

Stakeholder management in construction: An empirical study to address research gaps in previous studies



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Abstract

This paper concentrates on identifying gaps in the scope of previous studies on stakeholder management, and starting to address those gaps by conducting an empirical study. To complete these research objectives, literature review, interviews, questionnaire survey, and a case study were used in this study. Four gaps regarding critical success factors, stakeholder management process, methods for stakeholder management and stakeholder relationship management were identified. Based on an empirical study, a framework for effective stakeholder management is proposed, and the application of a Social Network Analysis technique, as a means of determining the influence of stakeholders on decision making, is illustrated and validated by a case study. These findings can serve as initial references towards a more systematic approach for stakeholder management. Since the empirical study was conducted only in Hong Kong and Australia, further studies should be conducted in other regions to validate and compare with the finding in this paper.

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1. Introduction

According to PMI (2004), a project is: “a temporary endeavour undertaken to create a unique product, service, or result”. Based on this definition, projects are temporary and unique. Olander (2006) points out that a project is a unique process, consisting of “a set of coordinated activities with a start and a finish date, undertaken to achieve an objective conforming to specific requirement, including constraints on time, cost and resources”. Ibrahim and Nissen (2003) also state “there is no such thing as a typical facility development project. No two projects are ever the same”. The uniqueness nature and limited duration of projects require additional efforts to build effective project teams and generate trust, both within the team and between the team and the project stakeholders (Grabher,

2002). The team members must learn quickly how to work together as a coherent unit (Ibrahim and Nissen, 2003). Project managers need to be attuned to the cultural, organisational and social environments surrounding projects (Wideman, 1990).

Youker (1992) defines the notion of “project environment” according to the Random House dictionary, which is “the aggregate of surrounding things, conditions or influences”. Burton and Obel (2003) also use contingency factors to describe the project environment as one of having high complexity, high uncertainty, and high equivocality, such factors make stakeholder management difficult. Youker (1992) clarifies that uncertainty becomes a problem for the project manager because of the dependency relationship between the project and the uncontrolled elements in its environment. Managing stakeholders needs to balance competing claims on resources between different parts of the project, between the project and other projects and between the project and the organisation (Bourne, 2005), but an environment of uncertainty and complexity makes “achieving this balance more difficult” (Turner and Muller, 2003).

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Scholars studying the construction sector (e.g. Boshier et al., 2007; Cole, 2005; El-Gohary et al., 2006; Newcombe, 2003; Olander and Landin, 2005) have realized that stakeholder involvement is important to project outcomes, and recognition of the concept of stakeholder management has grown in recent years. A consequence of the growth of interest in stakeholder management has been a simultaneous expansion of different perspectives of stakeholder research (Friedman and Miles, 2006). In recent years, some researchers have attempted to classify these research perspectives. Jones (1995) identified three major approaches to classify stakeholder theory: descriptive, instrumental, and normative. Kolk and Pinkse (2006) considered the recent research to focus on three core themes: (1) identifying the nature of stakeholders, (2) examining under which circumstances and how stakeholders influence organisational decisions and operations, and (3) identifying different strategies to deal with stakeholders. Bourne and Walker (2006) classified the stakeholder theory to “social science stakeholder theory, instrumental stakeholder theory, and convergent stakeholder theory”. However, according to Freeman and McVea (2001) and Atkin and Skitmore (2008), the adoption of these defined approaches has possibly tended to prevent more fruitful explorations of the issues arising from recognition of the stakeholder concept. They suggest that stakeholder research should also include application of the insights of stakeholder theory to real world problems, in contrast to that pure research which focuses solely on the development of stakeholder theory. Nevertheless, according to Achterkamp and Vos’s (2008) study, lack of attention has been paid to “conceptualising the stakeholder notion in the context of projects as well as to make the notion operational for this context”.

This paper, therefore, is not concerned with the description of stakeholder management theory as such, but concentrates on identifying the gaps in the scope of previous studies on stakeholder management, and starting to address those gaps by conducting an empirical study. The intention is to add to knowledge and the provision of an improved understanding of the stakeholder management issues. These issues result from recognition of the fact that there are multiple stakeholders whose expectations and influences must be encompassed in the project management process. Section 2 describes the research process adopted for this study. Section 3 consists of the literature review and the identification of gaps in the scope of previous research to date. Section 4 describes an empirical study made by us, towards addressing these identified gaps. These studies have led to a proposed framework for effective stakeholder management and an examination of the effectiveness of the Social Network Analysis technique.

2. The research process

In order to identify gaps in the stakeholder management research field in construction, a literature review was undertaken. Well regarded construction research journals were searched. Journals selected were those with high scores for quality on the combined ABDC (Australian Business Deans Council) Journal List. See Table 1 for the full list. The search scope was expanded

to include common search engines such as Google Scholar, ABI database, EI CompendexWeb, ISI web of knowledge and several bookstores on the web. Some references from many articles initially found, were also followed up. The aim was to access as much research produced information as possible on the subject of stakeholder management in construction.

Publications were searched using the keywords “stakeholder”, “project participants”, and “project environment”. The terms “project participants” and “project environment” were used because some scholars (Kaatz et al., 2005; Leung et al., 2004; Patela et al., 2007; Wideman, 1990; Youker, 1992) never use the word “stakeholder” in their papers, and yet they did in fact analyse both the participation of stakeholders in project environments and various stakeholder perspectives. The search process was guided by a study by Olander (2006). The first selection was based on available abstracts, and the second selection after reading paper contents. At the conclusion of the search process, 68 items had been identified for further analysis, as the ones deemed most appropriate for the analysis of past stakeholder management research in construction.

