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1   # A Framework for Stakeholder Management in Construction Projects

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6   **Abstract:** This paper presents a systematic and generic framework reference for the

7   practice of stakeholder management in the construction industry. It contains findings

8   from empirical studies, comprising six interviews, a pilot study, a questionnaire

9   survey in Hong Kong and fifteen interviews in Australia. Six activity groups (i.e.

10   precondition, project data identification, stakeholder estimation, decision making,

11   action and evaluation, and sustainable support) and a total of 18 activities within these

12   groups and their interrelations formulate the main body of the framework. The

13   proposed framework was validated by five real-life projects, the results of which

14   confirm the applicability of the proposed framework. This study serves as a reference

15   for project management teams to systematically manage stakeholders in construction

16   projects.

17

18   **Keywords:** Framework, Stakeholder management, Construction, Empirical studies,

19   Action research.

20

21   ## Introduction

22   Many scholars have considered stakeholder management to be important in

23   construction in recent years (e.g. Newcombe, 2003; Olander and Landin, 2005;

24   Chinyio and Akintoye, 2008; Yuan et al., 2010), and as a result has become

25   increasingly professionalized. Operational knowledge of the practice of stakeholder

26   management is found in literature, software packages and current practice. Although

27   there has been some success in areas such as the manufacturing industry, the

28   construction industry still has a poor record of stakeholder management during the

29   past decades (Loosemore, 2006). One reason for this, as stated by Karlsen (2002), is

30   the lack of an established systematic framework for project stakeholder management.

31   There are no routine functioning strategies, plans, methods or processes. The result is

32   random stakeholder management.

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34 Although many initiatives within the stakeholder management community have made

35 significant progress to improve the process, a formal framework has yet to be fully

36 developed for construction projects (Chinyio and Akintoye, 2008). This leads to a

37 research question, which is "what the key components and their interrelationship are

38 in a systematic stakeholder management framework for construction projects".

39 Previous studies have concentrated on either one stage/issue of stakeholder

40 management, or proposed several stages which are not coherent or not detailed

41 enough in practice. One reason for the lack of an established formal stakeholder

42 management framework could be the multiplicity of tasks and parties involved in a

43 construction project. Such projects are subject to many changes; hence although

44 informal project stakeholder management is inadequate, the task of formalising a

45 framework is difficult to complete.

46

47 Project stakeholder management should provide the project team with adequate

48 support for the selection of realistic options in the management of project

49 stakeholders. Therefore, a formal approach needs to be synthesised and developed in

50 order to improve the performance of the stakeholder management process in

51 construction projects.

52

53 To address the abovementioned research question, this study presents a framework

54 which offers a systematic and generic reference for stakeholder management in the

55 construction industry. The two main objectives of this research are: (1) to develop a

56 systematic framework for stakeholder management; and (2) to validate and implement

57 the proposed framework in construction projects. These objectives have been

58 achieved through a literature review, interviews, questionnaire surveys, and action

59 research, all targeting construction projects. It should be noted that as the findings in

60 this study are based on a literature review, and empirical studies in Hong Kong and

61 Australia, they may also be considered limited in scope. Nevertheless, the study

62 contributes to the body of knowledge on stakeholder management, especially the

63 framework for stakeholder management, organized as follows:

64 First, a review of stakeholder management in previous studies is conducted.

65 Second, the methods for the investigation of the framework for stakeholder

66 management in construction are set out.

67 Third, the findings from the empirical studies in Hong Kong and Australia are
68 presented.

69 Fourth, a systematic framework for stakeholder management based on the findings in
70 the empirical studies, is described.

71 Finally, action research was conducted to illustrate the application of the framework
72 for stakeholder management. The outcomes of the action research are discussed and
73 summarized.

74

Literature review

The development of stakeholder theory

77 The origin of 'stakeholder' in management literature can be traced back to 1963,
78 when the word appeared in an international memorandum at the Stanford Research
79 Institute (Freeman, 1984). Thereafter the concept diversified into four different fields
80 (Elias et al, 2002): corporate planning, systems theory, corporate social responsibility
81 and organisation theory.

82

83 The next landmark in the development of stakeholder literature was the publication of
84 Strategic Management: a Stakeholder Approach by Freeman (1984). The
85 term 'stakeholder' is defined as "any group or individual who can affect or is affected
86 by the achievement of the firm's objectives" (Freeman, 1984). Freeman not only
87 acknowledged the importance of stakeholder management, but also developed a
88 framework. In response to this work, scholars, in general, studied stakeholder theory
89 from three aspects, i.e. the descriptive/empirical aspect (seeking to describe and
90 explain the methods and process in stakeholder management), the instrumental aspect
91 (exploring the impact of stakeholder management on the achievement of corporate
92 performance goals), and the normative aspect (seeking to examine moral and
93 philosophical guidelines for management; these were brought together by Donaldson
94 and Preston in 1995.

95

96 Subsequently, two models were proposed, one by Mitchell et al. (1997) and the other
97 by Rowley (1997) based on the concept of the "dynamics of stakeholders". Mitchell
98 et al. (1997) proposed that classes of stakeholders could be identified by the
99 possession, or the attributed possession, of one or more of three relationship attributes:

100 power, legitimacy and urgency. By analysing the possession of these three attributes
101 project managers can realise the change of stakeholders' salience. Instead of
102 analysing stakeholder attributes, Rowley (1997) focused on the "network of
103 stakeholder relationships". He highlighted that stakeholder relations are not static,
104 they are dynamic and in a constant state of flux. The attitudes and actions of
105 stakeholders may change at different stages. This reflects the dynamic nature of the
106 relationship between stakeholders.
107
108 During the last decade more stakeholder theories and empirical studies have emerged.
109 In construction, Bourne (2005) proposed the stakeholder circle methodology; Olander
110 (2006) applied the stakeholder impact matrix in practice; and in 2008, a group of
111 scholars, such as Chinyio, Rowlinson, Akintoye, Skitmore and Walker, presented
112 their findings on stakeholder management in a special issue of 'Construction
113 Management and Economics'. These specific studies have contributed to the
114 development of stakeholder theory and also formed a theoretical foundation for this
115 research.
116
117 **Stakeholder management in construction projects**
118 A construction project comprises a series of complex activities. Different stakeholders
119 have different levels and types of investments and interests in the project in which
120 they are involved. Engaging stakeholders prior to "the time a decision is reached" is
121 considered crucial for construction projects (Eschenbach and Echenbach, 1996).
122 According to Cleland (1999) and Karlsen (2002), managing multiple stakeholders and
123 maintaining an acceptable balance between their interests is crucial to successful
124 project delivery. Olander and Landin (2005) opined that a negative attitude to a
125 construction project by stakeholders can severely obstruct its implementation. Such
126 obstruction will lead to overruns in time and cost, and poor quality, due to conflicts
127 and controversies concerning the design and implementation of the project. Their
128 study reveals that an evaluation of the demands and influence of the stakeholders
129 should be considered as a necessary and important step in the planning,
130 implementation, and completion of any construction project. Jergeas et al. (2000) also
131 suggested that the purpose of the project needs to be understood, and feedback from
132 stakeholders be solicited in order to achieve alignment between the stakeholders and
133 project team. Many problems can be overcome if the stakeholders are actively

