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Demystifying stakeholders' commitment and its impacts on construction projects

MEI-YUNG LEUNG^{1*}, ALICE CHONG², S. THOMAS NG³ and
MICHAEL C. K. CHEUNG¹

¹Department of Building and Construction, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong, Hong Kong

²Department of Applied Social Studies, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong, Hong Kong

³Department of Civil Engineering, The University of Hong Kong, Pokfulam Road, Hong Kong

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Construction projects are typified by the involvement of a number of participants. Each project team member has his/her own expertise, and would contribute towards the success of the project. However, since their inputs are often interdependent, conflicts may arise in some circumstances. This is particularly evidenced when they are working within limited resources in terms of time and budget. One cannot expect a project team to attain the necessary synergy when common goals are not being visualized or observed. To improve the implementation performance of construction projects, it is necessary to investigate the goal commitment amongst temporary project team members. This research study aims to investigate the impacts of commitment amongst major project stakeholders. The results indicate that high affective commitment induces high performance and satisfaction, while the continuous commitment provokes intention to quit.

Keywords: Commitment, performance, satisfaction, intention to quit, turnover

Introduction

Construction is a team work that depends largely on the commitment of every stakeholder to excel. Despite that, not all project participants would have agreed goals in time, cost and quality, and conflicts between stakeholders may arise in some circumstances. The diversity in goals is magnified in times of economic adversity and uncertainty, as one would place a higher priority to self-interest than project success (Walker, 1996; Leung *et al.*, 2002). The situation is aggravated when participants with 'no volition after the discussion and no action after the decision' exist throughout the decision making process, as they would only contribute negatively to the synergy of the whole construction team.¹

As project participants are a volitional element in a construction project, the existence of desirable and reachable goals does not necessarily guarantee sufficient compelling

force to drive an individual to act. Liu (1999) advocated that commitment amongst construction professionals in maintaining the specific goals during the implementation process is essential. While establishing the readiness to commit is an intricate task, evaluating the consequences resulted from a lack of goal commitment amongst professionals is even more tortuous.

Over the years, many management scientists have applied behavioural theories to examine the complicated construction management issues. For instance, Liu and Walker (1998) applied the expectancy theory to investigate project outcomes; Lingard and Rowlinson (1998) used the goal-setting theory to examine behaviour-based safety management problems; Green (1999) studied the participative research strategy for soft value management; Walker and Newcombe (2000) investigated the use of power on construction projects; Leung *et al.* (2002) studied the goal specificity and conflict management in construction; while Rowlinson (2001) examined the importance of commitment in governmental departments especially in

*Author for correspondence. E-mail: bcmei@cityu.edu.hk

light of dynamic environment and changed organizational structures. There is a strong possibility that behavioural theories can be used for analysing the goal commitment amongst construction participants. The aim of this paper is to examine the impacts of commitment in construction projects based on the behavioural paradigm.

Forms of commitment

Commitment can be related to different behavioural and psychological aspects, such as organization (O'Reilly and Chatman, 1986), union (Gordon *et al.*, 1980), job (Rusbult and Farrell, 1983), career (Blau, 1985), team (Bishop and Scott, 2000) and personal goals (Hollenbeck *et al.*, 1989; Locke and Latham, 1990) (refer to Table 1). Researchers believe that commitment can be broadly classified into organizational commitment (company and union), project/task commitment (job and career), as well as personal goal commitment. Balfour and Wechsler (1996) found that both organizational and personal characteristics could affect the degree of organizational commitment, while organizational commitment might in turn influences the multiple dimensions of organizational effectiveness (e.g. adaptability, turnover and tardiness rate) (Angle and Perry, 1981). In behavioural science perspective, organizational commitment is influenced by the relative strength of individuals' involvement in the specific organization. According to Mowday *et al.* (1979) and Tubbs (1993), those who are strongly committed to the organization can be characterized by at least three interrelated factors: (a) a strong belief in and an acceptance of the organization's goals and values; (b) a willingness to exert considerable effort on behalf of the organization; and (c) a strong desire to maintain membership in the organization.

As highlighted in Table 1, neither organizational commitment nor project/task commitment has little to do with personal dimension. Commitment implies a personal determination *to try for a goal* or *to keep trying for a goal* irrespective of whether the goal (organization/project/person) is specified or not.² In order to maintain goals during the implementation process, goal commitment amongst construction professionals is crucial to the success of a construction project (Liu, 1999). According to Mowday *et al.* (1979, 1982), goal commitment can be expressed through two phenomena namely the attitudinal commitment (identification of the person with the project) and behavioural commitment (binding of his/her actions). *Behavioural commitment* needs time and effort to pursuit the goals (e.g. the client's requirements in the preliminary stage) and implement the final products (e.g. drawings/documents), while *attitudinal commitment* refers to affective (want to), continuance (need to) and normative (ought to) commitment in psychological states (Allen and Meyer, 1990, 1996). The concepts of these three attitudinal commitments should therefore be applied in the study to understand the stakeholders' commitment on construction projects.

