, the schedule must be chased up and some social issues had to give way. In addition, one suggestion claimed that powerful stakeholders may be reluctant to participate in the project because they can expect great burdens would be put on their shoulders. All social responsibility issues may cause additional costs; thus, they must be avoiding such risks and be reluctant to participate. There were some comments pointed out the results generated from the framework were reasonable, but whether those powerful stakeholders would take their responsibilities was invisible and hard to supervise.

Considering the suggestions and comments, the framework needs to be implemented in more projects in future taking note to the above problems. For example, the identification of social responsibility issues should not only limit to the environmental or safety issues, according to the different situations, some project difficulties, like the project delay, should be also included in to-do-list. Priorities will be given on the issues in the list. Project delay will become the first priority of some capable stakeholders. This framework is for reducing stakeholder conflicts by assigning stakeholder with their most capable and urgent issues to firstly deal with. About the reluctance, more external stakeholders should be involved in the framework, such as social organizations, public institutions, unions, and public media. They can provide the driving force and monitoring the implementation of the framework.

7.8 Effectiveness and applicability of the framework

The effectiveness and applicability of the framework are validated by the positive feedbacks from the participants. The study used a cross-sectional case study rather than a longitudinal research or before-and-after comparison, because it is hard to control environmental variables, no rigorous identifications can be made on what changes are caused by the framework and what are not. More elaborations are made to discuss the framework outcomes and implementations.

7.8.1 How the framework can facilitate collaboration

From the literature review, this study identified that the obstacles of stakeholder collaboration are lack of team structures and unequal power and responsibility. This framework is designed to develop team structure based on stakeholders' attributes, in order to reduce the gaps between power and responsibility. From the case study, this framework is found to effectively improve collaborative work by stakeholders from three aspects:

First, the framework provides a communication platform for stakeholders to put forwards their concerns and share information and knowledge equally. From the case study, it is found that stakeholders are not often gathered for discussing their social and environmental concerns. Especially the end users and communities are seldom involved in project meeting. Effective communication can help stakeholders to arrive at common social responsibility objectives, which is an important premise for collaboration.

Second, team structures can be built from the framework as a "team scaffold" to guide stakeholders. In this "team scaffold", accountability for different SR issues is assigned guiding stakeholders what roles they should take and collective responsibility is formed by clarifying who should share the consequences. It is found from the case study that because the social responsibility issues are not compulsory, stakeholders do not have motivations to implement them. By building the "team scaffold", the principals for each issue are assigned to leading and coordinating collaborative work by stakeholders.

Third, trust and cooperative atmosphere created by the framework can also improve collaboration. By assigning leader roles to stakeholders with strong power and follower roles to those with weak power, the gaps between power and responsibility can be reduced. In addition, the framework also empowers the stakeholders with legitimate and urgent claims to defend for their benefits. Their influences are a counterbalance to avoid stakeholders abusing their power. Trust among stakeholders can be built by understanding that through the framework, everyone will do their share and provide resources for win-wins.

7.8.2 How to implement the framework in practice

The framework is not a one-off model that only implemented in project planning stage, but a consistent monitoring and partnering initiative that should be implemented constantly along project lifecycles. Because the dynamic and uncertain nature of project environment, it is not able to predict all social responsibility issues occur in all project stages. By implementing the framework, potential issues can be gradually identified from the stakeholders who have knowledge and interests (for example NGOs and end users).

In practice, the framework can be incorporated as a part of project stakeholder meetings. The formalization of the framework may come across some resistance from practitioners, due to the fear of disturbance on their routine work and risks that brought by the organizational changes. Resistance can be a good thing for organizational interventions, because the framework can be improved by providing resolutions to practitioners' concerns and worries. Project managers should address that the framework is for the improvement of work efficiency, and it is built in a collaborative way to produce values to all rather than self-serving benefits.

7.8.3 What are the main contributions from the framework

First, the framework help to define responsibility allocation among stakeholders. Because stakeholders don't have pre-agreed accountability over the emerging social and environmental issues, stakeholders pass-bucking and avoidance of responsibility cause risks to project implementation. This framework provides a tool for project

managers to identify responsibility allocation among stakeholder when new issues are emerged. It can also help stakeholders to cope with new challenges and risks that emerge in our society and the environment by quickly finding out who are the principals to lead the rest stakeholders.

Second, the framework help to reduce the gaps between unequal power and responsibility taken by stakeholders. Because it is normal in construction projects that powerful stakeholders don't realize their responsibility and leave the pressures on weak ones, which cause financial stress and lose of trust. Through implementing the framework, stakeholders' awareness of their capable issues to improve project social performance can be raised. In addition, the framework also empowers stakeholders with urgent and legitimate claims to use their influence to drive powerful stakeholders taking their responsibilities. Aggressive is not always a bad thing, it acts as a constraint for stakeholder power abuse. The framework is for identifying the potential aggressiveness and primarily respond to these demands, but not for completely preventing it.

7.9 Summary of the chapter

The theoretical foundation established in this study claimed stakeholder collaboration on social responsibility in construction projects can be facilitated by balancing power and responsibilities and suggesting proper influencing strategies. Based on this statement, a framework was developed attempting to enable stakeholder collaboration on social responsibility issues. This chapter validated the practical effectiveness of the framework through implementing it in a real construction project. The social responsibility issues to be implemented were identified and the action plans for all the related stakeholders were proposed. At last, the performance of the framework was validated with positive feedback of the participants. By this point, the last objective proposed in this study has been achieved. According to the research gaps pointed out in this study, although stakeholder collaboration is significant to social responsibility in construction projects, no management tool exists for dealing with the conflicting interests and scarce resources. In this study, a validated stakeholder collaboration framework was established to supplement this gap to facilitate stakeholder

collaboration on social responsibility issues.

CHAPTER 8 CONCLUSIONS

8.1 Introduction

This chapter summarized the main conclusions obtained in this study. First, the research objectives proposed in the beginning were revisited. From data collection and analysis, the main conclusions under each research objective were summarized in sequence. The significance of this study was demonstrated by discussing the theoretical contributions and practical implications. At last, the research limitations and future directions were presented.

8.2 Review of the research objectives

Construction industry has been under imperative pressures to implement social responsibility due to the severe adverse impacts along with construction development activities. The unsatisfactory social performance is the obstacle that hinders the sustainability of the development of construction and building sectors. To improve social responsibility performance, construction project stakeholders need to collaboratively share resources and respond to the emerging social issues over the project lifecycle. At present, only eighteen academic literatures were found that focuses on social responsibility in construction sector, most of which are conceptual research. Therefore, current research on this particular area is limited and fragmented. Even no attentions are paid on social responsibility at the project level. This study focused on this gap and attempted to find a way to implement social responsibility under complicated stakeholder environment.

The main aim of this study has been to provide a better understanding of complicated stakeholder environment in construction projects, and developing an operational framework to facilitate stakeholder collaboration on social responsibility implementation. Four objectives have been proposed to achieve in this study:

（1） To establish a theoretical foundation that links theories of stakeholder power and influence with social responsibility in construction projects.

（2） To explore stakeholders' dynamic power on different social responsibility issues in construction projects lifecycles.

（3） To investigate the inter-stakeholders' influences on social responsibility implementation in construction projects.

（4） To develop an operational framework for assisting stakeholder collaboration to share the critical resources and engage in social responsibility issues in construction projects.

The first objective has been achieved by the integrative literature review in Chapter 2. Two key factors to successful stakeholder collaboration were identified from the reviews on the relevant literatures. They are 1) balancing stakeholder power and responsibility; 2) adopting proper influencing strategies. The theoretical links have been bridged among three different fields including: social responsibility, stakeholder collaboration, stakeholder power and stakeholder influence. The research gaps in each field were also identified. The theoretical foundation for this study was established by integrating the three lines of theories.

The second objective has been achieved by a questionnaire survey presented in Chapter 4. The stakeholder power over the 35 social responsibility issues over the project lifecycle has been revealed. The results explicated the dynamic distribution of stakeholder power on different social responsibility issues.

After explaining stakeholder power, the third objective was to investigate the inter-stakeholder influences on social responsibility. This objective has been achieved in Chapter 5. Through interviews with practitioners, the behavioral strategies and tactics adopted by project stakeholders have been identified.

In Chapter 6 and 7, the stakeholder collaboration framework for social responsibility in construction projects was developed and validated in the HZMB project. The last objective has been achieved. Two quantifiable stakeholder measures: SPI and SII, were proposed. An operational framework was developed based on these two measures to provide a general solution for implementing social responsibility issues under complicated stakeholder environment. All research objectives have been

achieved in this study. The key research conclusions were elaborated in the following sections.