134 engaged in early planning and integrated into the project team, and if a systematic
135 approach is used to identify and manage stakeholders in the project delivery process
136 (Jergeas et al., 2000). They indicated that this was the only way expectations can be
137 managed, hidden agendas brought to the surface, and project priorities established.
138
139 However, according to Rowlinson et al.'s study (2010), "the issue of stakeholders and
140 their management was paid scant regard; the government was used to making
141 decisions on development rather than consulting widely with the major players."
142 Rowlinson et al. (ibid) further stated that, in the construction industry, stakeholder
143 management and relationship management were still in their infancy. The
144 management of the stakeholders was rather ad hoc, since there are no 'well-
145 functioning' strategies, plans, methods or processes. Most recently, Widén et al.
146 (2013) also emphasised that a structured process of stakeholder engagement has to be
147 an integral part of the construction innovation process.
148
149 It appears that previous studies either concentrated on one stage of stakeholder
150 management, such as stakeholder identification in Smith and Love (2004), and
151 stakeholder influence analysis in Newcombe (2003), or proposed several stages which
152 are not coherent or not detailed enough to be used in practice. For example, Karlsen
153 (2002) considers "identification of stakeholders" and "analysing the stakeholders" are
154 the first two stages for stakeholder management; however, he ignored the stage of
155 "gathering information about stakeholders", which is considered important by Young
156 (2006). Therefore strong indications exist to suggest a formal approach should be
157 further synthesised and developed in the interest of both the project and its
158 stakeholders.
159
160 This research defines stakeholder management as a process comprising problem
161 solving activities, minimizing project risks, and facilitating projects to move forward
162 in a timely and effective manner.
163

164 **Research methods**
165 This research is conducted in two phases with two objectives.
166
167 **Phase 1 - an iterative development and refinement process**

168 Six semi-structured interviews were conducted in the initial stage of the research, with

169 the aim of identifying stakeholder management practice in Hong Kong. The six

170 experts were selected because they all had more than 10 years' experience in

171 stakeholder management on construction projects, had different roles in projects

172 (client, consultant and contractor), and were from different types of organizations

173 (government, education and company). A semi-structured approach was adopted in

174 the interviews. Questions used in the interviews included but were not limited to:

175   • Who are the stakeholders in construction projects?

176   • Which kind of information do you usually gather about project

177   stakeholders?

178   • How do you classify stakeholders' behaviours?

179   • How do you identify which stakeholders are more important than

180   others?

181   • Which kind of strategies in practice do you use in dealing with the

182   issues raised by the project stakeholders?

183   • What factors do you think contribute to the success of stakeholder

184   management?

185

186 Content analysis was used for 'extracting and corroborating meaning from the

187 interviews' (Chinyio and Akintoye, 2008). An initial list of key issues during the

188 stakeholder management process was synthesized, and the first version of the survey

189 questionnaire was subsequently developed with the aim of further verifying the

190 outcomes from the interviews through a broad survey.

191

192 Prior to sending questionnaires, a pilot study was conducted to ensure the suitability

193 and comprehensiveness of the questionnaire. Two project managers, a client

194 representative and a contractor, were asked to complete the preliminary questionnaire.

195 Their suggestions were incorporated into the final version of the questionnaire. The

196 main part of the questionnaire rated the importance of key issues during the

197 stakeholder management process according to a five-point Likert scale (1 = strongly

198 disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree) or a yes/no selection.

199 The full-scale survey was conducted in Hong Kong, and its respondents were project

200 managers selected from internet information, newspapers, magazines, membership

201   lists of two institutes (i.e. the Association for Project Management Hong Kong, and

202   the Hong Kong Construction Association), and registered lists (including the

203   Authorized Architects' register, the Authorized Engineers' register, the Authorized

204   Surveyors' register, and the General Building Contractors' register) published by the

205   Buildings Department of Hong Kong.

206

207   A total of 654 copies of the questionnaire were delivered to the potential respondents.

208   The majority of copies were sent by mail, although for those potential respondents

209   whose mailing address was unknown copies were sent by email. About three weeks

210   were given for the respondents to complete and return the questionnaire. The ways for

211   returning the questionnaire comprised mail, email and fax. A total of 183 completed

212   questionnaires were received consisting of 81 respondents from client organizations,

213   45 from contractor companies and 57 from consultant organizations. The response

214   rate was 28%, which was consistent with 'the norm of 20–30% with most

215   questionnaire surveys in the construction industry' (Akintoye, 2000). The results of

216   this survey show the importance of key issues during the stakeholder management

217   process, and the main components in an initial framework for stakeholder

218   management in construction projects.

219

220   The findings from the empirical studies in Hong Kong were validated and revised by

221   fifteen interviewees in Australia. Australia has mature management in the

222   construction field and as such was suitable to validate the data collected from Hong

223   Kong. The Australian construction industry is similar to Hong Kong, but possesses a

224   different cultural environment. The culture of Hong Kong is oriental, whereas the

225   dominant culture in Australia is western. This potentially allows the proposed

226   framework to be used as a general reference for project managers from different

227   cultural backgrounds. The 15 experts, whose experiences on stakeholder management

228   ranged from 11 to 20 years, worked for governments, educational organizations,

229   companies or non-government organizations. They were not only from the

230   construction industry, but working for general management, community relationships

231   and business. Stakeholder management in construction projects is closely related to

232   general management and community engagement. However, differences in these

233   areas potentially occur principally due to the complexity of construction projects.

234   Nonetheless, a wider investigation of stakeholder management, which incorporates

235 the techniques and findings common to non-construction industries, could make a
236 sound basic contribution to the eventual establishment of a systematic framework in
237 construction. The same questions and interviewer, who is familiar both western and
238 eastern cultures, were used during the fifteen interviews as those in Hong Kong, and
239 in addition, outcomes from the empirical studies in Hong Kong were presented to and
240 discussed with the interviewees. It should be noted that due to time constraints, a
241 questionnaire survey was not conducted in Australia. This is a limitation of this study
242 which is described in the conclusion section. Based on the outcomes in the empirical
243 studies in Hong Kong and Australia an initial framework for stakeholder management
244 in construction was developed.

245

246 **Phase 2 - action research to validate the systematic framework in five real-life**
247 **projects**
248 The second objective of this research is to validate the proposed framework, and as
249 such the researchers were obligated to test the outcomes in practice and be involved in
250 projects to help project teams manage their stakeholders. Action research, which
251 focuses on research in action rather than research about action (Coughlan and
252 Coghlan, 2002), was chosen as suitable in this phase of the study. Five real case
253 projects are used to this effect. The outcome from this phase is a finalised framework
254 for stakeholder management in construction. The overview of the case projects will be
255 described in the "research finding from action research" section.

256

257 **Research findings from the iterative development and refinement**
258 **process**
259 **Findings from the empirical studies in Hong Kong**
260 A list of key issues arising during the stakeholder management process was identified
261 through the interviews and questionnaire survey in Hong Kong (Table 1). The relative
262 agreements of the respondents were analysed with the aid of the Statistical Package
263 for Social Sciences (SPSS) computer software by calculating the mean values and
264 conducting factor analysis.