Affective commitment (AC) refers to professionals' emotional attachment to, identification with and involvement in the construction projects (See Allen and Meyer, 1990), which is similar to the three organizational commitment characteristics of Mowday *et al.* (1979) discussed above. AC is an attitudinal commitment that derives from a combination of project perceptions and personal characteristics, which becomes positive feelings about a construction project and in turns lead to commitment (Mowday *et al.*, 1982).

Continuance commitment (CC) refers to the costs when employees leave the organization or the undertaking

Table 1 Essences of definitions of commitment

Essences	Authors
Organizational commitment	
1. An attitude towards the organization that links the person to the organization	Sheldon (1971)
2. Affective attachment to the goals and values of an organization	Buchanan (1974)
3. The relative strength of an individual's identification with and involvement in a particular organization	Mowday <i>et al.</i> (1979)
Job/project commitment	
4. One's attitude toward one's profession or vocation	Blau (1985)
5. The likelihood that an individual will stick with a job and feel psychologically attached to it, whether it is satisfying or not	Rusbult and Farrell (1983)
6. A function of personal, role-related, and structural characteristics as well as situational factors related to the job setting	Randall and Cote (1991)
Personal goal commitment	
6. Determination to try for a goal even through difficulties	Locke <i>et al.</i> (1981)
7. A function of the expectancy and valence associated with the goal	Locke and Latham (1990)
8. (a) Pre-choice evaluations of potential goals	Tubbs (1993)
(b) Subsequent choice of a personal goal	
(c) Maintenance of that choice	

project (Allen and Meyer, 1990). Its underlying construct can be viewed as a tendency to engage in consistent lines of activity based on the individual's recognition of the costs (cf: Becker, 1996). However, the unwillingness to leave the company may be due to attractive cost inducement but not the AC (Meyer and Allen, 1984). As a result, a high level of CC would not necessarily associate with an intention to stay in the organization/project. According to Brown (1996), CC is a behavioural approach whereby a person attains a state or position of commitment as a result of engaging in committing behaviours, and CC is an additive function of rewards, investments and alternatives (Oliver, 1990).

Normative commitment (NC) refers to employee's feelings of obliging to remain in the project (refer Allen and Meyer, 1990). The underlying construct of NC is that commitment is the totality of internalized normative pressures to act in a way which meets project goals and interests (cf: Wiener, 1982). Allen and Meyer (1990) found that there was significant relationship between AC and NC, as the feelings of obliging to maintain membership in the organization may be meaningfully linked to the feelings of desire although they are not identical. However, there has been little investigation on the AC/CC/NC the project level in the construction industry.

Consequence of commitment

Commitment is an important attitudinal predictor of employee behaviour and intentions (Becker *et al.*, 1996; Mowday *et al.*, 1982). It can affect the project performance,

the job satisfaction, the intention to quit and the actual turnover in the company. The consequences of commitment include two main routes: (a) commitment → performance → satisfaction (Hackett *et al.*, 1994; Cranny *et al.*, 1992); and (b) commitment → intention to quit → turnover (Steel and Ovalle, 1984).

Commitment → performance → satisfaction → commitment cycle

Commitment enhances feelings of security, efficacy, loyalty and duty (Meyer *et al.*, 1993); encourages creativity; maintains an identity distinct from the organization (O'Reilly and Chatman, 1986); reduces the absenteeism (Sagie, 1998); increases employee tenure (Beck and Wilson, 2000); improves job performance (e.g. Hollenbeck *et al.*, 1989) and gains job satisfaction (e.g. Sagie, 1998). Table 2 highlights the results of previous studies on the relationships amongst commitment, performance and satisfaction.

Although positive relationship between AC and job performance and negative relationship between CC and performance were found in the various previous studies, some still obtained no relationship between commitment (or CC) and job performance (e.g. Steers, 1977; Somers and Birnbaum, 1998). Since AC and NC share similar characteristics, both AC and NC are hypothesized in the paper as imparting positive effects on the construction performance, while CC is regarded as a negative determinant. Construction professionals' emotional attachment, actual involvement and internalized normative pressures can improve the project performances (e.g. high quality of works, good use of time and resources, etc.)

Table 2 Summary of the previous findings of commitment → performance → satisfaction

Findings of performance	Researcher(s)
Commitment — (+ve) — performance	Locke <i>et al.</i> (1981) Hollenbeck <i>et al.</i> (1989) Tubbs (1993) Siders <i>et al.</i> (2001)
Commitment — (no relation) — performance.	Steers (1977) Wiener and Vardi (1980)
AC — (+ve) — performance	Hackett <i>et al.</i> (1994) Allen and Meyer (1996)
CC — (-ve) — performance	Konovsky and Cropanzano (1991)
AC/CC — (no relation) — performance.	Somers and Birnbaum (1998)
CC — (no relation) — performance	Hackett <i>et al.</i> (1994)
Commitment leads to satisfaction	Sagie (1998) Kirkman and Shapiro (2001)
Performance — (+ve) — job satisfaction	Shore and Martin (1989)
Job satisfaction was a determinant of commitment	Bluedorn (1982) Wiener (1982)
Performance — (weak) — job satisfaction	Sagie (1998) Kirkman and Shapiro (2001)

Note: AC – Affective Commitment; CC – Continuous Commitment

and participant's satisfaction (e.g. promotion, good relationship, appropriate working hours, within budget, etc.), while the commitment supported by the cost inducement causes negative final outcome for the team members on the construction project.