Table 1 lists the 68 items, consisting of journal papers, international conference papers, theses, booklets, reports, and some chapters in eight books. The journals, Construction Management

Table 1
An overview of the publications.

Source of the literature		Number of related papers	Percentage (%)
Journals	Construction Management and Economics	15	22
	International Journal of Project Management	9	13
	Building Research & Information	6	9
	Engineering Construction and Architectural Management	2	3
	Facilities	2	3
	Journal of Architectural Engineering	2	3
	Project Management Journal	2	3
	Structural Survey	2	3
	AACE International Transactions	1	1
	AEW Services	1	1
	Architectural Science Review	1	1
	Automation in Construction	1	1
	Baltic Journal of Management	1	1
	Civil Engineering and Environmental Systems	1	1
	Engineering Management Journal	1	1
	European Journal of Industrial Engineering	1	1
	Journal of Engineering and Applied Science	1	1
	Journal of Financial Management	1	1
	Land Use Policy	1	1
	Management Decision	1	1
	R&D Management	1	1
	The TQM Magazine	1	1
Others	International symposium or conference	2	3
	Theses	2	3
	Books	8	12
	Booklets or reports	2	3
Total		68	100

and Economics and International Journal of Project Management, have published the greatest number of papers on stakeholder management. In particular, Volume 26, Issue 6 of Construction Management and Economics is a collection of eleven papers on stakeholder management, bringing together contributions reflecting contemporary and emerging themes in stakeholder management (Atkin and Skitmore, 2008).

The study is conducted with three steps:

- Firstly, Cleland and Ireland (2002) consider it important that the project team knows whether it is successfully “managing” the project stakeholders or not, and the review, therefore, initially focused on identifying stakeholder management Critical Success Factors (CSFs). In terms of stakeholder management, CSFs can be viewed as those activities and practices that should be addressed in order to balance stakeholders’ interests and further ensure that projects are moved forward. Our two initial findings (IF1 and IF2) were made. Finding IF1 is that the identification of CSFs, which improve the performance of stakeholder management, first requires an understanding of the stakeholder management process. Finding IF2 is that management of stakeholder relationships is important.
- Then, as a result of IF1, those papers discussing the stakeholder management process were further reviewed. Two further findings were made, FF1 and FF2. Finding FF1 states that a stakeholder management model in construction has not yet been fully developed, and FF2 is that a range of practical approaches that can be used for stakeholder management has yet to be consolidated. As a result of IF2, papers discussing the management of stakeholder relationships were reviewed, and a further finding (FF3) is that most of these studies focus only on the promotion of the relationships, however, few focuses on the impact on the project which results from such networks of stakeholder relationships.
- Finally, the research then proceeded through empirical investigations, intended to make some progress towards repairing the FF1, FF2 and FF3 weaknesses identified. To learn from the experiences of practitioners, six interviews were held, a questionnaire survey was administered and a case study was conducted. These studies had two objectives: (1) derivation of a proposed systematic framework for stakeholder management; (2) validation of the effectiveness of a specific Social Network Analysis technique for analyzing the influence of stakeholders. This empirical work is described below in Section 4.

3. Literature review

3.1. Critical success factors for stakeholder management in construction

During the review of the 68 papers, it became apparent that only two papers (Jergeas et al., 2000; Olander and Landin, 2008) related mainly to factors affecting stakeholder management. Jergeas et al. (2000) used interviews to identify “communication with stakeholders and setting of common goals, objectives and

project priorities” as two aspects bringing improvements to the management of stakeholders. Using a comparative study, Olander and Landin (2008) identified five factors within the stakeholder management process that could bring about different project outcomes. These factors are: “analysis of stakeholder concerns and needs; communication of benefits and negative impacts; evaluations of alternative solutions; project organization; and media relations”. Their studies make a significant contribution to the promotion of successful stakeholder management on construction projects, but because the projects were limited to only two industry sections and the sizes of the samples were small, it is not possible to generalize their findings. The first study was limited to only five project managers working on oil and gas industry construction sites, and the second was based on only two railway development projects in Sweden.

Some other factors affecting stakeholder management were also identified by the review. Landin (2000) considers that “the long-term performance of any construction project and its ability to satisfy stakeholders” depends on the decisions made and the care taken by the decision makers in fostering stakeholder communication. Bakens et al. (2005) and Young (2006) also point out that the key to good stakeholder management is effective communication. Aaltonen et al. (2008) state that the key issue in project stakeholder management is management of the relationships between the project team and its stakeholders. These factors were cited as critical success factors for stakeholder management, but verification is needed through further quantitative and qualitative studies.

Therefore, based on literature review, it seems that previous studies regarding critical success factors for stakeholder management are either limited to small sample size, or just assumptions without further verification. A complete list of the factors which contribute to the success of stakeholder management has not yet been undeveloped.