8.3 Research conclusions

8.3.1 The keys to stakeholder collaboration on social responsibility

From the reviews of the existing literatures in Chapter 2 stakeholder power and stakeholder influence were revealed as the key focuses for resolving the problems in social responsibility collaboration. The main argument of this study is that outcomes of social responsibility efforts can be increased through effective power and influence chains among project stakeholders. The mechanism is that the flows of critical resources held by powerful stakeholders can enhance the capacity of project team on coping with the emerging social issues.

The current literature review showed that the ignorance of the imbalanced power among stakeholders is the primary problem for current stakeholder collaboration research and practices (Hardy & Phillips, 1998; Loosemore, 1999). Because stakeholders' power distributions are dynamic and complicated, it is extremely difficult for stakeholders with conflicting interests and limited resources to jointly devote to social responsibility. Powerful stakeholders are supposed to take more responsibility because they are more capable of accessing scarce resources and obtaining supports from other stakeholders. The wise usage of power can pass social responsibility commitments to the upper and lower echelons in the supply chain, and facilitate stakeholders collaboration on dealing with social responsibility issues (Jones et al., 2006).

Moreover, it is argued that stakeholders' awareness of power does not definitely lead to collaboration, the exercise of influences is equally essential. Stakeholder power is only the potential to influences; while there can be no effects on the targets if influences are not strategically practiced. Different stakeholders have different strategies to drive the target organization to respond to their claims or initiatives (Frooman, 1999). If stakeholders adopt proper strategies, the targets may react and even proactively engage themselves towards the desired directions (Sharma &

Henriques, 2005). However, inappropriate influencing strategies may not necessarily lead to compliance and even damage stakeholder relationships (Boyd et al., 2007). Therefore, the influences among multiple project stakeholders on implementing social responsibility were also focused in this study.

In previous studies, some factors like trust, partnership, culture, and regulations, are reported having relations with stakeholder collaboration. Power and influence are overlooked due to the negative and sensitive connotations. However, social responsibility collaboration is a non-zero-sum game under asymmetry information. Stakeholders can achieve an all-wins situation by sharing resources and powers. Although in political and social context, power implies manipulation and compel, nevertheless, it is the most flexible and adaptive approach to united different social actors towards common objectives.

8.3.2 The stakeholder dynamic power

Through the two-mode social network analysis of the questionnaire data, the underlying stakeholder power on the 35 social responsibility issues over the construction project lifecycle has been revealed. It shows that besides the internal stakeholders, the external stakeholders also have the irreplaceable responsibilities on promoting social responsibility in construction projects.

The core three stakeholders on social responsibility implementation have been found. They are governments, main contractors, and developers. The core three stakeholders have superior power over almost all social responsibility issues. However, their power fluctuates remarkably along the project lifecycle due to the dynamics in construction projects. The findings show that both governments and developers have the highest power in project initiating and planning stage. However, their power decreases dramatically after construction commence. In contrast, main contractors dominate at the construction stage, while have relative low power in the pre- and post-construction stages. Some may argue that stakeholders' roles and responsibilities may vary significantly under different types of contracts. This study addresses that stakeholders' power on social responsibility issues not only depends on their resources, but also on the abilities to communicate their advocacy and call for supports from

others in stakeholder network. Moreover, it is also found that stakeholders have different domains on social responsibility in construction projects. For example, governments show exclusive power over human right issues, such as equal opportunity for minorities and discriminations. Contractors have great power compared with others on the labor protection issues. Compared with the three core stakeholders, consultants have very limit power on social responsibility issues. Although they possess abundant knowledge and experiences to promote social responsibility initiatives, they are not the one who take charges because their plans can be easily turned down by their clients (Othman, 2009).

District councils and NGOs are found as the defenders for community and public benefits. Before this study, no research has been conducted on the roles of district councils on social responsibility implementation in construction projects. Considering scope of power, district councils were mainly responsible for the community related issues. They have strong power, only lower than the three core stakeholders, to monitor and influence the project activities for safeguarding the benefits of local communities. By contrast, the overall power of NGOs is rather weak. Despite their vital and active roles in resolving environmental and social problems, NGOs in Hong Kong have inadequate controls on social responsibility in construction projects. The power of NGOs keeps increasing as project proceed although the overall power is limited. Therefore, NGOs can continuously monitor the social and environmental impacts during project operations, demolitions, and even rehabilitations.

End users have the least power among all the stakeholders. This result does not conform to the common situations in general management that consumers are the most significant source of pressures for social responsibility implementation (Alberg Mosgaard et al., 2016; Henriques & Sadorsky, 1999; Sharma & Henriques, 2005). This result revealed that although public participation is highly emphasized by the Hong Kong government, project end users still lack effective channels to put forwards their requirements and participate in the project decisions.

It is noteworthy that stakeholders with great power do not have same levels of interest over the social responsibility issues. Comparison results show significant gaps between the stakeholders' power and their interest. It means although powerful

stakeholders have the abilities to implement social responsibility, while generally they do not have intrinsic intentions to do it. Through discussion of stakeholder power and interests, one proposition is obtained that stakeholder engagement levels in implementing social responsibility issues is determined by both stakeholder power and interest.

8.3.3 The stakeholder influence strategies

It has been concluded from the literature review that power only stands for stakeholders' potential to influence, while the behavioral strategies are real manifestations that decide the targets' behaviors to collaborate on social responsibility. The questionnaire findings answer what social responsibility issues stakeholders have power on, while the interview findings reveal how stakeholders exercise their power to influence the others.

The strategies and tactics of stakeholder inter-influences on social responsibility in construction projects have been elaborated in this study. Some unique characteristics of stakeholder influences regarding social responsibility collaboration were revealed. In previous research, stakeholders with relative high leverages in negotiations tend to adopt hard strategies to force the targets, while stakeholders without power choose rational or soft strategies (Somech & Drach-Zahavy, 2002). However, this study proposes that all ranges of stakeholders either with or without power are able to exercise both aggressive and cooperative strategies equally. Therefore, the adoptions of strategies to influence on social responsibility are not determined by power. Based on the discussions in this study, the second proposition in this study is that the determinants of stakeholders' choices on aggressive and/or cooperative strategies are the perceived legitimacy and urgency over the issue. It means that if stakeholders think the initiative is legitimate, and the situations are urgent, they would select aggressive strategy to enforce the desired behaviors. However, it is also worth noted from the findings that cooperative strategies are most frequently used by stakeholders compared to aggressiveness because of the voluntary and discretionary nature of social responsibility.

Instead of only focusing on dyadic relationships, this study developed a holistic

stakeholder map based on the influence flows among the external and internal stakeholders. The map depicts the diffusion of social responsibility commitments within and outside the construction supply chain. Based on the influencing strategies and tactics identified from the interviews, the project stakeholders in the map are categorized into eight roles in social responsibility collaboration: the claimant (communities and the public), the promoter (NGOs), the regulator (governments), the motivator (end users), the initiator (developers and investors), the advisor (consultants), the operator (main contractors), and the follower (subcontractors and employees). It is shown from the map that regardless of different stakeholders' power, all stakeholders have irreplaceable roles in the flow of influences towards social responsibility collaboration.

Among the external stakeholders, governments act as the regulator role in social responsibility collaboration, because the basic and most important strategies of their influences are legislations and regulations. However, laws are only the bottom-line; governments can offer the incentive policies, labels, or tax reductions for promoting social responsibility. Meanwhile, governments need to communicate between public and project participants for resolving conflicts, mediating disputes, and compensating effected groups. From the findings, it was learnt that community power is also vital in promoting social responsibility. In projects, communities and the public play the role of the claimant to raise their concerns and requests regarding the projects in stakeholder meetings or by complaints if necessary. NGOs have no adequate power on social responsibility issues, but they have alternative strategy to gain power through coalition with powerful stakeholders. If the issues are legitimate and urgent, NGOs can ally with governments or district councils to put joint pressures on project leaders. Mostly, NGOs gently ask cooperation from project stakeholders to invest in their concerned issues, through tactics such as lobbying, fundraise, letters, emails, visits, etc.

The influence flows among the internal stakeholders run downstream the supply chain echelons. End users are the motivator of social responsibility collaboration. Despite their powerlessness, the demands of end users regarding social issues in projects are the original driving force of social responsibility collaboration. Developers and investors,

as the initiator, would react to end users' demands, and incorporate their initiatives in project planning. As one of the most powerful stakeholders, developers can also use their power to withhold the payments or use sanctions to guarantee their requirements are met. Then social responsibility commitments are transmitted downwards to contractors and subcontractors. Consultants work as the advisor between developers and contractors. Because consultants have weak decision-making power, they can influence through developers by demonstrating technical feasibilities, benefits to society and environment, and estimated returns and cost savings of social responsibility issues. As one of the most powerful three stakeholders, contractors act as the operator to perform the social responsibility issues initiated by the upper echelons. In order to maintain the partnering relationships with contractors, subcontractors and suppliers would voluntarily respond to the social responsibility issues organized by contractors, such as volunteer social service or charity donations.