265
266   *(Insert Table 1 here)*
267

8

268   In terms of construction stakeholders and their information, the interviewees
269   identified a number of groups relating to the construction projects. These groups
270   include: clients, contractors, consultants, suppliers, end users, Government,
271   financiers/sponsor, communities, district councils, general public, competitors,
272   utilities, special interest groups and the media. Besides the basic contact information
273   of these stakeholders, the interviewees also collected information on stakeholder
274   interests, needs, and constraints to the project, which are the same as the findings of
275   previous studies, such as Cleland (1999) and Freeman et al. (2007). According to the
276   mean values in Table 1, the respondents agreed that most of the fourteen groups were
277   project stakeholders and all their interests, needs, commitments and constraints should
278   be gathered. The main discrepancy was in the respondent opinions regarded the
279   inclusion of 'competitors' and 'the media'. This is consistent with similar findings in
280   the literature. Donaldson and Preston (1995) and Olander and Landin (2005) present
281   the media as typical positive or negative influencers, but obviously not as
282   stakeholders in the literal sense. However, according to Pinto (1998), a stake can be a
283   moral or legal claim, rather than a literal or practical claim, and it is evident that the
284   media can have a tremendous impact on project activities (Olander, 2007). Similarly,
285   based on a survey in Norway, Karlsen (2002) included 'competitors' and 'the media'
286   in the stakeholder list as well. The aim of categorising the project stakeholders is to
287   help the project teams identify stakeholders as completely as possible; hence
288   'competitors' and 'the media' are included in this research.

289

290   In regards to 'prioritising stakeholders', three stakeholders' attributes, i.e. power,
291   urgency and proximity, were considered important by the interviewees. According to
292   the results in Table 1, 'stakeholder power', or "the ability to control resources, create
293   dependencies, and support the interests of some organization members or groups over
294   others" (Mitchell et al., 1997), is considered to be the most important. This is in line
295   with many previous studies, such as Winch and Bonke (2002), Newcombe (2003),
296   and Bourne and Walker (2005). Meanwhile, the interviewees also implied that they
297   prioritised stakeholders based both on their intuitive experience and the directives
298   from higher authorities. 'The directives from higher authorities' are ranked second for
299   prioritizing stakeholders, possibly because more than half of the respondents (102 of
300   183) were contractors and consultants, and hence, clients' instructions were important

directives. Since the mean values of the four factors are more than three, they are all important for 'prioritizing stakeholders'.

In terms of stakeholder behaviour, and the strategies employed to deal with stakeholders, the interviewees thought that the behaviour and strategies adopted were dependent on different situations and issues, and these two steps are indispensable. Three types of stakeholder behaviour and four types of strategies were identified by the interviewees:

- o Stakeholder behaviour
  - Cooperative potential: The behaviours that would help the project achieve its objective on the issue in question;
  - Competitive threat: The behaviours that would prevent or help to prevent the project's achieving its goal;
  - Opposing position: The behaviour that would be observed when the stakeholders totally disagreed with the project team.
- o Strategies
  - Holding: either fighting against addressing a stakeholder's issues or completely withdrawing and ignoring the stakeholder;
  - Defence: doing only the minimum legally required to address a stakeholder's issues;
  - Compromise: negotiating with stakeholders and trying to reach a mutually acceptable solution;
  - Concession: implementing stakeholder requirements or yielding to stakeholder demands.

86% of respondents agreed with the inclusion of the characteristic, 'cooperative potential'; while only half, or less than half, of the respondents chose to include 'competitive threat' and 'opposite position'. The implication of this selection percentage implies that the respondents considered most stakeholders to show potential support or acceptance of projects. The positivity of such acceptance encourages the project managers to try for a 'win-win' situation, based on cooperation, rather than confrontation. This finding is confirmed in Table 1 by the response to the question regarding strategies since the respondents usually chose compromise or concession to deal with essential stakeholder requirements. Most of the respondents

334   disagreed with the 'holding' strategy, or 'do nothing and let the situation take care of

335   itself'. This indicates that it is felt that project managers should deal with every issue

336   raised by stakeholders in an appropriate manner.

337

338   The interviewees identified fifteen factors in regards to the critical factors for

339   successful stakeholder management (as shown in Table 1). Analysis of the survey

340   response data produced the mean for the 15 factors ranging from 3.80 to 4.43. This

341   indicates that all respondents considered these 15 factors critical for stakeholder

342   management in construction projects. The highest ranking by all respondents was

343   'managing stakeholders with social responsibilities (economic, legal, environmental

344   and ethical)' (mean value = 4.43) which is therefore considered an influential factor to

345   the success of stakeholder management. 'Exploring stakeholders needs and project

346   constraints' and 'communicating with and engaging stakeholders properly and

347   frequently' (mean value = 4.26) were both ranked as the second most influential

348   factors. The fourth ranked factor was 'understanding areas of stakeholder interests'

349   (mean value = 4.22), whereas the fifth ranked factor was 'identifying stakeholders

350   properly' (mean value = 4.21), and the sixth factor was 'keeping and promoting a

351   good relationship with stakeholders' (mean value = 4.17). These factors were the top

352   six for stakeholder management in Hong Kong construction projects. In addition, it is

353   worth noting that all respondents perceived 'predicting stakeholder reactions for

354   implementing the strategies', 'analysing the change of stakeholder influence and

355   relationships during the project process' and 'assessing stakeholder behaviour' as the

356   least influential factors.

357

358   In order to represent relationships among sets of factors, factor analysis was used.

359   According to Pallant (2001), two main issues have to be considered in determining

360   whether a data set is suitable for factor analysis: sample size and the strength of the

361   relationship among the factors. In terms of sample size, Nunnalyy (1978)

362   recommends a 10 to 1 ratio; that is, "10 cases for each item to be factor analysed".

363   The minimum number for factor analysis suggested by Pallant (2001) is 150. There

364   were 15 factors in this survey, so according to Nunnalyys' recommendation (1978),

365   150 respondents should be obtained. There were 183 respondents in this study and

366   therefore is above the recommended limit, and adequate for factor analysis. In terms

367   of the strength of relationship among the factors, the Bartlett's test of Sphericity

368 (Bartlett, 1954) and the Kaiser-Meyer-Olkin (KMO) (Kaiser, 1970) were

369 recommended. The Bartlett's test of Sphericity is significant ($p<0.05$), and the value

370 of the KMO index is above 0.6, suggesting the data set is suitable for factor analysis.

371 In this survey, Bartlett's test of Sphericity was significant ($p<0.05$) and the value of

372 the KMO index was 0.870 (above 0.6). The results of these tests confirmed that the

373 data were appropriate for factor analysis.

374

375 A four-component solution was produced based on Varimax rotation of principal

376 component analysis (Table 2). These four factor groupings with Eigenvalues greater

377 than 1.000 explain 61.532% of the variance. Each of the factors belonged to only one

378 grouping, with the value of factor loading exceeding 0.50 (Norusis, 1992; Li et al.,

379 2005; Aksorn and Hadikusumo, 2008). It was noticed that C1 "managing stakeholders

380 with social responsibilities (economic, legal, environmental and ethical)" does not

381 belong to any of the factor groupings. The residual 14 factors can be grouped into

382 four principal components, and the corresponding importance ranking of the extracted

383 components was: (1) stakeholder assessment, (2) stakeholder identification, (3)

384 decision making, and (4) continuous support.

385

386   *(Insert Table 2 here)*

387

388 Based on the results of factor analysis, an initial framework for stakeholder

389 management in construction is proposed (Refer to Yang et al., 2009). Although C1

390 "managing stakeholders with social responsibilities (economic, legal, environmental

391 and ethical)" was not grouped into the four components, it was ranked first among the

392 15 critical factors for stakeholder management in construction projects. These indicate

393 that it is the priority factor for stakeholder management success. Owing to the

394 significance of this factor, this factor is hence named as the 'precondition factor' for

395 stakeholder management; that is, stakeholder management should be conducted with

396 social (economic, legal, environmental and ethical) responsibilities.