Other studies, Bakens et al. (2005), Jergeas et al. (2000), Karlsen (2008), Olander and Landin (2008), and Young (2006), confirm that “communication” is an important CSF and they also show that the relationship between the project team and stakeholders is important. As further support, Rowlinson and Cheung (2008) consider that the success of stakeholder relationship management is contingent upon a well-defined communication strategy, supported by structured facilitation of relationship activities. Karlsen (2008) confirms that 5 factors are important to the formation of relationships between the project team and the stakeholders; and Karlsen et al. (2008) identify 14 factors as most important for building trust between a project team and its stakeholders. Since the management of stakeholder relationships is inherently of importance to stakeholder management, investigation seems necessary.

3.2. Stakeholder management processes in construction and methods used in the processes

Several scholars have proposed stakeholder management process models, which are summarized in Table 2. However, it seems that there is no consensus on the best model. Stakeholder management requires a formal structured approach (Cleland and

Table 2
Stakeholder management process models in construction projects.

Scholars	Stakeholder management processes
Karlsen (2002)	Identification of stakeholders; analysing the characteristics of stakeholders; communicating and sharing information with stakeholders; developing strategies, following up.
Elias et al. (2002)	Developing a stakeholder map of the project; preparing a chart of specific stakeholders; identifying the stakes of stakeholders; preparing a power versus stake grid; conducting a process level stakeholder analysis; conducting a transactional level stakeholder analysis; determining the stakeholder management capability of the R&D projects; analysing the dynamics of stakeholder interactions.
Young (2006)	Identifying stakeholders; gathering information about stakeholders; analysing the influence of stakeholders.
Bourne and Walker (2006)	Identifying stakeholders; prioritizing stakeholders; developing a stakeholder engagement strategy.
Olander (2006) adopted Cleland (1999)	Identification of stakeholders; Gathering information on stakeholders; Identifying stakeholder mission; Determining stakeholder strengths and weaknesses; Identifying stakeholder strategy; Predicting stakeholder behavior; Implementing stakeholder management strategy.
Walker et al. (2008)	Identifying stakeholder; Prioritizing stakeholders; Visualizing stakeholders; Engaging stakeholders; Monitoring effectiveness of communication.
Jepsen and Eskerod (2009)	Identification of the (important) stakeholders; characterization of the stakeholders pointing out their (a) needed contributions, (b) expectations concerning rewards for contributions, (c) power in relation to the project; decision about which strategy to use to influence each stakeholder.

Ireland, 2002), but such a formal approach has not yet been fully developed (Chinyio and Akintoye, 2008). Karlsen (2002) points out that no formal and systematic project stakeholder management process exists in real projects and that the management of stakeholders is a random affair, since there are no routine functioning strategies, plans, methods or processes. Cleland and Ireland (2002) go on to propose some basic guidelines for the development of a project stakeholder management process. They believe a formal approach is required, because projects are subject to so many changes that informal methods are inadequate. They also point out that successful project stakeholder management should provide project teams with decision-making intelligence. Although the scholars cited in Table 2 have proposed several stakeholder management process models, it appears that these models are not coherent and detailed enough to be of practical use. For example, Karlsen (2002) considers “identification of stakeholders” and “analysing the stakeholders” to be the first two stages required for stakeholder management, but ignores the preceding stage of “gathering information about stakeholders”, which is considered important by Young (2006). Considering all of the above, it seems clear that a formal stakeholder management process model needs to be synthesized and developed.

Besides the process for stakeholder management, as Chinyio and Akintoye (2008) stated, to achieve project objectives, it is also essential to identify effective approaches for stakeholder management. Although several scholars (Newcombe, 2003;

Bourne, 2005; Young, 2006) have proposed the different approaches for stakeholder analysis, few have attempted to consolidate practical approaches that can be used for stakeholder management (Reed et al., 2009), except Chinyio and Akintoye (2008), and Reed et al. (2009). Chinyio and Akintoye (2008) focused on stakeholder engagement approaches in construction in the United Kingdom, and Reed et al. (2009) discussed the approaches for stakeholder analysis used within natural resource management research activities. These studies identified and proposed a range of approaches that have helped the practitioners to manage stakeholders. However, their limited scope means that they do not represent the complete picture. It is thus necessary to expand Chinyio, Akintoye and Reed et al.’s work to consolidate a range of practical approaches that can be used for stakeholder management.

3.3. Stakeholder relationship management in construction

Many scholars consider stakeholder relationship management to be important. Cleland (1986) and Jergeas et al. (2000) consider that “efficient management of the relationships between the project and its stakeholders is an important key to project success”. Hartman (2002) believes that successful project relationships are vital for successful delivery of projects and meeting stakeholder expectations. Olander (2006) treats stakeholder management in construction projects as a system, and believes that the different parts of the system must be studied, together with the relationships between these parts (Arbnor and Bjerke, 1997). Unlike the focus of traditional project management, on the stakeholders themselves, large numbers of researchers in recent years have taken stakeholder relationships into account (Cova and Salle, 2006). Table 3 summarises the literature on relationship management in construction into two categories.

The first category relates to the promotion of the relationships between different project participants and the analysis of the importance of relationship management. The booklet “Stakeholder Measures (72 questions)” was produced by Construction Pathfinder (Devitt, 2001) to stimulate debate on stakeholder relations and how to improve them. It places the spotlight on stakeholder relationships in a manner which encourages companies to learn from each other. By studying stakeholder empowerment, Rowlinson and Cheung (2008) point out that relationship management is useful for enhancing project performance and client satisfaction. PMI (2004) defines project stakeholder management as “the systematic identification, analysis and planning of actions to communicate with and influence stakeholders”. Based on this definition, Aaltonen et al. (2008) consider the key to effective project stakeholder management is management of the relationships between the project and its stakeholders. These studies have contributed to successful relationship management in construction projects, and relationship management research is well developed from this particular perspective.