Social responsibility collaboration in construction projects is like a machine in which stakeholders are different components with irreplaceable functions to ensure the successful operations and output the desirable values. The mechanism is sophisticated that the vacancy of any stakeholders' endeavors can lead to the failure of social responsibility implementation in projects. The findings clarify the roles of different stakeholders in social responsibility collaboration, as well as provide guidance for stakeholders using appropriate strategies and tactics to perform their influences.

8.3.4 The stakeholder collaboration framework

In reality, stakeholder collaboration on social responsibility faces the challenges of the emergent and dynamic environment. A stakeholder collaboration framework was developed in this study for offering an alternative approach to overcome this difficulty. According to Reed (2008), the best practices for stakeholder collaboration include the clarified common objectives, systematically analysis of relevant stakeholders, the empowerment and equity, the involvement throughout the lifecycle, and the definition of participation and appropriate level of engagement. The framework developed in this study highlighted these practices and contributed to social responsibility collaboration effectiveness.

Based on the prior findings in this study, two indexes were developed, the stakeholder power index (SPI) and stakeholder influence index (SII), as determinants for predicting engagement levels and influencing strategies on the social responsibility issues. The framework generates action plans from two levels: the organizational and project levels. For each related stakeholder, it suggests appropriate engagement levels and corresponding influencing strategies on the social responsibility issues. For the project team, the collaboration structures can be explicated including the stakeholder clusters and their different roles. Following the prescribed suggestions, project stakeholders can strategically deal with the social responsibility issues individually, and collaborate with the other stakeholders. The mechanism behind the framework is that stakeholder collaboration can be facilitated when stakeholders concentrating on their capable issues and using power and influences chains for obtaining necessary resources. The framework provides a managerial tool for guiding stakeholders' engagement and interactions on social responsibility issues, turning unstructured stakeholder interactions into well-organized and traceable collaborations.

The applicability and effectiveness of the framework were validated in a mega infrastructure project-the HZMB project. The social responsibility issues that need to implement in the HZMB project were identified. After collecting stakeholders' attributes, the customized action plans were delivered to the related stakeholders. From the feedback returned by the participants, the framework has positive effects on assisting stakeholder collaboration, facilitating social responsibility implementation, and improving overall project social performance. Compared with the conventional stakeholder models, the framework developed in this study has the following characteristics:

First, the stakeholder analysis perspective is based on inter-stakeholder relationships rather than dyadic organization-stakeholder relations. More insights can be obtained from removing the central position of a focal organization and taking all stakeholders as equal actors to influence each other.

Second, in conventional stakeholder models, powerful stakeholders are associated with high risks that require additional attentions, while powerless stakeholders are often neglected. However, in this framework stakeholder power is linked with the corresponding responsibilities, even powerless stakeholders are attached with

importance on driving social responsibility implementation.

Third, stakeholders are evaluated based on scales, giving distinctions to stakeholders with a lot of salience and with little salience, instead of using binary black-or-white assessment. In addition, the evaluation tool is designed in relative value rather than absolute value, therefore it is applicable for cross-project comparisons.

Fourth, evaluations of stakeholders are based on different social responsibility issues instead of general perceptions. Stakeholder dynamics nature is addressed by conducting stakeholder analysis in issue arenas.

Fifth, instead of using subjective external evaluations, this framework reduce single-party bias by adopting multi-stakeholders' self-perceptions in the identification and assessment of stakeholders.

Along with the rapid development of society, the social responsibility issues in construction project keep changing dramatically. This framework is applicable to the changing social environment. It addresses the dynamic project environment, and helps stakeholders quickly find their positions and respond to the new challenges. Considering the invisible stakeholder power structures and conflicting interests in construction projects, this framework offers an exclusive way to facilitate stakeholder collaboration on social issues for achieving the all-win outcomes.

8.4 Contributions of the study

8.4.1 Theoretical significance

The findings of the study have several original contributions to the existing body of knowledge in both general management and construction project management fields:

1) This study extends social responsibility theories from the individual organizational level to the construction project level. Social responsibility theory has been brought to more complicated environment under dynamic stakeholder power and interactions.
2) Regarding to the unclarified mechanism of stakeholder collaboration, this study identifies power and influence as fertile perspective to probe into stakeholder

collaboration.

3) This study supplements the mainstream stakeholder research by shifting the focus from stakeholder prioritization to responsibility allocation. The understanding of stakeholder power is deepened by addressing not only the privileges but also the responsibilities that come with power.

4) This study earns credits by addressing and describing stakeholder dynamics and heterogeneity, which is a point that lacks academic attentions in both general management and project management fields. Empirical evidence is first provided about the fluctuations of stakeholder power on dealing with different social responsibility issues at project level.

5) The study contributes to stakeholder theories by depicting the holistic map of stakeholder influence chains. Besides key players in the project, the responsibilities of multiple stakeholders including end users, district councils, NGOs, and governments were firstly interpreted.

8.4.2 Practical implications

The implications that obtained from this study can contribute to the social responsibility practices in construction projects in the following aspects.

1) The empirical findings from Hong Kong can help construction stakeholders better comprehend their roles and responsibilities. Suggestions are provided for construction stakeholders about their strengths and scopes of responsibility. In the institutional level, more values can be produced if stakeholders put emphasis on their capable fields by sharing their resources and expertise. The study also suggests the roles that should be taken by multiple stakeholders, showing the roadmap towards promoting SR at project level.

2) This study develops two quantifiable indexes, the SPI and SII to be used in projects for determining responsibility allocation among multiple stakeholders. SPI can be used for suggesting powerful stakeholders to proactively engage in their capable issues. SII can be used for mangers to predict the possible aggressiveness taken by stakeholders. Measures can be taken in advance to avoid delay or over cost of projects.

3) The stakeholder collaboration framework developed in this study provides a workflow for collaborative work in the project environment. First, the framework provides a communication platform for stakeholders to discuss not only cost-time-quality, but also environmental and social issues. They can share information and concerns on project social impacts. Second, the framework offers recommendations for responsibility allocation. The leaders and followers will be identified for each issue which can form a team structure and collective responsibility among stakeholders. Third, trust and cooperative atmosphere can be built through understanding that all stakeholder are willing to do their share for the achievement of win-wins.

8.5 Limitations and future research

8.5.1 Research limitations

There are some limitations in this study that need to be noticed:

1) The questionnaire and interview survey can only show the general perceptions of stakeholder power and influence, because under different project delivery approaches, the distributions of stakeholders' power and responsibility vary significantly. Different project types, either big scale or small scale, either public or private projects, lead to changes of stakeholder power and influence. In addition, the data was collected only in Hong Kong; the regional data may not be generalized to all countries because of different social, culture, and political environment.

2) Only one case study was conducted for validating the framework developed in this study. The framework still need more case studies in more construction projects under different backgrounds and environments. In addition, the effectiveness of the framework was only estimated by the feedbacks, no longitudinal or action research has been conducted in the project due to the time limitation.

8.5.2 Validation with oversea interviews

Considering the limitation of the constraint investigation sample in Hong Kong, the

author also attempted to validate the findings with some oversea interviews. During the PhD study period, the author had a four-month attachment program in the Business School at the University of Queensland in Australia. The attached supervisor, Associated Professor Bernard McKenna helped to get in touch with some senior industrial practitioners in Brisbane and Sydney. Using his connections, the author conducted eight interviews with high-level directors/managers in major construction organizations in Australia. The details of the interviews were described in Table 8-1.

Table 8-1 the validation interviews in Australia

No	Backgrounds of the interviewees	Working experiences (years)	Positions	Time (DD/MM/YY)	Period (mins)
1	Investor	10	Department head	11/12/15	36
2	Consultant	15	Research director	11/12/15	43
3	Developer	10	Regional director	10/12/15	24
4	Contractor	26	Managing director	02/12/15	28
5	Consultant	7	Senior consultant	09/12/15	34
6	Consultant	8	PR officer	12/11/15	37
7	Consultant	8	Sustainability leader	09/12/15	22
8	NGO	5	Research manager	02/12/15	23

**Developed based on the author data collection*

When the interviews were conducted, the main data analysis in this study had been mostly completed. The purpose of these oversea interviews was to validate whether the findings on stakeholder power and influence on social responsibility collaboration were also applicable in a more developed country. The respondents were asked about 1) their general perceptions on social responsibility collaboration in construction projects; 2) what do they think about stakeholders' power on social responsibility issues; 3) what influencing strategies they think stakeholders' may use to influence. From the interviews, the main findings of this study were validated:

1) The interviews confirmed that stakeholder collaboration is an imperative on social responsibility implementation in construction projects. The interviewees mentioned they often met conflicts when they want to carry out social responsibility initiatives. Mostly, the conflicts came from the project schedule and cost, with the social responsibility programs. The pressures from developers and investors were in tension especially in commercial projects. The interviewees stated that because different stakeholders' interests are hard to coordinate, equal dialogues are very important to achieve stakeholder collaboration on social responsibility issues.