According to Cranny *et al.* (1992), job satisfaction is an affective reaction to the job that results from the incumbent's comparisons between the actual and desired outcomes, and it is a more unstable and changeable attitude than commitment (Mowday *et al.*, 1979). Henne and Locke (1985) concluded that high satisfaction is a result, not a cause, of high performance. The relationship between the performance and the satisfaction is higher than the relationship between the commitment with the performance (Shore and Martin, 1989). In the feedback loop, satisfaction keeps people attached to the organization, improves commitment to the organization, and creates the willingness to accept new challenges (Sagie, 1998). Hence, it is often considered as a predictor of commitment rather than the contrary. High level of job satisfaction induces high level of commitment on the subsequent tasks.

Commitment → intention to quit → turnover

However, insufficient commitment to a specific project goal may also induce negative effects upon the individual and/or the organization (Randall *et al.*, 1990), including a stifling of individual creativity/innovation, a disloyalty to the firm and greater turnover. Commitment can still be maintained amongst the stakeholders by the attractive cost (e.g. increasing salary, high tender fee /contract sum). Table 3 shows the relationship amongst commitment, intention to quit and turnover. Table 3 shows that the commitment in the form of CC has no relationship to the intention to quit (Meyer and Allen, 1984), but the commitment generally has negative correlation to both intention to quit and turnover. Intention to quit mediates

the relationship between commitment and turnover (Jaros *et al.*, 1993). While intention to quit is a direct predictor of actual turnover (Stroh *et al.*, 1996), non-commitment and dissatisfaction provoke intention to quit and turnover indirectly (Michaels and Spector, 1982).

In sum, project success depends on a high level of job performance (Hackett *et al.*, 1994) and job satisfaction (Cranny *et al.*, 1992), and a low level of turnover behavior (Steel and Ovalle, 1984). AC and NC may improve both the job performance and satisfaction and reduce the turnover rate of construction professionals; while CC could increase the intention to quit and turnover.

Research method

The three forms of commitment (i.e. AC, CC and NC) were measured using the subscale for each facet proposed by Allen and Meyer (1990). Meyer and Allen (1997) reported strong reliability coefficients of 0.85 for scores obtained using the affective scale, 0.79 using the continuance scale and 0.73 using the normative scale. Revised scale was formed in the study by using four items for each facet for construction projects. In addition, two modified questions from the Organizational Commitment Questionnaire (OCQ) (Mowday *et al.*, 1979) were also incorporated into the affective subscale for measuring and cross-checking the affective facet of personal commitment on construction projects. The questions used in the questionnaire are listed in Appendix A.

In order to better explain the impact of commitment, three important behavioural aspects namely performance, satisfaction and turnover were derived. For job performance items, emphasis is placed on the time, cost and quality of project, which is coherent with the standards of work, good use of time and resources as proposed by Shore and Martin (1989). As job satisfaction was defined

Table 3 Summary of the previous findings of commitment → intention to quit → turnover

Findings of turnover	Researcher(s)
Commitment — (-ve) — turnover	Porter <i>et al.</i> (1976)
Commitment — (-ve) — intention to quit	Steers (1977)
Attractive cost inducement — (-ve) — intention to quit	Shore and Martin (1989)
CC — (no relation) — intention to quit	Meyer and Allen (1984)
Intention to quit — (best predictor of) — turnover	Steel and Ovalle (1984)
Commitment and Satisfaction — (lead to) — intention to quit — (lead to) — turnover	Stroh <i>et al.</i> (1996)
Satisfaction — (moderate relation) — intention to quit	Michaels and Spector (1982)
Satisfaction — (-ve) — turnover	Jaros <i>et al.</i> (1993)
Satisfaction — (no relation) — turnover	Vroom (1964)
	Carsten and Spector (1987)
	Porter <i>et al.</i> (1974)

Note: CC – Continuous Commitment

as 'a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences' (Locke, 1976, p. 1300), questions relating to individual's satisfaction on various aspects in the job such as the 'increment of salary' and 'nature of works' were set. The questions pertaining to turnover were designed to measure the 'intention to quit the project', 'intention to quit the company' and 'has the respondent already quitted the company.' (Michaels and Spector, 1982). A seven-point scale was provided for the commitment and the consequence variables identified.