397

398 Therefore, an initial framework for stakeholder management in construction

399 comprises five components, i.e. precondition factor, stakeholder assessment,

400 stakeholder identification, decision making, and continuous support. Since the factor

401 regarding social responsibilities (C1) is the precondition of any activities for

402 managing stakeholders, it is placed above the other four groupings. According to

403 general management processes, information should be input first during the process of

404 stakeholder management in order that stakeholders be assessed based on the

405 information obtained. After an accurate stakeholder assessment, further decisions can

406 be made. Continuous support and appropriate communication needs to be conducted

407 during the whole process of stakeholder management, to promote the management

408 process through methods such as monitoring the change of stakeholder influence, and

409 keeping a steady relationship with stakeholders.

410

411 **Findings from the interviews in Australia**

412 The interview questions used in the fifteen interviews in Australia were synonymous

413 with those in Hong Kong. In addition, outcomes from the empirical studies in Hong

414 Kong were presented to and discussed with the interviewees in Australia. The main

415 comments from the interviewees are summarised as follows:

416 - Regarding the construction groups, the interviewees considered the

417   categorised stakeholder groups to be systematic, but they queried whether the

418   categories were mutually exclusive, since they observed that one stakeholder

419   may belong to several groups. An obvious example is that 'government' could

420   also be a 'client'. The interviewees thought another way to classify

421   stakeholders was to divide them into 'internal stakeholders' and 'external

422   stakeholders', which is an arrangement used by Bourne (2005) in the

423   Stakeholder Circle methodology. This classification can solve the

424   'overlapping' problem. However, the main purpose of this list is for use as a

425   reference for the project management team to identify stakeholders not for the

426   means of classification. The purpose of the list was discussed with the

427   interviewees and subsequent approval achieved, with the addition of some

428   suggestions.

429 - The interviewees also considered 'government' to include 'district councils',

430   which are called 'city councils' in Australia, so the government group can be

431   revised to 'government (state/federal/local)'. One more group, i.e.

432   'environmental groups', was proposed by the interviewees. Although

433   'environmental groups' can be considered as 'special interest groups', at

13

434   present, due to the importance of environmental issues, the interviewees

435   preferred to emphasise this group by giving it its own identity.

436

437 As such, the finalised list of stakeholder groups in construction is: clients, contractors,

438 consultants, suppliers, end users, government (state/federal/local), financiers/sponsor,

439 communities, environmental groups, general public, competitors, utilities, special

440 interest groups, the media and others. It should be noted that a particular stakeholder

441 could have multiple roles. For example, the government could be an end user,

442 financial sponsor, environmental regulator or utility. Even within one government

443 organization, different branches may fill these different roles and have differing

444 objectives. Due to the uniqueness nature of construction projects, broad terms are

445 used for the stakeholder list. When using this list, industry practitioners should bear in

446 mind a stakeholder may take multiple roles in a project, and this list is suggested as a

447 common reference for project management teams in the construction field. In addition,

448 while this list has been confirmed through a series of interviews, it is not exhaustive

449 of all stakeholders in construction. Thereby, 'others' was added to the list for

450 extraordinary cases.

451

452 Regarding stakeholder behaviour, the interviewees agreed with the three types,

453 namely cooperative potential, competitive threat, and opposite position. Nevertheless,

454 one interviewee recommended 'support & receptiveness' evaluation in the

455 Stakeholder Circle methodology to classify the stakeholder behaviour. According to

456 Bourne (2005), the attitudes of stakeholders can be assessed by the current and target

457 levels of stakeholder interest and support. The level of support has a similar meaning

458 to behaviour types, and therefore can be visualised in the Stakeholder Circle software.

459

460 The interviewees agreed with the classification of stakeholder attributes (power,

461 urgency and proximity), and four strategy types (holding, defence, compromise, and

462 concession) necessary to deal with the issues raised by stakeholders.

463

464 In terms of the factors contributing to successful stakeholder management and the

465 initial framework, the interviewees made seven suggestions:

466   • The interviewees thought communicating with and engaging stakeholders

467   were important for stakeholder management and therefore should be included

14

468	in the framework. Two interviewees, one from the construction sector and one
469	working on community relationships, suggested that project managers should
470	also decide the level of stakeholder engagement, and match it with the
471	appropriate methods. This suggestion is in line with the finding of a literature
472	review conducted by Reed (2008) which suggested that for best practice in
473	stakeholder participation, "methods should be selected and tailored to […]
474	appropriate level of engagement". The interviewees also recommended an
475	engagement spectrum, developed by the International Association for Public
476	Participation (IAP2). The engagement spectrum comprises five engagement
477	levels - 'inform (to provide the stakeholders with balanced and objective
478	information to assist them in understanding the problems, alternatives and/or
479	solutions)', 'consult (to obtain stakeholders' feedback on analysis, alternatives
480	and/or decisions)', 'involve (to work directly with the stakeholders throughout
481	the process to ensure that stakeholder concerns and aspirations are consistently
482	understood and considered)', 'collaborate (to partner with stakeholders in each
483	aspect of the decision)', and 'empower (to place final decision-making in the
484	hands of stakeholders) (Victorian Government Department of Sustainability
485	and Environment, 2005). One interviewee from the construction sector had
486	prior experience of this spectrum in his work and confirmed its effectiveness.
487	As the interviewee stated, "this spectrum can be used to ensure a common
488	understanding of stakeholder engagement".
489	
490	• The interviewees considered 'compromising conflicts' and 'predicting
491	stakeholder reactions' are, in fact, implied in 'formulating appropriate
492	strategies', hence, these two activities should not be listed in the framework as
493	separate concepts.
494	
495	• The interviewees considered there should be one more step after 'decision
496	making', i.e. 'action & evaluation'. The corresponding strategies should be
497	implemented, and the management process evaluated. One interviewee stated
498	that 'it is essential that the project managers monitor and review the
499	stakeholder management activities to ensure objectives and actions are being
500	implemented'. Thus this step is not merely decision-making, but also problem-

501   solving. The stakeholders should be interviewed or surveyed at a subsequent

502   stage regarding their opinions about the management activities.

503

504   - 'Obtaining support and assistance from the higher authorities' is considered

505   important by the interviewees, and should be included in the 'continuous

506   support' box in the framework for stakeholder management. Similarly,

507   according to Chinyio and Akintoye (2008), practitioners in the United

508   Kingdom hold the same point of view, and they stated that "the 'top-level

509   support' was essential for effective stakeholder management". A similar

510   opinion was expressed by Bourne (2008), who considered 'centralised support'

511   as a criterion for evaluating the organisational maturity of stakeholder

512   management. Therefore, this factor should be included in the framework for

513   stakeholder management.

514

515   - In regards to the complexity of stakeholder management, the interviewees

516   believed that an approach profile should be established for the project

517   management team's reference. The profile should not only include the

518   methods for stakeholder engagement, but also those of stakeholder analysis

519   and estimation.

520

521   - Regarding the precondition factor, i.e. 'managing stakeholders with social

522   (economic, legal, environmental and ethical) responsibilities', in the initial

523   framework, the interviewees confirmed the importance of this factor.

524   Meanwhile, they proposed one more responsibility -cultural responsibility. By

525   this, they mean that cultural diversity needs to be considered as Australia has a

526   large number of immigrants and a highly diverse population. This is a

527   reasonable consideration and should therefore be included. One interviewee

528   explained cultural responsibility by using an urban renewal project as an

529   example. He said that the residents affected by the project were from at least

530   nine non-English speaking countries including but not limited to China, Italy,

531   Turkey, Vietnam, Spain and Arab-speaking countries. It was important that

532   the differences in culture and tradition be fully considered in that project

533   because the community involvement or ownership was integral to the success
534   of the project.