2) The interviews validated the findings from questionnaire survey that governments and developers are the most powerful stakeholders to initiate social responsibility issues in Australia. According to them, contractors often follow the regulations and contracts. If any social responsibility issues emerge during construction, they would report the possible measures with a reasonable quote to their clients. However, contractors have dominated power on safety and health issues on the projects, which corroborates the findings of the questionnaire survey in this study.

3) With regards to the influencing strategies, the interviewees confirmed the use of aggressive strategies when stakeholders feel their claims are strong and in urgent need to be responded to. They gave an example of the Union for Construction Workers in Australia. It is a very strong organization to safeguard construction labors' safety and welfare. They were claimed as "very tough" and "very strong" because they often hold protest and boycott when their requests were not responded to properly. The influence in construction supply chain was also validated. The interviewees stated that the relationship-driven is a very common way to exert influences in their supply chain management.

From the interviews, some differences were found between social responsibility implementation by Hong Kong and Australian construction organizations. Compared with Hong Kong, Australia is in a more advanced development stage that cares more about sustainability and social demands in the urbanization process. By conducting the interviews in Australia, this study provided a rough comparative analysis on the current situations in the two areas.

1) Overall speaking, Australian interviewees had more positive attitudes towards the concept of social responsibility. They thought social responsibility as a balance between "doing good" and "doing well". The respondents under review were proud of their companies' social commitments when they talked about this topic. However, Hong Kong interviewees mostly held reluctant attitudes and thought they won't voluntarily engage in social responsibility issues unless regulated. When talking about good practices regarding social responsibility, Australian interviewees talked more about environmental protection, green building, community relationships, and philanthropy, while Hong Kong interviewees address more on health and safety, disturbance on neighbors, and labor care.

2) With regards to stakeholder power distributions, the main differences between Hong Kong and Australia are the "powerless" stakeholders. In both two areas, key stakeholders are the same. However, Australian interviewees stated that NGOs requests are important incentives that they would engage in social responsibility issues, unlike the limited power of NGOs in Hong Kong. In addition, tenants or end users in Australia tend to have more influences on construction projects compared with Hong Kong. It was frequently mentioned by the interviewees that the green building initiative in Australia is mainly driven by tenants and buyers who are willing to pay more on green building labeled house. Another difference is different perspectives on community power in Australia and Hong Kong. In Hong Kong, we have found the main community issues controlled by the authorized power of district councils while residents/end users have very limited power. However, in Australia, individual residents in communities are more powerful. They can directly claim for their own benefits by protests or boycotts to object constructions activities around their neighbors. Because of their strond power, developers in Australia are active in developing good community relationships for getting the "license to build".

8.5.3 Future directions

Future research could consider the following directions:

1) The propositions obtained in this study need to be further tested by experimental

studies. No empirical research has been conducted on what stakeholder attributes can influence stakeholder strategies on social responsibility issues. It is of great significance to investigate under what conditions, stakeholders would use aggressiveness towards construction projects, so that these severe conflicts can be avoided before happen.

2) In addition, more case studies of different types of project, in different countries, and under different political environment should be conducted to test whether the framework can improve the project social performance under different conditions. For achieving more robust relations, longitudinal action research can be considered for comparing the collaboration performance before and after the interventions.

3) Studies on cross-sectoral multi-stakeholder collaboration on social issues are in great demands, and current literatures are far from satisfactory. Starting from this study, more research should be conducted in this area to explore, describe, and explain, the mechanism of stakeholder collaboration on social issues.

APPENDICES

Appendix A: sample of preliminary questionnaire in Delphi method

Dear Experts, Colleagues and Professors:

Thank you very much for your attention and support.

This preliminary questionnaire is a part of a doctoral research on corporate social responsibility (SR) implementation in construction projects. The social responsibility issues (SRIs) related to construction projects listed in this questionnaire are identified from literature and will be used to design a questionnaire survey among practitioners in the industry. The total number of SRIs is 80, which exceed the normal amount of questions for an effective questionnaire design. Therefore, elimination should be conducted first to cut down some items in order to avoid the reduction of validity because of respondents' tiredness.

Therefore this questionnaire aims at eliminating at least 30 items from a list using Delphi Method (DM). DM is employed to obtain reliable consensus from a panel of ten experts from industry and/or academy with certain experiences in construction projects through structural and anonymous procedures. Please be kindly informed that depending on the results of this questionnaire, further questionnaires may be sent to you later. As one of the expert in Delphi panel, please answer the following questions with your own judgment based on the expertise and practical experience in construction field. Thanks again for you valuable time.

Contact person:
LIN Xue
PhD candidate
Email: xue.lin@
Tel: +852 5660
Department of Building and Real Estate
The Hong Kong Polytechnic University

Q1. Which type is your experience in construction field? (please check the most relevant option)

☐Work experiences in the industry
☐Research experiences in the academic
☐Both

Q2. How long have you been working or researching in construction field altogether? (please check the most relevant option)

☐1 to 5 years
☐6 to 10 years
☐11 to 15 years
☐Above 16 years

Q3. Which SR issues do you think is NOT important or IRRELEVANT in construction projects, which should be eliminated from the SRIs list?

*Notice: Please check **as much as possible** the SRIs that you consider should be eliminated from the list.*

Project Inception Stage (15 items):

☐1. Disclosure on policies, decisions and activities related to new projects about likely impacts on society and the environment

☐2. Establishing channels for stakeholders to freely communicate their views and interests on new projects

☐3. Discussing human rights policies and procedures in place to improve human rights performance during project planning

☐4. Identifying future health and safety risks to employees and proposing protection measures during project planning

☐5. Making land use selection decisions for project site considering adverse impacts on ecosystem, agricultural land, biodiversity and habitats

☐6. Evaluating project feasibility considering the potential air pollution, water pollution, noise pollution, and waste generation

☐7. Assessing and setting objectives and policies to minimize future greenhouse gas emission of the project lifecycle

☐8. Assessing and setting objectives and policies to minimize resource consumptions in project lifecycle

☐9. Making procedures and policies to prevent anti-competitive behaviors in project bidding and procurements

☐10. Call upon agreements on transparent environment and establish common codes of ethics for new projects

☐11. Identifying and proposing measures to prevent any future health and safety risks to project users

☐12. Ensuring the harmonious resettlement of local residents for land acquisition for new projects

☐13. Providing platform for public and local community to acknowledge, participate and complaint in new projects planning

☐14. Identifying and proposing measures to minimize negative impacts on local inhabitant, cultural heritage, and local environment

☐ 15. Incorporating benefits to local community into the project planning, including improvement of local infrastructure, economy and employment

Project Design Stage (12 items):

☐ 16. Developing effective communication mechanism to ensure all stakeholders' requirements are incorporated into the design process

☐17. Incorporating all environmental considerations for the whole project lifecycle in project designing (e.g. GHG emissions, resource exploitation, and environmental pollution)

☐18. Considering energy performance improvement opportunities in the design of new projects

☐19. Choosing eco-materials or environmental friendly materials for material selection in project design

☐20. Encouraging innovation and R&D for improving environmental performance in project design

☐21. Ensuring the durability and long lasting of buildings in project design

☐22. Ensuring the aesthetical and visual effects of project design, taken economic efficiency into consideration

☐23. Considering all health and safety risks for emergencies such as fire, earthquake, flood, radiation, and eco-environmental accidents in designing process

☐24. Adoption of international ratings, standards, and methods for assessing project design, e.g. Leadership in Energy and Environmental Design (LEED), Design Quality Indicator (DQI)

☐25. Protection of property rights of project design

☐26. Enhancing end-users satisfaction through listening to their demands during the design

process

☐27. Educating project end-users to enhance their understanding of the project and awareness of social responsible consumption

Project Construction Stage (33 items):

☐28. Disclosure on sustainable performance during the project construction process using international reporting standards (e.g. Global Reporting Initiatives G3 and G4 for sustainability disclosure)

☐29. Promoting cooperation and collaboration culture among stakeholders in projects

☐30. Regular meetings and conferences among stakeholders to discuss the conflicts and interests on socially responsible issues during construction process

☐31. Avoiding discrimination, provide equal treatments and equal opportunities for different genders, minorities and disables