The survey was conducted in Hong Kong, and was administered by fax or by post. A sample of 110 was randomly selected, and 64 sets of questionnaire were returned representing a response rate of 58%. All returned questionnaires were completed by project team members including quantity surveyors (33%), architects (23%), structural engineers (20%), building surveyors (16%) and project managers (8%). Majority of respondents were working in private consultant practices (48%) or public sector (38%), and most of them with 5–10 years of relevant experience (41%).

Results in three techniques

The relationships amongst commitment and the consequential variables were analysed through correlation coefficient, multiple regression and structural equation model. Table 4 presents the intercorrelations of the criticality indices of commitment and the outcome variables to construction works. As shown in Table 4, there are positive significant relationship between AC and satisfaction (0.538, $p < 0.01$), AC and job performance (0.495, $p < 0.01$), satisfaction and performance (0.480, $p < 0.01$), CC and intention to quit project ($r = 0.371$, $p < 0.01$), AC and NC ($r = 0.256$, $p < 0.05$), intention to quit project and intention to quit company ($r = 0.438$,

$p < 0.01$), and intention to quit company and turnover ($r < 0.410$, $p < 0.01$). On the other hand, there are negative significant correlations between the commitment (AC and NC)/satisfaction/performance and the intention to quit project/company/turnover variables. The results clearly reveal two main groups for the commitment in the construction projects: (1) AC, NC, job performance and satisfaction; and (2) CC, intention to quit project/company and turnover.

In order to predict the consequences caused by commitment during the management process, regression analysis with stepwise estimation method was employed to establish an optimized multiple regression model. The model was derived when the t -values of the included (or excluded) variables were higher (or lower) than the threshold values (Howitt and Cramer, 1997). The results of regression analyses as depicted in Table 5 indicate that different consequences were regressed against different forms of commitment. Being a useful technique in exploring the predictive ability of a set of independent variables on each project success variable, the results of regression analysis in Table 5 confirm that AC is a major factor that influences the job performance and satisfaction positively. Both AC and NC affect the intention to quit project/company and turnover negatively. On the other hand, CC induces the intention to quit the project/company and, subsequently, influences the actual turnover during the implementation process.

Although regression analysis can be used for predicting final outcome, it does not provide empirical support on validation or reliability for measuring latent variables nor can it demystify the complicate relationships amongst the latent variables (Lehman, 1991; Diamantopoulos and Siguaw, 2000). For instant, job performance induces satisfaction, intention to quit company causes turnover or vice versa. Structural equation model was, therefore, applied to develop an integrated structural model to cross-check the inter-relationships amongst the hypothetical variables

Table 4 Means, standard deviations, Cronbach Alpha and correlations

	AC	CC	NC	Sat	JP	IQP	IQC	TO
Affective commitment (AC)	—							
Continuance commitment (CC)	−0.106	—						
Normative commitment (NC)	0.256*	0.250*	—					
Job satisfaction (Sat)	0.538**	−0.021	0.214	—				
Job performance (JP)	0.495**	0.054	0.136	0.480**	—			
Intent to quit project (IQP)	−0.460**	0.371**	−0.308*	−0.274*	−0.312*	—		
Intent to quit company (IQC)	−0.503**	0.256*	−0.097	−0.419**	−0.416**	0.438**	—	
Turnover (TO)	−0.269*	−0.001	−0.383**	−0.107	−0.244	0.238	0.410**	—
Mean	28.28	15.86	14.67	30.09	33.55	7.94	7.06	0.33
s.d.	4.11	2.49	3.08	4.68	3.78	2.01	2.75	0.47
α	0.78	0.70	−0.61	0.82	0.78	0.63	0.92	/

Note: * $p < 0.05$; ** $p < 0.01$; $n = 64$; The reliabilities for hypothetical variables are verified within acceptable ranges for newly created stressors ($\alpha > 0.60$).

Table 5 Regression model for the prediction of commitment consequences

Eq.	Dependent variables	Independent variables	Unstandardized coefficients		<i>t</i>	Sig.	<i>R</i>	<i>R</i> ²
			B	Std. Error				
1	Performance (Perf)	(Constant)	17.566	3.085	5.693	0.000	0.556	0.309
		AC	0.307	0.116	2.641	0.010		
		Sat	0.243	0.102	2.382	0.020		
2	Satisfaction (Sat)	(Constant)	5.523	4.532	1.219	0.228	0.591	0.350
		AC	0.453	0.135	3.347	0.001		
		Perf	0.350	0.147	2.382	0.020		
3	Intention to quit the project (IQP)	(Constant)	10.334	2.005	5.155	0.000	0.639	0.409
		AC	-0.163	0.051	-3.176	0.002		
		CC	0.338	0.084	4.008	0.000		
		NC	-0.215	0.070	-3.056	0.003		
4	Intention to quit the company (IQC)	(Constant)	11.836	2.933	4.035	0.000	0.647	0.419
		AC	-0.179	0.082	-2.181	0.033		
		TO	1.823	0.600	3.036	0.004		
		CC	0.246	0.110	2.227	0.030		
		Sat	-0.140	0.069	-2.013	0.049		
5	Turnover (TO)	(Constant)	0.653	0.294	2.221	0.000	0.536	0.287
		IQC	6.475E-02	0.019	3.469	0.000		
		NC	-5.328E-02	0.017	-3.189	0.004		