The second category focuses on analysis of the impact made by stakeholders through informal ‘instrument’, ‘the network of relationships’. Bourne and Walker (2006), Newcombe (2003),

Table 3
The literature on relationship management.

Categories	Scholars
Category 1: Promoting relationships between different project participants; analysing the importance of relationship management.	Cleland (1986); Smyth (2000); Jergeas et al. (2000); Devitt (2001); Hartman (2002); Smyth (2004); Smyth and Edkins (2007); Skitmore and Smyth (2007); Smyth and Fitch (2007); Anvuur and Kumaraswamy (2008); Aaltonen et al. (2008); Karlsen (2008); Smyth (2008); Rowlinson and Cheung (2008)
Category 2: Analysing the impact of stakeholders arising from the existence of ‘the network of relationships’.	Newcombe (2003); Bourne (2005); Bourne and Walker (2005); Bourne and Walker (2006); Cova and Salle (2006); Olander (2006); Cova and Salle (2006), Olander and Landin (2008)

and Pryke (2006) used the term “network of relationships” in their studies, because they believe a construction project takes place in a non-linear, complex, iterative and interactive environment, in which the impact of stakeholders cannot be easily identified. Pryke (2006) considers traditional analysis is a dyadic-discussion about contract and intra-coalition relationships, which has traditionally made the assumption that relationships essentially involve only two parties. The project environment is much more complicated (Bourne, 2005), as evidenced by the “milieu” map of an example project drawn up by Cova and Salle (2006). To make use of “network of relationships” in analysing stakeholder impact, the notion of hidden/invisible stakeholders is important. They may have little apparent influence, but the hidden influences make the innocuous power more substantial (Bourne and Walker, 2006). Newcombe (2003) emphasizes that project managers should not look down on those stakeholders who have little obvious power and consider them as weak, because these stakeholders may have a strong influence on the attitudes of the more powerful stakeholders. Bourne and Walker (2006) consider that hidden/invisible stakeholders could cause major disruption to a project’s development through unseen power and influential links. Similarly, Olander and Landin (2008) find that the public often has no formal power to affect the decision-making process for a project, but it has an informal power that can press powerful stakeholders to change their positions. All of these studies show that analysis of the impact of stakeholders acting through “network of relationships” is important, especially as it can highlight the importance of different stakeholders.

Although relationship management research from this second category has been confirmed as important (e.g. Bourne and Walker, 2006; Newcombe, 2003; Olander and Landin, 2008), few studies exist on how to analyse the impact resulting from stakeholder relationship networks (Aaltonen and Sivonen, 2009). The only available tool is the Stakeholder Circle Tool developed by Bourne (2005), which can be used to identify and prioritize the influences of the project stakeholders. The software calculates the importance of each stakeholder based on the assessment, which is made by project team, of each stakeholder’s attributes (power, proximity, and urgency). Although the project team (usually including the sponsor) may have investigated the impact of every stakeholder, use of such software cannot overcome the cognitive limitations of the project team. There is no real departure from the traditional dyadic analysis (Pryke, 2006), and the accuracy of the results is likely to decrease as the complexity of the project increases.

Though Stakeholder Circle Methodology may have a useful place in stakeholder relationship management, it needs back up validation by identifying the underlying structure of the relationships between stakeholders.

Social Network Analysis (SNA) is considered potentially to be such a tool (Bourne and Walker, 2006; Rowley, 1997). This technique was first proposed by Rowley (1997) in the field of stakeholder research and some scholars of stakeholder management in construction consider SNA to be useful (e.g. Cova and Salle, 2006; Bourne and Walker, 2006). Those researchers, however, do not appear to have yet made any empirical studies using this method. The SNA method is further explained and its utility examined using a trial case study in Section 4.2, below.

3.4. Summary of the research gaps in previous studies

In the literature review, four gaps in the scope of the existing research on stakeholder management in construction are identified:

- a comprehensive list of the factors affecting the success of stakeholder management has yet to be fully developed;
- a systematic framework for stakeholder management needs to be further developed;
- a range of practical approaches that can be used for stakeholder management has yet to be consolidated;
- most studies focus only on issues of promotion of the relationships themselves, but few focus on analysing the impact on the project resulting from those stakeholder relationship networks.

An empirical study was conducted in Hong Kong and Australia to address the identified research gaps. Findings are described in Sections 4.1 to 4.4 respectively corresponding to the four gaps.

4. An empirical study to address the research gaps

4.1. A list of CSFs

Based on the 68 papers literature review, 15 factors contributing to the success of stakeholder management in construction projects have been identified. Six interviews were conducted in Hong Kong to verify the selected CSFs, and to gather views on what are effective practical methods and tools for use in the stakeholder management process. These experts were selected because they all had more than 10 years’ overall

experience on stakeholder management in construction projects, and they have different roles in projects and on different levels of position. The interviews were conducted in the interviewees' office, and lasted for 0.5 to 1 h, depending on the interviewees' available time slots and how many comments they gave.