☐32. No engagement with forced labors and child labors

☐33. Providing education to avoid harassment in projects

☐34. Protection and care for migrant labors, including legal contracts, medical insurance, occupational health and safety, left over children, and avoiding defaulting wages

☐35. Providing protection measures, training programs and on-site supervisions to prevent employees from health and safety risks during the construction process

☐36. Ensuring the working conditions comply with national laws and regulations (e.g. work hours, environments, welfare)

☐37. Providing medical insurance and regular medical checks for employees

☐38. Educations and activities for effective emergency management procedures during construction (e.g. injuries, accidents and occupational diseases)

☐39. On-site and off-site facilities for labors e.g. staff areas, drinking water, and food

☐40. Promoting occupational health and safety culture in projects

☐41. Programs or trainings to improve the capability and employability of employees

☐42. Utilizing land use effectively, reducing earthwork and excavation, and taking measures to avoid land pollution

☐ 43. Protection of living environment for both human beings and animals during construction process

☐44. Reducing and control generation and emission of dust, harmful gas or substances (e.g. CO, SO_2, SO, NO_2 and ozone depleting substances) during construction

☐45. Reducing noise and vibration from project construction and avoiding disturbance for local residents

☐46. Treatment and control of sewage on site

☐47. Supporting the purchase of environmental friendly, energy efficient materials, plants and services

☐48. Reducing the generation of construction waste and implementing proper classification, pile, treatment, and dispose of construction waste

☐49. Taking measures to reduce greenhouse gas emission, e.g. saving energy and resources consumption, arrangement of material and plant transportation, reuse of building components or materials, use off-site fabrication during construction process

☐ 50. Investment in implementing environmental management, including labor, plant, material, and finance

☐51. Application of environmental management system during construction process, e.g. International Standard Organization (ISO 14000, ISO26000)

☐ 52. Adoption of environmental management consultancy, environmental management facilities, energy saving technology, pollution reduction technology, and waste reduction technology

☐53. Implementing programs, procedures and policies to prevent bribe and corruption during construction

☐54. Legal actions for anti-competitive behavior, antitrust and monopoly practices during construction process
☐55. Incorporating social, ethical, environmental criteria in purchasing and distributing
☐56. Ensuring no misleading marketing and information is delivered to project users
☐57. Ensuring the in-door environment will not be harmful to project users' health
☐58. Considering local suppliers for purchasing labors, materials, plants and services
☐59. Facilities and measures to reduce the impacts on normal transportation, work and life in local community
☐60. Provision of warning boards and signals, safety facilities to avoid health and safety risks of local residents

Project Operation Stage (10 items):
☐61. Continuously monitoring and recording the generation of pollution, energy and resources consumption (e.g. including electricity, water, and fossil) during the operation of project
☐62. Providing workshops and training programs for instructions of application of green facilities in project
☐63. Application of building environmental performance assessment methods or certificates, e.g. Hong Kong building environmental assessment method (HKBEAM), Greenstar, Green home evaluation manual (GHEM), Building Research Establishment Environmental Assessment Methodology (BREEAM)
☐64. Programs or activities to promote the culture of environmental protection and resource saving during the operation of projects
☐65. Providing follow-up services and maintenance of project
☐66. Providing educations to enhance project users' understanding of the project and awareness of social responsible issues
☐67. Reviewing project users' complaints and take actions to prevent recurrence
☐68. Resolving disputes and enhancing project users' satisfaction
☐69. Reducing the adverse impacts on local community during the operation of project
☐70. Provision of spaces and facilities beneficial to the development of local community

Project Demolition Stage (10 items):
☐71. Measures to avoid safety risks during project demolition from explosion, dismantling, toxic materials, and radioactive materials
☐72. Compensation and resettlement for the involuntarily dismissed employees because of end of project
☐73. Adequate demolition plan to reduce or recycle the hazard materials and waste
☐74. Supervision and control on the demolition activities to protect the environment
☐75. Adoption of technologies to alleviate the disturbance on eco-environment systems and neighborhoods
☐76. Classification of demolition wastes for enabling effective treatment and disposal
☐77. Special treatment given to toxic materials, heavy metals, radioactive chemicals released from demolition
☐78. Recycling and reclaiming of useful materials such as steel, brick, glass, timber, and some equipment
☐79. Rehabilitation for the damaged environment for the local residential facilities, land, water, and ecosystem for local community
☐80. Ensure the public awareness of the project demolition, ensure the safety of around residents and avoid harmful impacts on local environment

Q4. Do you recommend any additional important SRIs that are not included in this list? Please indicate in the following text box about any recommendations or comments.
Click here to enter text.

Appendix B: sample of stakeholder power questionnaire survey

Letter to participants

Dear Participant,

Many thanks for your participation. This questionnaire survey aims at collecting stakeholders' powers on the implementation of social responsibility issues in construction projects. And it is a part of a doctoral research conducted in the Hong Kong Polytechnic University. Please fill in the questionnaire using the instructions, which will only take you about 15 to 20 minutes. Please be noted that all the information you provided is anonymous and will be only used for academic purpose. Thank you again for your valuable time. If you have any queries, please feel free to contact:

LIN Xue PhD candidate
Department of Building and Real Estate
The Hong Kong Polytechnic University
Tel: +852 5660
Email: xue.lin@

Section A: Background Information

Q1. Please indicate the name of your organization. (Optional)

_____

Q2. Please indicate the nature of your organization.
☐Private Company
☐Public Listed Company
☐Government department
☐Public institution
☐Others (please indicate): _____

Q3. Please indicate the usual role of your organization in construction projects.
☐Main Contractor
☐Developer
☐End User
☐Government
☐Financial Institution
☐Sub-contractor (including suppliers)
☐Consultants (including architects/engineers, project management and supervision)
☐Non-Government Organizations
☐District Council
☐Town Planning Board
☐Others (please indicate): _____

Q4. Please indicate how long have you been working in your organization.
☐Less than 5 years
☐6 to 10 years
☐11 to 15 years
☐Above 16 years

Q5. Please indicate how long have you been working in construction industry

☐Less than 5 years

☐6 to 10 years

☐11 to 15 years

☐Above 16 years

Q6. Please indicate your level in your organization.

☐Senior management level

☐Project management level

☐Site supervisory level

☐Junior level or workforce

☐Others (please indicate): _____

Section B: Stakeholder power on Social Responsibility Issues (SRIs)

Instructions: *In this section, please rate the SRIs based on your organization's interests levels, and evaluate stakeholders' powers on the implementation of these SRIs in construction projects.*

Q7. For each SRI, please answer the following two questions

1) **Level of concern:** In the grey column, please indicate to what extent your organization is interested in or concerned with this SRI using the following scale.

5= extremely concerned; 4=very concerned; 3=moderately concerned; 2=slightly concerned; 1= not at all concerned;

2) **Stakeholder power:** In each blank in the matrix, please fill with numbers indicating stakeholder's powers to implement each SRI using the following scale.

5=extremely powerful; 4=very powerful; 3=moderately powerful; 2=slightly powerful; ***Leave it blank*** *= not at all powerful;*

Project Stages	Social Responsibility Issues	1） Level of concern	2） Stakeholder power						
			Main Contractor	Developer	End User	Government	Consultants	NGOs[9]	District council
Initiating and planning Stage	Disclosing social and environmental impacts of new project	☐1 ☐2 ☐3 ☐4 ☐5							
	Establishing stakeholder (including public) engagement platform	☐1 ☐2 ☐3 ☐4 ☐5							
	Discussing human rights policies during project planning	☐1 ☐2 ☐3 ☐4 ☐5							
	Identifying H&S[10] risks for employees during planning	☐1 ☐2 ☐3 ☐4 ☐5							
	Minimizing adverse impacts of land use plan on ecosystems	☐1 ☐2 ☐3 ☐4 ☐5							
	Evaluating project feasibility considering environmental impacts	☐1 ☐2 ☐3 ☐4 ☐5							
	Prioritizing lifecycle environmental performance in design	☐1 ☐2 ☐3 ☐4 ☐5							
	Preventing anti-competitive behaviors in bidding and procurements	☐1 ☐2 ☐3 ☐4 ☐5							
	Establishing codes of ethics for new projects	☐1 ☐2 ☐3 ☐4 ☐5							
	Identifying H&S risks to project users during design	☐1 ☐2 ☐3 ☐4 ☐5							
	Compensating and resettling relocated household	☐1 ☐2 ☐3 ☐4 ☐5							
	Making development plan for local community	☐1 ☐2 ☐3 ☐4 ☐5							
Execution stage	Meeting stakeholders regularly to discuss conflicts during construction	☐1 ☐2 ☐3 ☐4 ☐5							
	Protecting the rights of migrant labors	☐1 ☐2 ☐3 ☐4 ☐5							
	Protecting employees from H&S risks	☐1 ☐2 ☐3 ☐4 ☐5							
	Promoting H&S culture in project	☐1 ☐2 ☐3 ☐4 ☐5							
	Protecting living habitat for both human beings and animals	☐1 ☐2 ☐3 ☐4 ☐5							
	Controlling construction dust, gas, sewage, waste and noise	☐1 ☐2 ☐3 ☐4 ☐5							
	Using green materials, plants, technologies and services	☐1 ☐2 ☐3 ☐4 ☐5							