Note: AC – Affective Commitment; CC – Continuous Commitment

Table 6 Fit indices of commitment models A–D

Model	df	χ^2	χ^2/df	RMSEA	GFI	AGFI	RFI	CFI
A	428	1711.09*	4.00	0.020	0.33	0.17	-0.62	0.00
B	448	847.06*	1.89	0.110	0.56	0.48	0.23	0.45
C	96	152.00**	1.58	0.075	0.79	0.71	0.67	0.88
[^] D	73	134.37**	1.84	0.090	0.80	0.71	0.67	0.86

Note: df = degree of freedom; χ^2 = chi-square; RMSEA = root mean square error of approximation; GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; RFI = Relative Fit Index; CFI = Comparative Fit Index; * $p < 0.01$; ** $p < 0.001$; ([^]D) The causal relationships amongst the hypothetical variables in the Model D are approved by the three techniques (refer to Table 8, Figure 1 and Appendix B4).

and evaluate the effects of the three types of commitment on construction project success (Long and Kahn, 1992; Joreskog and Sorbom, 2001).³

Based on the results of correlation coefficient, three structural models were established by LISREL: *Model A* (a *full model* with two-way causal relationships amongst commitment and the consequences variables based on correlation coefficient); *Model B* (a *modified model* with one-way relationships based on regression model); and *Model C* (an *optimized model* with deletion/amendment of parts of indicators and latent variables). Table 6 presents the goodness-of-fit indexes for the three structural models.

As shown, the goodness-of-fit indexes for *Model A* suggest that it fits the data poorly. *Model A* was modified by converting the two-way path to one-way path (see Appendices B1 and B2 for *Models A* and *B* respectively). Although the χ^2 and the RMSR have improved in *Model B*, they are still higher than *Model C*. Parts of the predictive ability of the measures is still in significant, e.g. indicator *c4* (see Appendix A) yields an error variance of 17.86 that is much higher than others; and variable *p7* (see

Appendix A) has negligible predictive ability to performance ($\lambda = -0.0087$). The indexes in the Table 6 show that *Model C* is the optimized causal model to represent the impact of commitment in construction projects due to the lower χ^2 (152.00) and RMSEA (0.075) and the higher GFI (0.79), AGFI (0.71), RFI (0.67) and CFI (0.88). In sum, variables *c1–c3* represent AC; *c5*, *c7* and *s5* represent CC; *c10–c11* represent NC, *p1–p3* represent performance, and *s3–s6* represent satisfaction in the measurement part of *Model C* (refer to Appendices A and B3). It is interesting that *s5* being identified as a job satisfaction variable also forms part of the CC variables with negative effect in the measurement part of *Model C*. One can conclude that CC in construction perspective should involve the cost of leaving and the relationship with colleagues in the organization.

For the structural equation part, the two variables namely intention to quit the project and turnover are removed from the model, as the results in *Model B* indicate that intention to quit the project has an insignificant correlation with turnover. The overall fit indexes have

increased after removing these two variables. In order to improve the fit of model, further re-specifications were made by (a) removing the path from AC to intention to quit the company, (b) reversing the causal relation between performance and satisfaction, and (c) adding a causal path from performance to intent to quit company in *Model B*.

The parameters (path coefficients) of *Model C*, along with their respective maximum-likelihood estimates, standard errors and t-statistics are listed in Table 7. Each estimate has the expected sign, e.g. the latent AC variable is positively related to the observed AC variables (indicators). Examinations of the t-values, which are all greater than 2.0 (cf: Diamantopoulos and Siguaw, 2000), suggesting that all parameters are significant in *Model C*.

Discussions

For a comparison of the three analytical techniques, the impacts of commitment to a construction project are

summarized in Table 8 and illustrated in Figure 1. It is interesting to note that only four causal relationships between the commitment and the consequence variables are supported by all three analytical techniques, while most of the other relationships are supported by either correlation/regression analysis or structural equation model only. The fit indexes of SEM for these four main lines (i.e. *Model D* in Table 6) is worse than the optimized model (*Model C*), but they are still acceptable in the test. The results revealed that CC generally has positive relationship between the intention to quit project/company and turnover, while opposite results were found in the study for AC and NC generally.