All interviewees agreed the appropriateness of the 15 CSFs. They also provided valuable comments clarifying the CSF definitions. For example, the first factor was changed from "Undertaking social responsibilities" to the more detailed description "managing stakeholders with social responsibilities (economic, legal, environmental, and ethical)". To analyse the ranking of the 15 CSFs, a full-scale survey was conducted in Hong Kong in August 2008. Prior to sending out the questionnaires, a pilot study was conducted with two project managers. The respondents were project managers from different aspects of the construction industry. They were selected from internet information, newspapers, magazines, membership lists of two institutes (i.e. the Association for Project Management Hong Kong, and the Hong Kong Construction Association), and registered lists (including the Authorized Architects' register, the Authorized Engineers' register, the Authorized Surveyors' register, and the General Building Contractors' register) published by the Buildings Department of Hong Kong (Yang et al., 2009). A total of 654 copies of the questionnaire were delivered to the potential respondents. Most copies were sent by mail, and for those potential respondents whose mailing address was unknown, copies were sent by email. About three weeks were given for the respondents to complete and return the questionnaire. The ways for returning the questionnaire comprised mail, email and fax. A total of 183 completed questionnaires was received representing a response rate of 28%, which is consistent with "the norm of 20–30% which pertains to most questionnaire surveys in the construction industry" (Akintoye, 2000). The raw data were analysed using the Statistical Package for Social Sciences (SPSS) computer software.

Table 4 ranks CSFs in order of descending mean score. The mean scores range from 3.80 to 4.43, which indicate that all respondents consider these 15 factors critical. The highest ranking CSF is "managing stakeholders with social responsibilities (economic, legal, environmental and ethical)" (mean=4.43) which is therefore seen as the factor most influential to the success of stakeholder management. "Exploring stakeholder needs" and "communicating with and engaging stakeholders properly and frequently" (mean=4.26) were both ranked equal second. The fourth ranked factor was "understanding area of stakeholder interests" (mean=4.22), the fifth, "identifying stakeholders properly" (mean value=4.21), and the sixth, "keeping and promoting a good relationship" (mean value=4.17). These six factors are the top six stakeholder management CSFs. In order to examine how greatly the individual respondents differed in their rankings, the Kendall Coefficient of Concordance was calculated. The Kendall Coefficient of Concordance for ranking the 15 CSFs in Table 4 was 0.122, which is statistically significant at the 1% level. This suggests that there was general agreement among the 183 respondents on the CSF rankings (Yang et al., 2009).

Table 4
Ranking of the 15 CSFs.

CSFs	Mean	Rank
C1. Managing stakeholders with social responsibilities (economic, legal, environmental and ethical)	4.43	1
C5. Exploring stakeholder needs to projects	4.26	2
C15. Communicating with and engaging stakeholders properly and frequently	4.26	2
C4. Understanding area of stakeholder interest area	4.22	4
C3. Properly identifying stakeholders	4.21	5
C11. Keeping and promoting a good relationship	4.17	6
C9. Analyzing conflicts and coalitions among stakeholders	4.04	7
C7. Accurately predicting the influence of stakeholders	4.02	8
C12. Formulating appropriate strategies for the management of stakeholders	3.97	9
C8. Assessing attributes (power, urgency, and proximity) of stakeholders	3.91	10
C10. Effectively resolving conflicts between stakeholders	3.88	11
C2. Formulating a clear statement of project mission	3.87	12
C13. Predicting stakeholder reactions to implementation of the strategies	3.83	13
C14. Analyzing the changes in stakeholder influences and relationships	3.83	13
C6. Assessing stakeholder behaviour	3.80	15

Notes: Number=183.

Kendall's Coefficient of Concordance=0.122. Level of significance: 0.00.

For 'Mean scores': 1=least important and 5=most important.

4.2. A guidance framework for stakeholder management

Based on the questionnaire survey data, factor analysis was used to determine groupings among the 15 CSFs. A four-component solution was produced based on Varimax rotation of principal component analysis. These four factor groupings, with Eigenvalues greater than 1.000 explain 61.532% of the variance. A CSF belongs to a particular group if the factor loading value exceeds 0.50 (Aksorn and Hadikusumo, 2008; Li et al., 2005; Norusis, 1992). It was found that C1 "managing stakeholders with social responsibilities (economic, legal, environmental and ethical)" belonged to none of the factor groupings. The remaining 14 CSFs can be grouped into four principal components (Yang et al., 2009), entitled: (1) stakeholder estimation, (2) information inputs, (3) decision making, and (4) sustainable support. The four components are ranked in order of importance.

The CSF, C1 "Managing stakeholders with social responsibilities (economic, legal, environmental and ethical)", however, scored highest among the 15 CSFs. This means that project managers consider this factor to be the most important for the success of stakeholder management, a finding in line with statements of several researchers (e.g. Carroll, 1991; Donaldson and Preston, 1995; Wood and Gray, 1991). According to Carroll, (1979) definition, economic responsibility is the obligation to produce goods and services, sell them at fair prices and make a profit; legal responsibility is the obligation to obey the law; and ethical responsibility covers those issues not embodied in law but expected by society. Recently environmental expectation has also been given much attention by many scholars (e.g. AlWaer et al., 2008; Prager and Freese, 2009) because of sustainable development expectations. Environmental considerations involve air, flora/fauna, dust, water, and noise. The purpose is to protect the

environment and to provide healthy living conditions. Because this most significant CSF, i.e. C1, was not included in any of the four components, we consider this factor a “precondition factor” for successful stakeholder management. With this precondition, and recognizing the four components extracted by factor analysis, a guidance framework for successful stakeholder management in construction projects is proposed, and defined by Fig. 1 (Yang et al., 2009).