[9] Non-government Organizations
[10] Health and safety

Project Stages	Social Responsibility Issues	1） Level of concern	2） Stakeholder power						
			Main Contractor	Developer	End User	Government	Consultants	NGOs	District Council
	Implementing environmental management system[11]	☐1 ☐2 ☐3 ☐4 ☐5							
	Implementing transparency management and promoting trust climate	☐1 ☐2 ☐3 ☐4 ☐5							
	Ensuring healthy in-door environment	☐1 ☐2 ☐3 ☐4 ☐5							
	Considering local suppliers for procurements	☐1 ☐2 ☐3 ☐4 ☐5							
	Reducing adverse impacts on local transportation, work and life	☐1 ☐2 ☐3 ☐4 ☐5							
	Protecting local residents from H&S risks during construction	☐1 ☐2 ☐3 ☐4 ☐5							
Controlling and closing stage	Monitoring and reporting project sustainable performance	☐1 ☐2 ☐3 ☐4 ☐5							
	Avoiding discrimination and providing equal opportunities during operation	☐1 ☐2 ☐3 ☐4 ☐5							
	Protecting employees from risks of demolition	☐1 ☐2 ☐3 ☐4 ☐5							
	Resettling involuntarily dismissed employees because the end of project	☐1 ☐2 ☐3 ☐4 ☐5							
	Providing training programs of green facilities	☐1 ☐2 ☐3 ☐4 ☐5							
	Promoting environmental protection and energy saving culture	☐1 ☐2 ☐3 ☐4 ☐5							
	Alleviating disturbance on eco-system and neighborhoods by demolition	☐1 ☐2 ☐3 ☐4 ☐5							
	Avoiding bribe and corruptions during operation	☐1 ☐2 ☐3 ☐4 ☐5							
	Reviewing project users' complaints and making responses	☐1 ☐2 ☐3 ☐4 ☐5							
	Rehabilitating damaged local environment	☐1 ☐2 ☐3 ☐4 ☐5							

Apart from the above issues, are there any other SRIs that your organization intend to implement in construction projects, please indicate_____

Please insert your email for follow-up and update:_____

[11] For example ISO14000 environmental management systems, and ISO26000 guidance on social responsibility

利益相关者对建设项目企业社会责任实施影响调查问卷 (Simplified Chinese)

亲爱的参与者：

您好！非常感谢您在百忙之中对本问卷调查的支持与配合。本研究基于香港理工大学博士课题“建设项目中企业社会责任实施研究”，旨在调查建设项目中各利益相关者对企业社会责任事项实施的影响。此问卷将占用您 20 至 30 分钟的时间，烦请您按照说明填答，十分感谢！再次郑重承诺您所提供的一切资料为匿名，且仅作学术研究用途。再次感谢您的宝贵时间，如有疑问请联系：

林雪 博士研究生
香港理工大学
建筑与房地产系
电话：+852 5660
电子邮箱：xue.lin@

第一部分：背景资料

问题 1：贵工作单位的名称（选填）

_____

问题 2：贵工作单位的性质
☐私有企业
☐国有企业
☐政府
☐公共机构
☐其他，請指出：_____

问题 3：贵工作单位在项目中常担任的角色（多选）
☐总承包商
☐业主或开发商
☐项目使用者
☐政府机构
☐投资机构
☐分包商（包括专业分包，供应商等）
☐咨询公司（包括设计、勘测、规划、监理公司等）
☐非政府组织
☐居民委员会
☐其他，請指出：_____

问题 4：您在贵单位的工作年限
☐少于 5 年
☐6 至 10 年
☐11 至 15 年
☐16 年以上

问题 5：您在建设行业中的工作年限
☐少于 5 年

☐6 至 10 年
☐11 至 15 年
☐16 年以上

问题 6：请指出您在机构中所担任的位置
☐高级管理层
☐项目管理层
☐现场管理层
☐助理或初级人员
☐其他，請指出：_____

第二部分：企业社会责任事项及利益相关者影响

说明：*此部分请根据贵单位在建设项目中对实施下列企业社会责任事项的意向和兴趣进行调查，并评估项目各参与方对这些事项的影响力*

名词解释：
企业社会责任事项：是指建设项目中各参与方除了以盈利为目的外，还应参与实施与环境、社会、生态的可持续发展相关的社会事项

问题 7：针对表格中每个企业社会责任事项，请回答下列两个问题：

1） 实施意向：首先在灰色列中，请指出贵单位对此企业社会责任事项的实施兴趣或意向，在符合的数字前打对号：

1=无实施意向，2=有较小意向，3=有一般意向，4=有较大意向，5=非常有意向。

2）利益相关者影响：然后请再此行表格余下的空格内填写对应数字，表明该利益相关者对此企业社会责任事项实施的影响程度：

1=无影响，2=有较小影响，3=有一般影响，4=有较大影响，5=非常有影响。

项目阶段	企业社会责任事项	1) 实施意向	2) 利益相关者影响						
			总承包商	开发商	项目使用者	政府机构	咨询公司	非政府组织	居民委员会
建设前阶段	公开报告新项目可能造成的社会及环境影响	□1 □2 □3 □4 □5							
	建立利益相关者沟通平台（包括公众参与）	□1 □2 □3 □4 □5							
	在项目计划期讨论项目中的人权问题及政策	□1 □2 □3 □4 □5							
	在项目计划期识别员工的健康安全风险	□1 □2 □3 □4 □5							
	减小项目用地对生态环境的影响	□1 □2 □3 □4 □5							
	项目可行性评估时优先考虑环境影响	□1 □2 □3 □4 □5							
	在设计中优先考虑项目全生命周期的环境绩效	□1 □2 □3 □4 □5							
	防治项目招标及采购中的不正当竞争行为	□1 □2 □3 □4 □5							
	为新项目制定道德守则	□1 □2 □3 □4 □5							
	在设计中识别项目使用者的健康安全风险	□1 □2 □3 □4 □5							
	对征地拆迁的当地居民给予合理赔偿安置	□1 □2 □3 □4 □5							
	制定发展当地社区的计划	□1 □2 □3 □4 □5							
建设阶段	组织利益相关者定期会议讨论冲突及解决方案	□1 □2 □3 □4 □5							
	保护农民工权益	□1 □2 □3 □4 □5							
	提供保护措施降低员工的健康安全风险	□1 □2 □3 □4 □5							
	促进项目中的健康安全文化	□1 □2 □3 □4 □5							
	保护动物栖息地及附近居住环境	□1 □2 □3 □4 □5							
	控制建筑粉尘、有害气体及化学物质的排放	□1 □2 □3 □4 □5							
	使用绿色材料、设备、技术及服务	□1 □2 □3 □4 □5							

项目阶段	企业社会责任事项	3) 实施意向	4) 利益相关者影响						
			总承包商	开发商	项目使用者	政府机构	咨询公司	非政府组织	居民委员会
建设阶段	实施环境管理系统[12]	□1 □2 □3 □4 □5							
	实施反腐倡廉管理，营造信任文化	□1 □2 □3 □4 □5							
	确保健康的室内人居环境	□1 □2 □3 □4 □5							
	优先考虑本地供应商	□1 □2 □3 □4 □5							
	减少对当地居民的交通、工作和生活的影响	□1 □2 □3 □4 □5							
	设置安全设施减少当地具名的健康安全风险	□1 □2 □3 □4 □5							
建设后阶段	持续监测并记录建设项目的可持续绩效	□1 □2 □3 □4 □5							
	在运营过程中提供平等机会，避免歧视	□1 □2 □3 □4 □5							
	在项目拆除过程中保护员工健康安全	□1 □2 □3 □4 □5							
	对由于项目结束非自愿遣散的员工进行补偿安置	□1 □2 □3 □4 □5							
	提供绿色设施的使用培训	□1 □2 □3 □4 □5							
	促进环境保护和资源节约文化	□1 □2 □3 □4 □5							
	减少拆除对生态系统及周边的影响	□1 □2 □3 □4 □5							
	防止运营过程中的贪污腐败	□1 □2 □3 □4 □5							
	及时处理项目使用者的投诉，并采取相应措施	□1 □2 □3 □4 □5							
	复原由于项目拆除损坏的当地环境	□1 □2 □3 □4 □5							

除上述事项外，贵单位是否还有实施其他企业社会责任的计划？请指出_____

请留下您的电子邮箱以便进行反馈和更新:_____再次非常感謝您的参与!