535

536   • The interviewees thought that although the interaction and dependencies
537   among the activity sets are connected in the initial framework, they are too
538   simple to be used as a reference in practice. A framework for management
539   process should not only define the activities that exist within the process, but
540   also illustrate how and what information needs to flow between activities
541   (Federal Information Processing Standards, 1993). Additional meetings were
542   arranged with four of the fifteen interviewees to discuss the interrelations and
543   outcome flows among the activities for stakeholder management.

544

545 All comments from the interviewees were considered in the revision of the initial
546 framework. A revised framework (Figure 1) was presented to the fifteen interviewees
547 at meetings or in emails at a later time with the aim of asking their comments. The
548 interviewees' replies matched the content of the revised framework, with minor
549 changes to the vocabulary, as such there were no major changes to the substance of
550 the framework. The logical sequence, and information flows in the revised framework
551 were praised by the interviewees. Further explanations regarding the systematic
552 (revised) framework for stakeholder management in construction are explored in the
553 next section.

554
555   *(Insert Figure 1 here)*
556

557 **The Details of the Systematic Framework**

558 A collection of diverse knowledge areas is described, giving a formalised view of the
559 systematic framework (Figure 1), which consists of a precondition group, four
560 management groups (stakeholder identification, stakeholder assessment, decision
561 making, and action & evaluation), and a continuous support group. For each group a
562 number of activities have been defined in logical sequence. A detailed description of
563 the groups and activities within the systematic framework is provided below. There
564 are also twelve outcomes from each management activates, which link the four
565 management groups as inputs and outputs. As indicated in Figure 1, the outcomes are
566 numbered as follows:

567   1. Management objectives
568   2. Stakeholder list
569   3. Information sheet
570   4. Priority index
571   5. Relationship matrix
572   6. Priority list
573   7. Attitude classification
574   8. Stakeholder engagement profile
575   9. Strategies for further actions
576   10. Project moving forward
577   11. Management objective improvement
578   12. Satisfaction level
579
580   It should be noted that, as every construction project is likely to be unique, some of

581   the identified activities can be omitted depending on the characteristics of the project,

582   the stage of the project and the resources in the organisation. In addition, this

583   framework indicates the sequences of stakeholder management, but not those of

584   project management, so it should be implemented continuously at every stage during

585   the overall project process.

586

587   **Precondition**

588   'Managing stakeholders with economic, legal, ethical, environmental, and cultural

589   responsibilities' is defined as the precondition for stakeholder management. As

590   indicated in the last section, it is deemed a 'precondition' as the core function of

591   stakeholder management is to analyse social responsibilities by delineating the

592   specific groups or persons that the management team should consider in its

593   management activities (Carroll, 1991; Donaldson and Preston, 1995). According to

594   Carroll's definition (1979) of social responsibility, economic responsibility is the

595   obligation to produce goods and services, sell them at fair prices and make a profit;

596   the legal responsibility refers to the obligation to obey the law; ethical responsibility

597   covers those issues not embodied in law but expected by society. Recently

598   environmental expectations have also been given increased attention by numerous

599   scholars (e.g. AlWaer et al., 2008; Prager and Freese, 2009) because of the

600   expectations for sustainable development. Environmental considerations include air,

601   flora/fauna, dust, water and noise. The purpose is to protect the environment and to

602   provide healthy living conditions. Cultural responsibility is related to the

603   consideration of cultural diversity, especially the differences in language and tradition.

604   Project managers should manage stakeholders by taking into consideration all of these

605   social responsibilities to ensure the project objectives are achieved. Therefore, this

606   group is placed at the top of the framework (Figure 1) to remind the project managers

607   to bear it in mind during the stakeholder management process.

608

609   **Stakeholder identification**

610   The stakeholder identification group in Figure 1 includes management activities for

611   the identification and collection of information (data) which will be used in the

612   subsequent management activities. The outputs of this group are: (1) the management

613   objectives, (2) stakeholder list, and (3) stakeholder information sheet. Three

614   management activities are included in this group.

615

616   Management activity 1 'Clearly formulating management objectives': The

617   identification of a clear mission for a project at different stages is widely considered

618   to be essential for the effective management of stakeholders (Winch, 2000). Before

619   every stakeholder management activity, project management teams should have a

620   clear understanding of the tasks and objectives at particular stages of the project

621   lifecycle, including issues such as cost, schedule and budget (Yang et al., 2009). In

622   order to formulate the management objectivities, stakeholder information (interests,

623   needs, commitments and project constraints) should be considered. If the project has

624   entered its middle stage, the effects of stakeholder management should be re-

625   evaluated to ascertain whether the former objectives have been achieved. The re-

626   evaluation should determine whether a revision and improvement of the current

627   objectivities has to be considered.

628

629   Management activity 2 'Identifying a full list of stakeholders': This serves to answer

630   the question of "who are stakeholders?" (Frooman, 1999). The project management

631   team could identify stakeholders either by following the 'external/internal' guidelines,

632   or by their functions such as clients, contractors, and consultants. The identification

633   should be based on the management objectivities of the project, and the output is a

634   full stakeholder list.

635

636   Management activity 3 'Collecting stakeholder information': Freeman et al. (2007)

637   believe identifying stakeholder information is an important task for assessing

638   stakeholders. This information includes stakeholder contact information, their

639   interests, needs, commitments and constraints to projects. The outcome of this activity

640   is a detailed information sheet regarding the issues of interest to the stakeholders.

641

642   **Stakeholder assessment**

643   The stakeholder assessment group refers to the analysis and assessment of

644   stakeholders. The baseline of the activities in this group is the information profiles,

645   which are developed during the three management activities in the 'stakeholder

646   identification' group. The outputs of this group are a stakeholder priority list,

647   relationship matrix, and attitude classification. This group is broken down into four

648   management activities.

649

650   Management activity 4 'Assessing stakeholder attributes': Based on the project

651   objectives, and stakeholder information, stakeholder attributes, namely, power,

652   urgency and proximity, need to be evaluated by the project management team. The

653   concepts of these attributes follow the studies of Mitchell et al. (1997) and Bourne

654   (2005). Power is the ability to "control resources, create dependencies, and support

655   the interests of some organisation members or groups over others"; urgency is "the

656   degree to which stakeholder claims call for immediate attention"; proximity is the

657   distance of stakeholders and the project. The outcome of this activity is a priority

658   index, which is a term used in the Stakeholder Circle methodology (Bourne, 2005).

659

660   Management activity 5 'Analysing the interrelationships among stakeholders': This

661   serves to map stakeholder relationships and analyse their coalitions and conflicts. In

662   terms of relationships, according to Cross and Parker (2004), two types of

663   relationships exist among stakeholders: formal relationships and informal

664   relationships. Formal relationships include contracts, and the hierarchy in

665   organisations/projects; informal relationships can refer to many interactions, such as

666   information exchange, help seeking, communication and influence. In addition,

667   stakeholder conflicts and coalitions should be analysed. These concepts are suggested

668   by Freeman's strategy model (Freeman, 1984). He believes conflict occurs whenever

669   disagreements exist in a social setting; and the groups, who share objectives,

670   stakeholders or interests about the project, are more likely to form coalitions. The

671   coalition matrix can enable project management teams to understand the interest

672   similarity between the stakeholders. Thereby, project teams could engage

673   stakeholders with similar interests in a consistent way. Analysing the
674   interrelationships among stakeholders is useful in identifying the 'hidden/invisible
675   stakeholders' (Bourne and Walker, 2005), and can be used as one method for
676   stakeholder identification, i.e. the second management activity in Figure 1. The
677   relationship matrix/network can also be analysed through 'Social Network Analysis',
678   and can help to prioritise stakeholders (Rowley, 1997).