4.3. Effective methods for successful stakeholder management

The six interviewees as indicated in Section 4.1 were also asked to propose effective methods for successful stakeholder management. As shown in Table 5, the proposed methods are classified corresponding to the basic stakeholder management process (Cleland, 1999). They can be used for identifying stakeholders, gathering information, analyzing stakeholders, making decisions, and implementing decisions. To verify the effectiveness of the proposed methods, a questionnaire survey was designed, the administration of which has been described in Section 4.1.

The effectiveness of each method was judged on the basis of its mean score. The higher the mean score, the higher the effectiveness will be. It shows that personal past experience was ranked as the most effective method for identifying stakeholders. This indicates that the experience of project managers is important to this management activity. Asking the obvious/identified stakeholders to identify others of importance, “snowball sampling” (Patton, 1990), is also considered very effective. For the action “gathering information about stakeholders”, focus group meetings rank high. Focus groups aim to reveal the key concerns of those selected (Dawson et al., 1993). Focus group meetings may also reveal preliminary issues that are of concern to a group or community (Department of Sustainability and Environment, 2005), and, again, “personal past experience” is also important for gathering information about stakeholders and analyzing it. This finding can be said to be in line with the study conducted by Chinyio and Akintoye

Table 5

The efficiency of methods used in the process of stakeholder engagement.

Purposes	Methods	Mean	Kendall's W ^a
Identifying stakeholders	Personal past experience	4.15	0.094
	Asking the obvious/identified stakeholders to identify others	3.70	
	Guidelines from governments or one's own organization	3.61	
	Professional services	3.55	
	Being directed by a superior	3.52	
Gathering information from stakeholder	Focus group meetings	4.28	0.197
	Personal past experience	3.80	
	Interviews	3.78	
	Public consultation (e.g. Gazette)	3.75	
	Formal memos	3.45	
Estimating stakeholders	Questionnaires	3.23	0.067
	Personal past experience	3.91	
	Workshops	3.90	
	Interviews	3.79	
	Public engagement approaches	3.71	
Making decisions	Surveys	3.47	0.420
	Meetings	4.21	
	Negotiations	4.20	
	Social contacts	3.72	
	Guidelines	3.43	
Implementing decisions	Appealing to Executive Council	2.98	0.202
	Meetings	4.31	
	Workshops	3.96	
	Negotiations	3.92	
	Interviews	3.86	
	Social contacts	3.67	
	Public engagement approaches	3.63	
	Surveys	3.26	

^a Kendall's Coefficient of Concordance.

(2008), who identified “intuition” as an important factor in stakeholder management. For the action “decision making”, meetings are important, which is also an effective method for the engagement of stakeholders.

Regarding “implementing decisions”, seven approaches (Table 5) were identified, all with mean values larger than 3

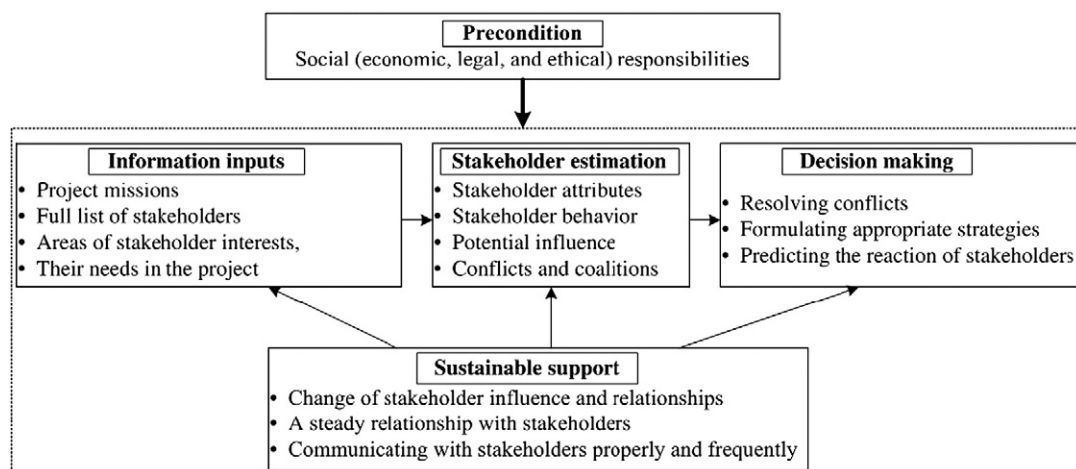


Fig. 1. A framework for successful stakeholder management in construction (Yang et al., 2009).

(Neutral). Several kinds of meetings and workshops were regarded as the most common ways of implementing decisions. Negotiations can also be categorised as communication with stakeholders, especially when settling disputes and problems. Based on similar studies in the UK, Chinyio and Akintoye (2008) also emphasized the importance of workshops, meetings and negotiations.

In order to examine whether the respondents ranked the methods in similar order to each other, Kendall Coefficients of Concordance were calculated. These are statistically significant at the 1% level, which indicates that there is a general agreement among the 183 respondents on the rankings. However, the right hand column of Table 5 contains coefficients which are all relatively small. This might reflect the context-specific feature of stakeholder management and imply that though the respondents consider all the methods are important, the order of importance may vary with different situations. This finding is in line with Reed et al.'s (2009) findings, as they stated that “choice of approaches will depend on the purpose of the stakeholder analysis, the skills and resources of the investigating team, and the level of engagement”.