CC refers to the 'cost' of leaving projects. Construction participants with CC often do not attach to the project desirability intrinsically. Therefore, they only stay in the project due to the limited alternatives at the moment and are not motivated to perform the tasks well. Simultaneously, the job satisfaction does not influence the CC of project participants in the feedback process. In contrast, this

Table 7 Analysis of path coefficients of Model C

Part of model	Causal relations	Maximum likelihood estimates	Standard errors	<i>t</i>	<i>R</i> ²
Measurement part	Affective commitment (AC)				
	→ <i>c</i> ₁	0.87	0.25	2.55	0.75
	→ <i>c</i> ₂	0.65	0.57	5.18	0.43
	→ <i>c</i> ₃	0.77	0.41	6.06	0.59
	Continuance commitment (CC)				
	→ <i>c</i> ₅	0.39	0.85	2.21	0.15
	→ <i>c</i> ₇	0.46	0.79	2.38	0.21
	→ <i>s</i> ₅	-0.60	0.26	-2.62	0.74
	Normative commitment (NC)				
	→ <i>c</i> ₁₀	0.64	0.59	3.65	0.41
	→ <i>c</i> ₁₁	0.56	0.69	3.13	0.31
	Performance (perf)				
	→ <i>p</i> ₁	0.86	0.26	3.07	0.74
	→ <i>p</i> ₂	0.86	0.26	7.36	0.74
	→ <i>p</i> ₃	0.61	0.63	4.97	0.37
	Satisfaction (sat)				
	→ <i>s</i> ₃	0.7	0.50	5.15	0.50
	→ <i>s</i> ₄	0.96	0.08	6.83	0.92
	→ <i>s</i> ₅	0.92	0.26	5.09	0.74
	→ <i>s</i> ₆	0.64	0.59	4.89	0.41
	Intent to quit company (IQC)				
	→ <i>q</i> ₃	0.78	0.40	3.59	0.61
	→ <i>q</i> ₄	1.08	-0.15	5.87	0.75
Structural equation part	Performance (Perf)				
	→ Satisfaction	0.40	0.71	2.46	0.29
	→ Intent to quit	-0.45	0.40	-3.06	0.60
	Affective → performance	0.39	0.72	2.32	0.28
	Satisfaction (sat)				
	→ Affective	0.50	0.64	3.26	0.36
	→ Normative	0.42	0.82	2.28	0.18
	Continuance → intent to quit	0.63	0.40	2.41	0.60
	Normative → intent to quit	0.16	0.40	2.67	0.60

Table 8 Summary of hypotheses and findings

Item	Hypothetical variables in causal relationships	Correlation	Regression analysis	SEM	Finding supported
1	AC → (+) performance	Yes ¹	Yes ¹	Yes ¹	Yes ³
	AC → (-) intention to quit project	Yes ¹	Yes ¹	—	Yes ⁴
	AC → (-) intention to quit company	Yes ¹	Yes ¹	—	Yes ⁴
	AC → (-) turnover	Yes ²	—	—	No
2	CC → (+) performance	—	—	—	No
	CC → (+) intention to quit project	Yes ¹	Yes ¹	—	Yes ⁴
	CC → (+) intention to quit company	Yes ²	Yes ¹	Yes ¹	Yes ³
	CC → (+) turnover	—	—	—	No
3	NC → (+) performance	—	—	—	No
	NC → (-) intention to quit project	Yes ²	Yes ¹	—	Yes ⁴
	NC → (-) intention to quit company	—	—	Yes ¹	Yes ⁵
	NC → (-) turnover	Yes ¹	Yes ¹	—	Yes ⁴
4	Perf → (+) satisfaction	Yes ¹	Yes ¹	Yes ¹	Yes ³
	Perf → (-) intention to quite project	Yes ²	—	Yes ¹	Yes ⁵
	Perf → (-) intention to quite company	Yes ¹	—	—	No
	Perf → (-) turnover	—	—	—	No
5	Sat → (+) performance	Yes ¹	Yes ¹	—	No
	Sat → (+) AC	Yes ¹	Yes ¹	Yes ¹	Yes ³
	Sat → (+) CC	—	—	—	—
	Sat → (+) NC	—	—	Yes ¹	Yes ⁵
	Sat → (-) intention to quite project	Yes ²	—	—	No
	Sat → (-) intention to quite company	Yes ¹	Yes ¹	—	Yes ⁴
6	Intention to quite project → (+) intention to quite company	Yes ¹	—	—	No
	Intention to quite project → (+) turnover	—	—	—	No
7	Intention to quite company → (+) turnover	Yes ²	Yes ²	—	Yes ⁴

Note: (+) = positive relationship; (-) = negative relationship; → = cause-effect relationship

AC = Affective Commitment; CC = Continuous Commitment; NC = Normative Commitment;

Perf = Performance; and Sat = Satisfaction;

Yes¹ – supported by correlation coefficient with $p < 0.01$ (see Table 4), regression analysis method (see Table 5) or structural equation model (see Table 7);