[12] 例如ISO14000 环境管理系统 和ISO26000 社会责任指南。

利益相關者对建設項目社會企業責任實施影响调查问卷

親愛的參與者：

您好！非常感謝您在百忙之中對本次案例研究的支持與配合。本研究基於香港理工大學博士研究生課題“建設項目中社會企業責任實施研究”，旨在調查建設項目中各利益相關者對社會企業責任事項實施的影響。此問卷將佔用您 20 至 30 分鐘的時間，煩請您按照說明填答，十分感謝！再次鄭重承諾您所提供的一切資料為匿名，且僅作學術研究用途。再次感謝您的寶貴時間，如有任何問題請聯繫：

林雪 博士研究生
香港理工大學
建築與房地產系
電話：+852 5660
電郵：xue.lin@

第一部分：背景資料

問題 1：貴工作機構的名稱（選填）

_____

問題 2：貴工作機構的性質
☐私人公司
☐公開上市公司
☐政府
☐公眾機構
☐其他，請指出：_____

問題 3：貴工作機構在項目中常承擔的角色
☐總承建商
☐業主
☐項目使用者
☐政府機構
☐金融機構
☐分包商（包括專業分包，材料供應商等）
☐顧問公司（包括建築設計/工程設計，項目管理公司，監理公司等）
☐非政府組織
☐區議會
☐城規會
☐其他，請指出：_____

問題 4：請選擇您在貴機構中的工作年資
☐少於 5 年
☐6 至 10 年
☐11 至 15 年
☐16 年以上

問題 5：請選擇您在建造業中的工作年資
☐少於 5 年
☐6 至 10 年
☐11 至 15 年
☐16 年以上

問題 6：請指出您在機構中所擔任的位置
☐高級管理層
☐項目管理層
☐現場管理層
☐助理或初級人員
☐其他，請指出：_____

第二部分：社會企業責任事項和利益相關者影響调查

說明：*此部分請根據貴工作機構在建設項目中對實施下列社會企業責任的意向進行回答，且評估項目利益相關者對這些事項的影響力*

名詞解釋：
社會企業責任事項:是指建築機構在工程項目中除了以盈利為目的外,還應參與實施更加廣闊事項，如社會、環境、生態等問題

問題 7：針對表格中每個社會企業責任事項，請回答下列兩個問題：

1） 實施意向：首先在灰色列中，請指出貴機構對此社會企業責任事件的實施興趣或意向，在符合的數字前打對號：

5=非常有意向, 4=有較大意向, 3=有一般意向, 2=有較小意向, 1=無實施意向。

2）利益相關者影響：然後請在此行表格餘下空格內填寫對應數字，表明該利益相關者對此社會企業責任事項實施的影響程度：

5=非常有影響, 4=有較大影響, 3=有一般影響, 2=有較小影響, 空白=無影響力。

階段名稱	社會企業責任事件	1) 實施意向	2) 利益相關者影響						
			總承包商	開發商	項目使用者	政府機構	顧問公司	非政府組織	區議會
建設前階段	公開披露新項目的社會及環境影響	□1 □2 □3 □4 □5							
	建立利益相關者（包括公眾）溝通渠道	□1 □2 □3 □4 □5							
	在項目計劃期討論項目涉及的人權問題及政策	□1 □2 □3 □4 □5							
	在項目計劃期識別員工健康安全風險	□1 □2 □3 □4 □5							
	減小項目用地對生態環境的影響	□1 □2 □3 □4 □5							
	項目可行性評估時考慮環境影響	□1 □2 □3 □4 □5							
	在設計中優先考慮項目全生命週期的環境績效	□1 □2 □3 □4 □5							
	防止項目招標及採購中不正當競爭行為	□1 □2 □3 □4 □5							
	為新項目制定道德守則	□1 □2 □3 □4 □5							
	在設計中識別項目使用者的健康安全風險	□1 □2 □3 □4 □5							
	對征地拆遷的當地居民給予賠償安置	□1 □2 □3 □4 □5							
	制定發展當地社區的計劃	□1 □2 □3 □4 □5							
建設階段	組織利益相關者定期會議討論衝突及解決方案	□1 □2 □3 □4 □5							
	保護農民工權益	□1 □2 □3 □4 □5							
	提供保護措施降低員工的健康安全風險	□1 □2 □3 □4 □5							
	促進項目中的健康安全文化	□1 □2 □3 □4 □5							
	保護動物棲息地及附近居住環境	□1 □2 □3 □4 □5							
	控制建築粉塵，有害氣體以及化學物質的排放	□1 □2 □3 □4 □5							
	使用綠色材料，設備，技術及服務	□1 □2 □3 □4 □5							

階段名稱	社會企業責任事件	3) 實施意向	4) 利益相關者影響						
			總承包商	開發商	項目使用者	政府機構	顧問公司	非政府組織	區議會
建設階段	實施環境管理系統[13]	□1 □2 □3 □4 □5							
	實施透明度管理，促進信任氛圍	□1 □2 □3 □4 □5							
	確保健康的室內環境	□1 □2 □3 □4 □5							
	優先考慮本地供應商	□1 □2 □3 □4 □5							
	減少對當地居民的交通，工作和生活的影響	□1 □2 □3 □4 □5							
	設置安全設施降低當地居民的健康安全風險	□1 □2 □3 □4 □5							
建設后階段	持續監測并記錄建設項目的可持續績效	□1 □2 □3 □4 □5							
	在運營過程中提供平等機會，避免歧視	□1 □2 □3 □4 □5							
	在項目拆除時保護員工生命健康安全	□1 □2 □3 □4 □5							
	對由於項目結束非自願遣散的員工進行補償和安置	□1 □2 □3 □4 □5							
	提供綠色設施的使用培訓	□1 □2 □3 □4 □5							
	促進環境保護和資源節約文化	□1 □2 □3 □4 □5							
	減少拆除對生態系統及周邊的影響	□1 □2 □3 □4 □5							
	防止運營過程中的貪污腐敗	□1 □2 □3 □4 □5							
	及時處理項目使用者的投訴，并採取相應措施	□1 □2 □3 □4 □5							
	復原項目拆除損壞的當地环境	□1 □2 □3 □4 □5							

除上述事項外，貴機構是否還有實施其他企業社會責任事項的計劃？請指出_____

请留下您的电子邮箱以便进行反馈和更新:_____再次非常感謝您的參與!

[13] 例如ISO14000 環境管理系統 和ISO26000 社會責任指南。

Appendix C: sample of one page invitation for interviews

Research Topic:

Stakeholder influence on social responsibility in Construction Projects

Research Objectives

This research seeks to better understand the companies' mutual effects on social responsibility (SR) in construction projects, including suppliers, subcontractors, main contractors, developers, and consultants. This interview investigates how the focal company communicates, influences, and collaborates with the upstream and downstream organisations, as well as how they respond to the pressures from external stakeholders. The results could provide suggestions for managers to integrate their SR values in project management, to influence their suppliers and consumers, instead of only managing SR within individual organisations.

Your Participation

We request your involvement in an interview based on your experiences. There are about 20 interview questions divided into five parts: Background information, SR practices, upstream SR, downstream SR, and external stakeholder pressures.

The interview is planned to take no more than 40 minutes. To facilitate our analysis we wish to audio tape the interview. This record will be used only for research purposes, and will be destroyed immediately after they are transcribed. All transcript records will be kept confidential and anonymous.

Your personal information will be de-identified in our data-base which is stored under strict regulations. The data will not reveal your name or the name of your organisation in any form.

Contacts

- the investigator
  Xue LIN
  PhD Candidate
  Phone: 61 040374 /852 5660
  Email: xue.lin@

Appendix D: sample of interview protocol

INTERVIEW PROTOCOL

Introduction

Thank you for participating in this interview. The research aims at mapping the organisations' mutual influences on SR implementation in the construction projects.

This interview investigates how your company communicates, influences, and collaborates with the upstream and downstream organisations that are involved in projects in relation to managing SR.

This interview is planned to take no more than 40 minutes.

Although I have a list of questions to guide the interview, please feel free to share any relevant information beyond these questions.

Is it okay for me to audio tape our conversation today? As stated in the information sheet, this audio is used only in my research purpose, and will be destroyed immediately after it is transcribed. The transcriptions are kept confidential and anonymous.

A. Background

1. What is your position in this company?
2. How long have you been 1) in your present position? 2) at this company?
3. Can you tell me about your company's policies on SR? What SR issues are mainly included?