4.4. Application of Social Network Analysis (SNA) for analyzing stakeholders' influence

Although many scholars (e.g. Bourne and Walker, 2006; Newcombe, 2003; Olander and Landin, 2008) consider ‘the network of relationships’ to be important, few studies focus on analyzing the impact of stakeholders resulting from the fact of the existence of the network. As an initial step towards addressing this research gap, a ‘Social Network Analysis’ can be made as one way of studying stakeholder relationships. In order to test the effectiveness of Social Network Analysis, a case study was conducted in Australia in 2009, on the construction of new classrooms and facilities for a theological school.

An interview was conducted with the project management team to identify the stakeholders. Fifteen individuals/groups were identified as involved in the construction stage. The team was then asked to prioritize the influence exerted by stakeholders based on its experience. The Stakeholder Circle technique was adopted (Bourne, 2005). The results are shown in the first column in Table 6.

A survey question was developed to enable construction of the stakeholder social network. The question was as follows:

“Please nominate groups or individuals, or choose those from the following list (the list in Table 6) who changed or influenced your activities related to the project in the construction stage and to what extent? 1=To some extent; 2=To a considerable extent”.

The questions were sent out by the project management team via email. One additional stakeholder, i.e. “College Board Members”, not identified during the meeting, was nominated by the warden. It should be noted that not all of the sixteen stakeholders (which included subcontractors, consultants and suppliers), were contacted due to limited time and resources. The

Table 6

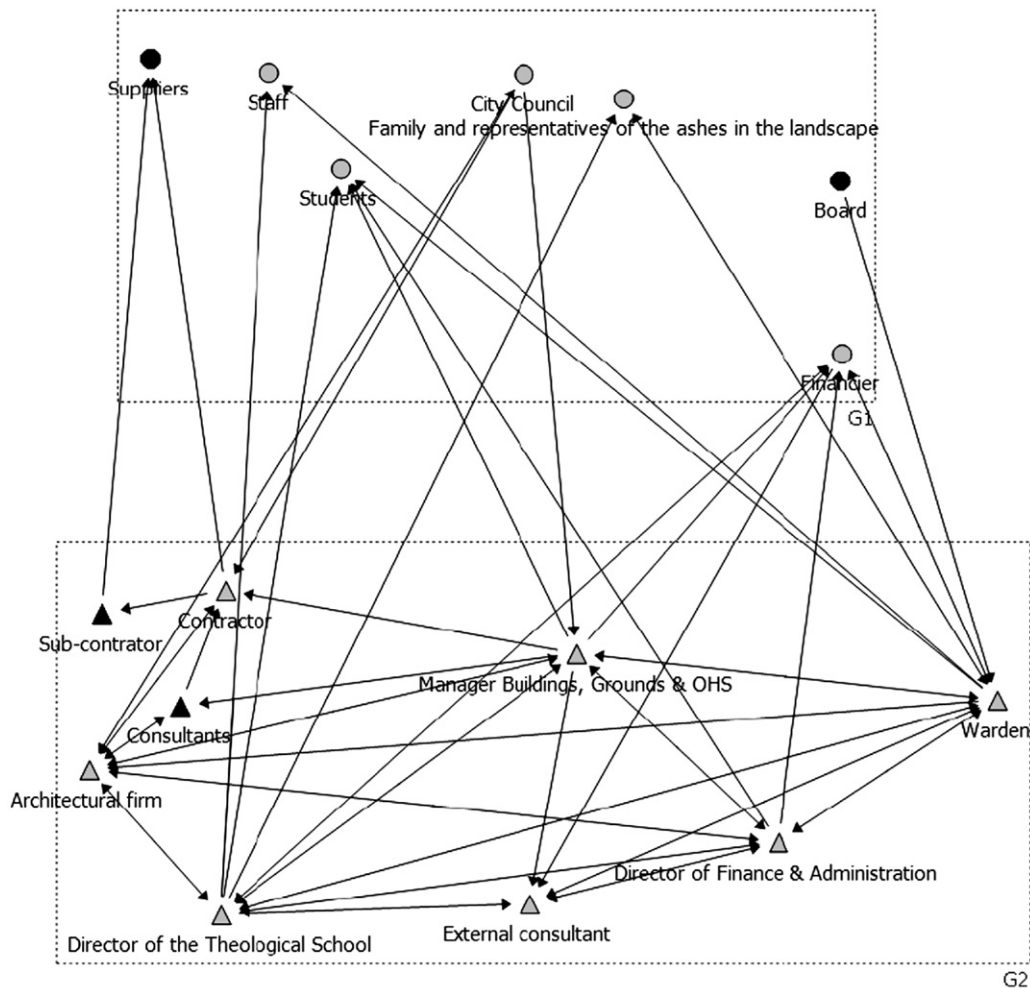
Stakeholder priority lists in the T College project.