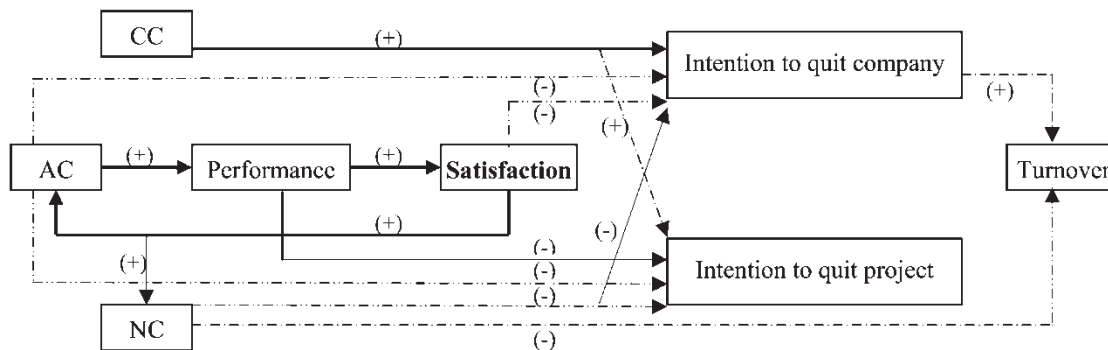
Yes² – supported by correlation coefficient with $p < 0.05$ (see Table 4);

Yes³ – supported by all three analytical techniques;

Yes⁴ – supported by correlation coefficient/regression analysis, but rejected by structural equation model;

Yes⁵ – supported by structural equation model, but rejected by correlation coefficient /regression analysis;

No – rejected by all three analytical techniques.

**Figure 1** Impact of commitment in construction projects

Note: (+) – positive relationship; (-) – negative relationship;

—→ causal relationship supported by three analytical techniques;

- - -→ causal relationship supported by correlation and regression analysis; and

...→ causal relationship supported by structural equation mode.

study strongly *suggested* that participants with CC may have intention to quit the company.

Based on the literature review, there are similar characteristics between NC and AC. Although the consequences of AC and NC cannot be proved as identical in all three techniques, both AC and NC are generally affected by satisfaction positively and, simultaneously, induce the intention to quit the projects/company negatively. A project participant with either AC or NC does not want to quit the project/company due to the desirability or sense of responsibility. In contrast, his/her commitment can be enhanced by job satisfaction through the feedback process. NC emphasizes on the commitment with 'ought to do' and, hence, there is no emotional attachment and involvement for the project participants to implement the tasks. The results from all three analytical techniques show no relationship between NC and performance, but correlation/regression analyses indicate that NC induces turnover negatively in the construction industry. Although NC cannot improve job performance positively, it can at least prevent the construction participants from quitting the project, thus, reducing the company turnover.

Although the negative relationship between AC and intention to quit is only supported by correlation/regression analyses, the results of all three techniques confirm that AC is the only form of commitment to improve job performance and job satisfaction. Since project participants with AC are more attached and involved in the project, they also want to stay in the organization for the particular project. This study strongly support that AC is critical to the success of construction projects, while CC is the worst form of commitment among the three.

The results indicated that high commitment cannot be simply used as a unidimensional construct to forecast good project performance and high level of satisfaction amongst the project team members for the construction projects. Commitment is multi-dimensional and different forms of commitment would bring about various impacts upon the performance of individual team members. For instance, the owner (client) may not be satisfied with the architectural design of a simple house if the architect (one of the team members) participates in the project due to the limited amount of projects in the market (i.e. CC). The structural drawings may not be issued according to the agreed schedule at the design stage if the project structural engineer does not have loyalty to the project (i.e. lack of AC).

The above findings carry some important practice implications on managing a construction project during the whole tendering and constructing process. First, in the pre-qualification and the tender interview of both consultants and contractors, the client (or client representative) is recommended to check the previous performance of the professionals; and to examine the professionals'

forms of commitment to the project and to the company. A track record of good project performance (in terms of time, cost and quality) and high personal satisfaction (towards salary, promotion, supervision, relationship and the nature of tasks) can encourage the project participants to apply AC in the subsequent tasks, while poor performance and low satisfaction induce the intention of stakeholders to quit the company finally. At the same time, the client should not only concern about project details in the consultant/construction tender interview process, but should also consider whether the construction professionals who attend the tender interview understand the project goals and outcome expectations, are enthusiastic about the proposed project and the nature of their involvement in the design and construction process. Action should be taken to enhance the working attitudes of the professionals and to change their commitment from the CC to the AC or NC, such as improving the relationship and communication between the client and the construction professionals, and specifying the project goals and outcome expectation. The commitment of construction team members represents the commitment of consultant firm/construction company, which in turn determines project success or failure.

Second, a formal briefing session is suggested to be held between the design teams and the construction teams of a particular project after the tendering stage and before actual construction. Traditional construction procurement normally involves two separate teams for design (e.g. architect, engineers, surveyor, end-users, etc.) and construction (e.g. construction manager, site agent, supervisors, etc.). Construction team members implement the project mainly based on the information specified in the contract documents, but they may not fully understand the project goals and outcome expectation as perceived by the design team. For them, the project is just another task to be completed as soon as possible. It is, therefore, difficult for them to see any uniqueness in the project or to develop a sense of identification with it. A face-to-face discussion between the two teams can clarify any vague information and enhance two-way communication.