679

680   Management activity 6 'Prioritizing stakeholders according to their influence': This
681   activity enables the creation of a finalised priority list of stakeholders by synthesizing
682   the results of 'priority index' and 'relationship matrix'. While the 'priority index' is
683   based on the traditional evaluation of stakeholder attributes, the analysis of
684   'relationship matrix' focuses on the relationships between pairs of stakeholders.
685   Therefore, these two outcomes can both be used as references for the project
686   management team. It should be noted that no method for identification and
687   prioritization is perfect and that the use of the results of the 'priority index' and
688   'relationship matrix' is deemed to help the project team to see anomalies and make
689   the necessary corrections.

690

691   Management activity 7 'Assessing stakeholder behaviour': This serves to analyse the
692   willingness of stakeholders to threaten or cooperate with the project management
693   team (Savage et al., 1991). The stakeholder behaviour can either be classified by the
694   levels of support and receptiveness, or be classified into 'cooperative potential,
695   competitive threat, and opposite position'. The outcome is a classification of attitudes.

696

697   **Decision making**
698   Based on the outcomes in 'stakeholder identification' (the information profiles), and
699   the outcomes in 'stakeholder assessment' (the priority list, the relationship matrix, and
700   the attitude classification), the project management team or decision making group,
701   can assist in deciding the levels and methods of stakeholder engagement, and
702   formulate appropriate strategies to deal with the issues raised by stakeholders at this
703   stage.

704

705   Management activity 8 'Deciding engagement levels and methods': Engagement
706   levels include 'inform (to provide the stakeholders with balanced and objective

707 information to assist them in understanding the problems, alternatives and/or
708 solutions)', 'consult (to obtain stakeholders' feedback on analysis, alternatives and/or
709 decisions)', 'involve (to work directly with the stakeholders throughout the process to
710 ensure that stakeholder concerns and aspirations are consistently understood and
711 considered)', 'collaborate (to partner with stakeholders in each aspect of the
712 decision)', and 'empower (to place final decision-making in the hands of
713 stakeholders)' (Victorian Government Department of Sustainability and Environment,
714 2005). The project management team should decide the levels and corresponding
715 methods for engaging stakeholders according to the project objectives, the stakeholder
716 information, their priorities and attitudes. The outcome is a profile for stakeholder
717 engagement.

718

719 Management activity 9 'Formulating appropriate strategies to deal with the issues
720 raised by stakeholders': This serves to decide what strategies the project management
721 teams use to address stakeholder conflicts with the consideration of their reactions to
722 the strategies. The strategy types comprise 'holding, defence, compromise, and
723 concession'. The choice of strategy types should be made in accordance with the
724 information profile, the stakeholder' priority, attitudes and the engagement methods.

725

726 **Action & evaluation**
727 The action and evaluation group is the final management activity group in the process
728 of stakeholder management. The inputs required are the formulated strategies, and the
729 profile for stakeholder engagement. This group includes three management activities.

730

731 Management activity 10 'Implementing the strategies': This activity is self-
732 explanatory. The formulated strategies should be implemented accordingly. The
733 outcome of this activity is to keep the project moving forward.

734

735 Management activity 11 'Evaluating the effects of stakeholder management': This
736 serves to answer the question "have the management objectives been achieved?" This
737 activity is carried out after the strategies have been implemented, and the results of
738 the evaluation should be used to improve the objectives in the succeeding process.

739

740 Management activity 12 'Evaluating stakeholder satisfaction with the engagement
741 activities': The engagement activities with stakeholders are based on the stakeholder
742 engagement profile. To obtain the stakeholder opinion about the engagement
743 activities, surveys and meetings should be conducted to evaluate the stakeholder
744 satisfaction level. The results can be used in order to better understand the stakeholder
745 interests, needs and project constraints.

746

747 **Continuous support**
748 Comparing the management activity groups ('stakeholder identification', 'stakeholder
749 assessment', 'decision making', and 'action & evaluation') focusing on the steps in
750 the stakeholder management process, this group includes the activities which should
751 be carried out to support the management activities implemented. This group is
752 named as 'continuous support' because the activities within not only support a single
753 management process, or contribute to the success of a single project, but can be used
754 for accumulating the experiences and knowledge of the project management team in
755 the long term. Five support activities are included in this group.

756

757 'Communicating with and engaging stakeholders properly and frequently':
758 Communication is essential for maintaining the support and commitment of all
759 stakeholders (Briner et al., 1996). Effective, regular, and planned engagement with all
760 members of the project community is necessary for project success (Briner et al.,
761 1996). Project managers should be highly skilled negotiators and communicators who
762 are capable of managing individual stakeholder expectations and creating a positive
763 culture change within the overall project (Weaver, 2007).

764

765 'Realizing changes of stakeholder information, influence, relationships and behaviour
766 during the project process': The concepts of the change and dynamics of stakeholders
767 were acknowledged by Freeman (1984). According to him, in reality, stakeholders,
768 their influence, relationships, and behaviour change over time, and depend on the
769 strategic issue under consideration. Therefore, the processing method should be
770 compared with historical records to indicate the changes.

771

772 'Keeping and promoting an ongoing relationship with stakeholders': Successful
773 relationships between the project management team and its stakeholders are vital for

774 successful delivery of projects and meeting stakeholder expectations (Savage et al.,
775 1991; Jergeas et al., 2000). Trust and commitment among stakeholders can be built
776 and maintained by efficient relationship management (Pinto, 1998; Karlsen et al.,
777 2008).

778

779 'Obtaining support and assistance from higher authorities': As one of the findings
780 from the interviews in Australia, top-level support is important for management
781 activities. In an organisation with a mature stakeholder management environment, the
782 higher authorities always monitor the management process, facilitate problems
783 solving activities and use the effects of stakeholder management as an indicator for
784 performance measurement of the management team.

785

786 'Establishing an approach profile for stakeholder management': Various approaches
787 for stakeholder management exist both in literature and in practice. A typology of
788 approaches for stakeholder management, and their descriptions, strengths, and
789 considerations should be synthesised as a reference for the project management team.

790

791 The systematic framework illustrated in Figure 1 shows the generic activities and
792 their interdependency during the process of stakeholder management in construction.
793 It should be noted that when considering the overall project management process, the
794 activities in the framework should be carried out iteratively, on a multitude of issues,
795 at varying levels of detail. Most stakeholder identification activities are based, to
796 some degree, on historical information, coming from the culmination of the outputs of
797 previous cycles of stakeholder management activities. To validate and test the
798 systematic framework in the field, five real projects are used for action research, and
799 are described in the following section.

800

801 **Research findings from the action research**

802 **Overview of the projects**

803 Five real-life projects were selected for action research:

804   o   The T College project is to construct a new building to provide new
805   classrooms and facilities for the college's theological school. The project is
806   relatively small with a contract price of AU$2 million.

807   o   The CI project is an urban renewal project in a district of M city with a
808   contract price of AU$1 Billion in new investments. The study area for the CI
809   project was approximately 35 hectares, of which Council 1 controlled 12
810   hectares. The CI project evolved from a government plan, itself the product of
811   five years' consultation with associated communities, traders, landowners,
812   state government agencies and other stakeholders.