Priority list at the construction stage (using Stakeholder Circle)	Priority list at construction stage (using Social Network Analysis)	
	Stakeholder	Out-Status Centrality
1. Manager Buildings, Grounds & OHS	1. Manager Building, Grounds & OHS	1.91
2. Director of Finance & Administration	2. Warden	1.86
3. Architectural firm	3. Director of Finance & Administration	1.74
4. Warden	4. Director of the T College	1.71
5. Director of the Theological School	5. Architectural firm	1.11
6. City Council	6. Contractor	0.51
7. Contractor	7. Financier	0.42
8. Consultants	8. City Council	0.40
9. Sub-contractor	9. Consultants	0.35
10. Suppliers	10. External consultant	0.34
11. Financier	11. Family and representatives of the ashes in the landscape	0.17
12. External consultant	12. Board	0.17
13. Students/Staff	13. Sub-contractor	0.12
14. Family and representatives of the ashes in the landscape	14. Suppliers	0
	14=. Students/Staff	0

project is a design-build case, however, and it can be assumed that the project management team had a good understanding of the relationships which existed between those stakeholders who received a questionnaire and those who did not. The data gathered from the survey was analysed by a Social Network Analysis tool, NetMiner (Cyram, 2009).

Fig. 2 is the map of the influence network. One additional stakeholder, i.e. Board Members, not identified during the meeting was nominated by the Warden. To estimate the degree of prominence of stakeholders, the status centrality concept was used, as this takes every connection in to account (even up to infinite length connections) between each node (Cyram, 2009). Out-status centrality indicates the extent to which a stakeholder affects others. The influence of a stakeholder is reflected by the out-status centrality. The higher the out-status centrality value, the more important the stakeholder is. As shown in Table 6, the project manager (project management team) had the highest influence in the construction stage. In view of the project management team's role in the construction stage, it is not surprising that the team is at the centre of the map. ‘Warden’, ‘director of finance and administration’, and ‘director of the theological school’ have a high level of influence because they all directly communicate with the project team, and supervise the process of construction.

In order to compare the stakeholder ranking results from the Stakeholder Circle with those from the Social Network Analysis, Spearman's rank correlation test was used to show whether or not the similarities are significant (Singh and Tiong, 2006). The results of this test are interpreted by correlation coefficients (r), whereby high coefficients indicate strong correlations between variables. If r is significant at the 5%



Notes: Node colour – Black (Not themselves surveyed stakeholders), Grey (Surveyed stakeholders);
Node shape – Circular (External stakeholders), Upright triangle (Internal stakeholders).

Fig. 2. The stakeholder interactions network.

level, this is taken to mean that the two variables have a strong correlation. A correlation coefficient of 0.871 between the Stakeholder Circle and the Social Network Analysis results is significant at the 5% level. This statistical result indicates both techniques give generally similar stakeholder rankings. These findings were presented to the project management team, who agreed that the Social Network Analysis (SNA) technique is an effective one. Based on the results of SNA, the team re-prioritized the stakeholders.

This case study shows that Social Network Analysis can play a valuable role in evaluating the pattern of ‘whole-of system’ stakeholder relationships. Putting theory into practice is always a challenge and in this case study there were also limitations. Firstly, it was difficult to ask all of the stakeholders to respond to the survey, so this may have caused boundary limitations and bias in the results. Secondly, there are various methods for analyzing social network survey data, especially the conducting of a centrality analysis. It is an open question for practitioners and researchers as to which method is more effective. This case study, nevertheless, helps to strengthen our confidence in the usefulness of the types of results that the study has produced, hence

contributing to the development of theory and methods in stakeholder management.

5. Conclusions

This paper adopts an integrated process for identifying gaps in the scope of previous studies on stakeholder management, and trying to address those gaps by conducting an empirical study. As a result, four research gaps were identified: (1) a comprehensive list of the factors affecting the success of stakeholder management has yet to be fully developed; (2) a systematic framework for stakeholder management needs to be further developed; (3) a range of practical approaches that can be used for stakeholder management has yet to be consolidated; and (4) most studies focus only on issues of promotion of the relationships themselves, but few focus on analysing the impact on the project resulting from those stakeholder relationship networks. By conducting an empirical study in Hong Kong and Australia, fifteen CSFs were identified and ranked. A framework for structuring effective stakeholder management and methods for effectively conducting stakeholder management has been synthesised. The use of Social

Network Analysis for analysing the impact made by different stakeholders is illustrated and validated using a college building in Australia, and the usefulness of the application of SNA to stakeholder management in construction has been confirmed.

The findings of our study provide empirical evidence on the context-specific feature of stakeholder management. Particularly, the selection of approaches should be suitable for a particular situation and depend on resources of the project, the nature of the project and objectives of the engagement; and there is no single, most effective approach, and usually a number of alternative approaches are combined to analyse and engage stakeholders. These findings help to take this research field one small step along the pathway towards good understanding of the stakeholder management process.

This study has its limitations. The empirical study was conducted in Hong Kong and Australia, so the findings may mainly reflect the stakeholder management environments in these two regions. In future, similar studies should be conducted in other regions to validate and compare with the finding in this paper. Furthermore, during the case study, when collecting and reporting data for applying the SNA method, many practical and ethical challenges were evident. For instance, the secure promise of the required number of participating stakeholders is necessary, as missing data, obviously, make Sociograms give a less accurate portrayal of communities. Problems of data limitation may arise because of project managers' reluctance to intrude upon key stakeholders' time, or stakeholders reluctant to provide data because the anonymity of the data collected cannot be assured. Therefore, more research is necessary to enable analysis of the interrelations among stakeholders, especially as regards the application of SNA.

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