   Probes: OHS, Environment, Community impacts, Philanthropy
4. How is your work related to SR? How do you define SR?
5. To what extent do legislative regulations, i.e. EIS or SIS, fulfil SR? Is the word SR being replaced?

B. Stakeholder influence on SR

6. Who do you think are included in the internal stakeholders in the construction projects?

   Probes: builders, suppliers, subcontractors, consultants, advisors, developers, property management, end users, facility management companies.
7. How do you communicate your SR values to these internal stakeholders?

   Probes: documents, emails, meetings
8. What strategies do you use to influence or motivate them to implement SR? Or how have your company been influenced by the these stakeholders?
9. Have you ever collaborated on any SR issues with these stakeholders?

10. Has your organisation been blamed for the misconducts or weaknesses of these stakeholders?

    Probes: low quality materials, unskilled labours, environmental unfriendly design

11. What are the aspects that mainly hinder you from integrating SR with these stakeholders?

    Probes: communication, collaboration, deputes, financial issues

12. Who do you think are included in the external stakeholders in the construction projects?

    Probes: governments, NGOs, communities, public, unions etc.

13. Can you tell me how does your company communicate your SR values to the external stakeholders?

    Probes: advertisements, publications, reports, labels, public media

14. In what ways do the external stakeholders influence your company to implement SR? Or in what ways does your company response to them?
15. Are there any SR programs that show the collaboration between your company and the external stakeholders?
16. Has your organisation been blamed for their misconducts or weaknesses?
17. What are the aspects that mainly hinder you from integrating SR with the external stakeholders?

Thank you very much again for participating in the interview. Your contributions to this research is sincerely appreciated and valued. And this research on extending the SR management to the whole construction supply chain instead of doing it in individual organization is of significance in both industrial practices and academic. For your information, I am pleased to send you the feedbacks upon your request.

End of the interview

Your participation is appreciated

Pre Interview preparations:

Institutions: _____

Interviewee (Title and Name): _____

Interviewer: _____

Data and venue: _____

Background information about the institutions:_____

_____

Post Interview Comments and Observations:

Other Topics Discussed:_____

_____

Documents Obtained: _____

_____

_____

Post Interview Comments:

_____

Appendix E: the case study plan

建设项目中利益相关者协同实施社会责任事项案例研究

亲爱的参与者：

您好！非常感谢您在百忙之中对本次案例研究的支持与配合。本研究基于香港理工大学博士课题“建设项目中社会责任事项实施研究”，旨在调查建设项目中各利益相关者对社会责任事项实施的影响。整个案例研究包含一下几步：

- 第一步是识别项目中需要实施的社会责任事项及相关方。可采用焦点小组或访谈调查（用时约 5 分钟），调查对象可为企业员工，居民代表，业主，承包商，监理，设计等利益相关方。

*SR 为社会责任的缩写

1. 项目中 SR 的实施

请问贵项目上是否有实施 SR 事项的计划 (未实施的)，包括环境，人权，生态，社区服务，公众参与，劳动者保护，公益，教育等等。

2. 有影响的利益相关方

在以上提到的 SR 事项中，您认为有影响的利益相关方包括哪些（组织及个人），如政府部门，业主，施工单位，项目经理，监理，设计，社区，公众等。

- 第二步为问卷调查，根据第一步识别出的社会责任事项及相关方进行问卷设计（附录 2，用时 10 分钟）。对象为项目主要参与方代表，包括并不限于开发商，总包，设计，监理，物业管理，项目使用者，分包，政府，当地居民代表，环保或其他非政府组织等。目的为衡量各利益相关者对项目社会责任事项实施的影响；
- 第三步为意见反馈，使用反馈意见表（用时 3 分钟），调查对象为前两步所有参与者。完成前面两步后，作者会根据收集到的数据做出一份报告给所有参与者，为项目经理以及各项目方提供社会责任事项实施的决策依据，并为项目各相关方如何协同实施提供借鉴，并请各参与者根据参与体验进行反馈意见。

Appendix F: sample of the questionnaire used in case study

《利益相关者对项目社会责任实施的影响》
港珠澳大桥案例研究调查问卷

尊敬的受访者：

您好！非常感谢您在百忙之中对本次案例研究的支持与配合。本研究基于香港理工大学博士课题“建设项目中社会责任实施研究”，旨在调查建设项目中各利益相关者对社会责任事项实施的影响。本问卷将会占用您**约 10 分钟**的时间，请您根据项目情况及经验作答。本问卷为匿名，**您的个人和单位信息将会绝对保密**，问卷结果仅作学术研究使用。在问卷的结尾，**请留下您的联系方式**，后续我们会将结果进行反馈，还需要收集您对研究结果的意见，再次感谢！如有任何疑问请联系：

林雪 博士研究生
香港理工大学建筑与房地产系
电话：+852 5660
电子邮箱：xue.lin@

第一部分：背景资料

问题 1：贵工作单位的名称 _____

问题 2：贵工作单位在项目中担任的角色
☐总承包商； ☐业主/开发商/投资方； ☐分包商（包括专业分包，供应商等）；
☐咨询公司（包括设计、勘测、规划、监理公司等）； ☐政府机构；
☐项目使用者； ☐非政府组织/环保团体； ☐社区代表/居民委员会；
☐其他，請指出：_____

问题 3：您在贵单位的工作年限_____

问题 4：您在建设行业中的工作年限_____

问题 5：您在贵单位的职务_____

第二部分：社会责任事项及利益相关者影响

问题 6：社会责任事项是指建设项目中除了质量成本工期等目标，还应参与实施的与环境、社会、生态的可持续发展相关的社会事项。请您针对表格中与项目相关的社会责任事项，评估贵单位在影响下列事项实施上的意向、权利、合法性、紧迫性程度，并在相应的数字前打钩。在评价前，请先浏览所有的社会责任事项，如有重要但未包含的，请在后续的补充表上添加。

序号	社会责任事项	1） 意向 贵单位对该社会责任事项的实施意向（1~5 分） *1=无意向 5=非常有意向*	2） 权利 贵单位对该社会责任事项实施的影响力大小（1~5 分） *1=无影响 5=非常有影响*	3） 合法性 贵单位是否有充分的合理性去影响该社会责任事项的实施（1~5 分） *1=不合理 5=非常合理*	4） 紧迫性 贵单位是否有认为在项目中实施该社会责任事项具有紧迫性（1~5 分） *1=不紧迫 5=非常紧迫*
1	披露项目对白海豚的影响情况	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
2	建立海岸公园保育生态	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
3	施工垃圾、废油、污水处理	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
4	建立环境监测站公布空气、噪音、水质环境监控及审核数据	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
5	施工工人的健康关怀	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
6	极端天气的安全管理	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
7	维护与周边居民的关系	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
8	社区协作：公众参与工作坊	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
9	社会公益活动	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5
10	项目节能减排方案	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5	□1 □2 □3 □4 □5

补充表：请填写您认为重要的其他社会责任事项

问题 **7**：有影响的利益相关者是指能够影响项目中上述社会责任事项实施的单位或个人，请勾选您所从属的利益相关者单位，如果您认为有重要但未包含的利益相关者请在补充表内填写。

序号	利益相关方名称	请勾选
1	业主方	□
2	三地联合委员会	□
3	岛隧总项目部	□
4	项目安全环保部门	□
5	安全质量监督站	□
6	监理	□
7	分包商	□
8	顾问专家团队	□
9	海洋与渔业局	□
10	海事局	□
11	白海豚保护区管理局	□
12	社区	□
13	边防部门	□

补充表：请填写您认为重要的其他利益相关者

序号	利益相关方名称	请勾选
		□
		□
		□

再次非常感謝您的参与!

如方便请留下您的电子邮箱或手提电话，以便给您发送分析结果报告并进行反馈调查：

Appendix G: sample of the feedback forms in case study

谢谢您对本次案例分析的调查，根据本次案例分析的过程及结果，请结合您的感受作答：

可操作性：					
1. 本方法是否在项目管理实践中具有可实施性？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
2. 本方法的操作步骤是否清晰明确？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
3. 本方法得到的结果是否易于理解？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
4. 贵单位是否会愿意参与本方法来促进项目社会责任实施？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
有效性：					
1. 本方法是否能够促进项目中社会责任的实施？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
2. 本方法是否能够有效提高项目社会绩效？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
3. 本方法是否能促进各项目方的沟通？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
4. 本方法是否能够促进各项目方的协同合作？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
5. 本方法是否能够有效帮助贵单位实施社会责任？	☐非常同意	☐同意	☐中立	☐不同意	☐非常不同意
请您为本研究提出宝贵的意见，并指教本方法存在的缺点和不足：_____					

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