813   o   The NSP project is an AU$650 million essential infrastructure project
814   involving the construction of approximately 12.5km of new sewer pipes in the
815   north of the city. The project will increase the sewerage system capacity for
816   the city's growing northern suburbs and help to protect the two creeks from
817   the damaging impact of sewage overflows that can occur after heavy rain. It
818   will also help to improve the health of waterways flowing into the main river.

819   o   The PU project dealt with the new Hong Kong 3+3+4 education
820   reform policy. In order to accommodate the expanding academic structure and
821   increasingly diversified educational training and practice, the University
822   submitted an application for the rezoning of government land, located to the
823   north of the existing main campus to cope with the proposed reform policy.

824   o   The ST project is in B University and likewise has to cater for the new
825   3+3+4 education reform policy in Hong Kong. However, unlike the A
826   University in the PU project, B University is located in the suburb of Hong
827   Kong, where there is much open space. Therefore, although this project is
828   composed of a group of three buildings with a total site area of up to $72,000m^2$,
829   the complexity of this project is relatively low compared to the PU project.

830

831   The project characteristics are summarised in Table 3.

832

833   (Insert Table 3 here)

834

835   As shown in Table 3, the selected projects are drawn from two countries: Australia
836   and Hong Kong, both of which have different cultures. The project types all relate to
837   the construction industry and include a building project, urban renewal project and
838   infrastructure project. Although there are three school building projects, they are
839   either at different locations, or at different phases in the project life cycle. These
840   differences provide interesting comparative material. Medium and high project

841 complexities make the management of stakeholders more meaningful, as there are

842 relatively complex stakeholder relationships in these projects, and project managers

843 normally have difficulties to manage the complex stakeholder relationships. These

844 projects are mainly analysed from the client and contractor perspectives, as they are

845 key bodies to successful communication with other project stakeholders.

846

847 Since the aim of this stage is to validate the proposed framework, the researcher

848 should apply the outcomes in practice and be involved in projects to help project

849 teams manage their stakeholders. The action research, which focuses on research in

850 action, rather than research about action (Coughlan and Coghlan, 2002), is chosen as

851 suitable in this phase of the study. In each project, the activities in the systematic

852 framework were followed, the stakeholders were identified and assessed, and

853 strategies were formed based on the project environment and characteristics. The

854 researcher not only engaged in the management processes, but also stood back from it,

855 summarised the outcomes, and reflected the outcomes to the systematic framework.

856 At the end of stakeholder management process in each project, the project

857 management team were asked to complete a feedback questionnaire for evaluating the

858 usefulness of the framework. Due to limited space, the detailed stakeholder

859 information is not presented in this paper; however, the inter-case analysis regarding

860 the application of the systematic framework is discussed in the next section.

861

862 **Inter-case analysis of the systematic framework**

863 The systematic framework includes six activity groups as shown in Figure 1. The

864 analysis in this section conducted based on these six activity groups.

865

866 Analysis 1 – precondition

867 In Figure 1, the precondition group is 'managing stakeholders with economic, legal,

868 environmental, cultural and ethical responsibilities'. Throughout the five project

869 studies, all of the management teams considered the economic (e.g. cost, job

870   opportunity), legal (in terms of the governments' approval), and environmental (e.g.
871   flora/fauna, noise, water quality, and dust) issues. Cultural and ethical responsibilities
872   were selectively taken in to consideration, in accordance with the nature of each
873   project. For example, in the CI project, the residents affected by the project were from
874   at least nine non-English speaking countries including, but not limited to, China, Italy,
875   Turkey, Vietnam, Spain and Arab-speaking countries; therefore, the differences in
876   culture and tradition should be fully considered. For example, in the T College project,
877   the stakeholder 'Family and representatives of the ashes in the landscape' was an
878   ethical consideration by the project management team. The stakeholder wanted the
879   relatives' ashes to remain in the college grounds and the original placement to be
880   uninterrupted. In respect of this the project manager decided that instead of moving
881   the ashes, the landscape of the project structure was laid on an alternative place near
882   the ashes.

883

884   Analysis 2 – stakeholder identification
885   The project management teams in the five projects knew their project objectives
886   clearly. Based on their experience or historical records, the teams identified
887   stakeholders and their interests. A new group 'Leaser' was proposed by the project
888   manager in the ST project.

889

890   A comparison of the five projects showed that, on the one hand, the projects at the
891   design stage, i.e. the CI project and the PU project, focused more on external
892   stakeholders (those who were outside of the performing project's management and
893   staff structure); on the other hand, the focus of the project management teams, at the
894   construction stage, was on internal stakeholders (e.g. consultants and contractors).
895   This reflects the dynamic nature of stakeholder management in the project life cycle.

896

897   The complexity of projects can be identified by the number of differing views of
898   stakeholders. An increase in the number of stakeholder perspectives, increases the
899   project complexity. In the CI project, there were more than 400 stakeholders, who
900   presented numerous interests; but in the ST project, only 12 stakeholders were
901   identified and their views are relatively simple and compatible.

902

903   Analysis 3 – stakeholder assessment

904   The project management teams considered this 'stakeholder assessment' group to be

905   most important. This corresponds to the outcomes by factor analysis described in the

906   previous section. Although the teams chose different methods (e.g. Stakeholder Circle

907   software and Social Network Analysis) for the analysis, they all felt this group of

908   steps helped them realise the underlying relationships of the stakeholders. The main

909   considerations for method selection are the project stage and complexity.

910

911   An additional stakeholder behaviour was identified by the management team in the

912   PU project: 'neutral attitude'. Although there were no stakeholders in the five projects

913   who represented a competitive threat, all the management teams agreed to keep this

914   type in the framework in the interest of completeness.

915

916   Another aspect raised through the comparison, is that it is relatively easier to satisfy

917   the stakeholders in medium complexity projects; for example, in the T College project,

918   all the stakeholders were satisfied, and in the ST project, most stakeholders were

919   cooperative except those with a neutral attitude. However, in the more complex

920   projects, i.e. the CI project, the NSP project and the PU project, opposite voices or

921   unsatisfied engagement statuses were evident, usually expressed by external

922   stakeholders.

923

924   Analysis 4 – decision making

925   The engagement levels (inform, consult, involve, collaborate, and empower), were

926   seen to increase along with the priority placed on stakeholders' in the five projects. A

927   wider variety of engagement methods were applied in the highly complex projects.

928

929   Regarding the strategy types, (namely - holding, defence, compromise, and

930   concession), as shown in Figure 1, holding was not used in any of the five projects

931   when responding to stakeholder requests. One reason may be that the identified

932   stakeholders were all major stakeholders and the management teams could not ignore

933   their interests. The team members indicated that compromise was the best way to

934   solve problems.

935

936   Analysis 5 – action & evaluation

937 It should be noted that not all the case projects presented implemented the
938 management activities in the actions & evaluation group. The main reason was time
939 limitation: In the NSP project, although the project management team requested the
940 researchers to develop a survey to evaluate stakeholder satisfaction, time did not
941 allow for sending out the survey and collection and analysis of the data; In the CI
942 project, the design stage will continue for another two or three years (as from 2011).
943 To date, within one or two months of the study completion, there has been no
944 response from the stakeholders. In contrast, in the PU project, which the researcher
945 tracked for a further one year, the actions and the stakeholder responses were
946 analysed in detail.

947

948 Another reason for the absence of action & evaluation is the stage of the project at the
949 research time. The T College project, NSP project and ST project were in the
950 construction stage, and the works on site were comparatively regular and routine
951 without big issues to solve. However, according to the ninth characteristic of action
952 research proposed by Gummesson (2000), while action research is a 'live' case study
953 being written as it unfolds, it can also take the form of a traditional case study written
954 in retrospect, when the written case is used as an intervention into the organisation in
955 the present (Coughlan and Coghlan, 2002). In such a situation the case study performs
956 the function of a 'learning history' and is used as an intervention to promote reflection
957 and learning in the organisation (Kleiner and Roth, 1997). The project management
958 teams in this research further confirmed Gummesson's opinion (2000). They
959 indicated that they learnt how to manage stakeholders systematically during the action
960 research, discovering relevant approaches to stakeholder analysis and engagement,
961 and a propensity to use the proposed framework (Figure 1) as a reference for their
962 following works.

963

964 Analysis 6 – continuous support
965 The issues of continuous support were considered to be important by the management
966 teams during the action research. Increasing the project managers' knowledge and
967 experience was also raised as an important consideration in contributing to the
968 success of stakeholder management.

969

970 Summary of analyses 1 - 6 and the results of the feedback questionnaire survey

971 The results of the feedback questionnaire survey are shown in Table 4. The results

972 indicate that the five project management teams were satisfied with the framework in

973 general. The management teams have taken on the framework as a systematic

974 reference for future work. The project management teams in the five cases confirmed

975 and highly rated the systematic framework given in Figure 1. They felt the framework

976 systematically illustrated the activities and outcomes during the stakeholder

977 management process. The framework subsequently will provide a reference for them,

978 to enable the efficient conduct of stakeholder management during their daily work.

979
980 *(Insert Table 4)*
981

982 The action research confirmed the opinion that the purpose of the framework was as a

983 reference for the project management team. Thus, depending on the characteristics of

984 the project, the stage of the project, and the resources in the organisation, some

985 identified activities can be omitted. For example, the activity 'formulating appropriate

986 strategies to deal with the issues raised by the stakeholders' was not implemented

987 during action research due to the lack of special issues raised at that stage. Similarly,

988 the stakeholder categories in Figure 1 are not an exhaustive list of all stakeholders in

989 construction; the categories can be selected and revised depending on the project.

990

991 **The changes on the systematic framework**

992 Based on the findings of the action research, the systematic framework (Figure 1) was

993 finalised with minor changes:

994 o the stakeholder type 'end user' is specified to include leaser, owner, operator,

995 and facility management;

996 o one type of stakeholder behaviour, neutral attitude, was added;

997 o one action in the 'continuous support' group was added, that is 'increasing the

998 project managers' knowledge and experience on stakeholder management'.

999

1000 **Conclusions**

1001 The aim of this paper is to develop a systematic framework for stakeholder

1002 management in construction. To achieve this objective, empirical studies, comprising

1003 six interviews, a pilot study, and a questionnaire survey in Hong Kong, and fifteen

1004 interviews in Australia, were conducted. The comments from the industry

1005   practitioners were synthesized with the outcomes from previous studies, and a

1006   systematic framework for stakeholder management in construction projects is

1007   proposed. Six activity groups, i.e. precondition, project data identification,

1008   stakeholder estimation, decision making, action & evaluation, and sustainable support,

1009   formulate the main body of the framework. A total of 18 activities within these groups

1010   and their interrelations are illustrated by using different symbols and colours in the

1011   framework. Five projects were used to validate the proposed framework. The action

1012   research findings reported in this paper confirmed the applicability of the framework.

1013

1014   The significance of the framework is that it serves as a reference for project

1015   management teams as a systematic consideration for stakeholder management in

1016   construction. In practice, project teams should first get familiar with the framework

1017   structure, activity groups, outcomes and interrelationship of each group, as well as the

1018   definitions of each term. This can be achieved by reading the explanation information

1019   of the framework as indicated in this paper, or engaging a professional consultant to

1020   help them understand the underlying concepts of the whole process. The project teams

1021   need to be clear about their economic, legal, environmental, cultural and ethical

1022   responsibilities as a social entity. Then, they should follow the sequence of the twelve

1023   management activities and make sure the corresponding outcomes are produced in

1024   each step. Experiences from the action research show that the activities in the

1025   framework can be selected depending on the nature of the project and the project

1026   management team's decision. However, the management activities in the 'stakeholder

1027   identification' group are essential for the inputs of the following steps; thereby,

1028   should not be omitted. It is also crucial to develop the 'priority list' and 'attitude

1029   classification', but the stakeholder relationship analysis step in the 'stakeholder

1030   assessment' group can be optional if the project environment is simple and the

1031   management team does not have appropriate knowledge or resources. For projects

1032   with high complexity, this step is highly recommended and can be implemented by

1033   involving external consultants who know how to decipher complex relationships (for

1034   example, consultants with social network analysis skills). The activities in the

1035   'decision making' and 'action & evaluation' groups produce the main outcomes of

1036   stakeholder management process, and push the project to move forward. The

1037   management activities in the framework form a loop, which indicates that for best

1038   results the activities should be carried out iteratively during the overall project process.

1039 The activities in the 'continuous support' group should be initiated at the beginning of
1040 stakeholder management process, and encouraged during the whole course. Ideally,
1041 construction organisations need to provide stakeholder management support to their
1042 project teams by developing stakeholder engagement method profile, maintaining
1043 long-term stakeholder relationships, and organising trainings to the core team
1044 members.

1045

1046 Limitations of the research are acknowledged as follows:

1047 o Owing to time and resource shortages, the development and refinement of the
1048 framework and practical approaches for stakeholder management are based on
1049 only twenty-one interviews and a questionnaire survey in Hong Kong and
1050 Australia. Since the interviewees and respondents were only from two regions,
1051 the findings are limited to Hong Kong and Australian construction projects.

1052 o In order to develop a more generic framework which can be used in both
1053 oriental and western culture environments, two locations (Hong Kong and
1054 Australia) were chosen for data collection. However, the interpretation of
1055 interview questions may be nuances from one culture to another. Although the
1056 same researcher, who is familiar with both cultures, was responsible for data
1057 collection in the two regions to keep the explanation and data analysis process
1058 as consistent and accurate as possible, a potential cultural related risk should
1059 still be noted in this research.

1060 o Owing to time limitations, the findings in this research are based on project
1061 managers' experience and did not engage the various construction
1062 stakeholders in the empirical studies. Future studies, which incorporate
1063 different stakeholders' perspectives in the framework, should be conducted.

1064 o Time limitations confined the use of the framework in the action research to
1065 one example, hence feedback from several attempts could not be obtained and
1066 therefore there was no basis on which to build improvements, either for
1067 stakeholder management use or to the framework itself.

1068 o Changes in stakeholder influence, relationships and attitudes could not be
1069 analysed in the action research due to time limitations, although according to
1070 the project management teams' statements the changes were evident at
1071 different stages of the projects. However, the project managers thought the use
1072 of this framework provided them with a clear summary of the stakeholder

1073   management tasks and outcomes in their projects and would be suitable for

1074   future use.

1075 For actual application, project teams should compare each activity in the proposed

1076 framework with the current practices and experiences in the organizations and

1077 projects. Although ideally potential users should conduct all activities in the

1078 management process, in practice, due to project resources and constrains, practitioners

1079 can make decisions on the actual use of the proposed framework.

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