Finally, it is recommended to assign proposed or follow-up projects to construction professionals or contractors who have a track record of implementing the projects with the AC or NC. This will be an important source of reinforcement to the professionals, motivating them to perform with commitment.

Recommendation

Despite the important findings arrived at by this study, some issues are not yet handled due to sampling and methodological constraints. First, the relatively small sample size of the present study may limit the generalizability

of the results. However, it should be pointed out that all respondents were identified through the membership records of various professional institutions in construction. The results also confirm that they had direct experience in the key decision making process of the construction projects. The sampling method could assure the results from being biased by any differential response to the measured variables.

Second, three statistical techniques were applied in this study to examine the relationship between the construct of commitment and job performance and satisfaction. The causal relationships partially supported by the analytical techniques are recommended for further research, in order to confirm their relationship.

Third, longitudinal case studies are recommended to cross-validate the results established in this cross-sectional study, since lateral studies can only be effective when confounding variables are constrained and controlled. It should be emphasized that the quantitative data analysis undertaken provided the context and support for subsequent qualitative studies. Further research such as case study and qualitative data analyses would be desirable to fortify our understanding on how commitment could influence construction management and in turn impact the whole project's life cycle. Triangulation should, therefore, be employed to provide the necessary 'leverage' to ensure a better understanding and generalization of the causal relationship through exploratory case studies, lateral research and their interaction.

Finally, this study did not evaluate the antecedents of the commitment in construction projects, for instance, goals discrepancy between participants, peers and the organizations; senior/organizational supportiveness; project specific constraints such as project complexity, involvement period and task nature at different development/construction phases and so on. Further studies for investigating the factors affecting the forms of commitment in the construction management are recommended to improve the performance of construction professionals in the industry.

Conclusions

To ensure a high quality construction project to be delivered in challenging environments, a comprehensive study on construction management could provide us with valuable information for enhancing the goal commitment amongst project participants throughout the entire management process. Three forms of commitment have been identified in this paper based on literature in organizational behaviour. AC has the intrinsic characteristics of emotional attachment and involvement in the project, while CC and NC concentrate extrinsically on the 'cost' of leaving the project and the reason (ought) to do the project respec-

tively. Although the consequences of commitment were studied by various researchers in the past, no absolute result has been found in the behavioural paradigm.

The study clearly supports that AC is the main criteria for construction project success (good performance and high satisfaction). Indication shows that professional responsibilities amongst the tasks (i.e. NC) depend passively upon the poor market/economic situation to maintain the construction professionals in the project/organization (i.e. CC), which cannot enhance project performance or increase the participants' satisfaction at the end. Managers of the construction industry need to stimulate and motivate the desirability and obligation of project participants to maintain/increase their AC or NC and to ensure the project will excel.

Acknowledgement

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Notes

1. A criticism to Hong Kong people made by the ex-Premier of the People's Republic of China – Mr. R.J. Zhu (SCMP 9/2001).
2. According to Locke *et al.*, (1981), a goal could be assigned, anticipative or set by the participant(s).
3. Readers are referred to Byrne (1998), Diamantopoulos and Siguaw (2000) and Joreskog and Sorbom (2001) for details of the structural equation model.

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Appendix A

Questionnaire

Investigation of commitment

Instruction: (i) Base on your **SELECTED PROJECT** (see Section A), please circle on a 7-point scale.

Descriptions	Strongly Disagree	Scale					Strongly Agree
c.1 I would be very happy to spend the time more than normal working hours on this project.	1	2	3	4	5	6	7
c.2 I really feel as if this project's problems are my own.	1	2	3	4	5	6	7
c.3 This project has a great deal of personal meaning for me.	1	2	3	4	5	6	7
c.4 I do not feel a strong sense of belongings to my project.	1	2	3	4	5	6	7
c.5 I am not worried about anything if I quit my job without having another one lined up.	1	2	3	4	5	6	7
c.6 Too much in my life would be disrupted if I leave my job at that moment.	1	2	3	4	5	6	7
c.7 It wouldn't be too costly for me to leave the project.	1	2	3	4	5	6	7
c.8 Another project may not match the overall benefits I have in this project.	1	2	3	4	5	6	7
c.9 I think that people these days move from one project to another too often before the completion of the project.	1	2	3	4	5	6	7
c.10 I continue to work for this project because I feel a sense of obligation to stay.	1	2	3	4	5	6	7
c.11 If I get another offer for a better project, I would not feel it was right to leave the entire project.	1	2	3	4	5	6	7
c.12 I do not believe that a person must always be loyal to the project.	1	2	3	4	5	6	7
c.13 I am proud to tell others that I am a member of the construction profession.	1	2	3	4	5	6	7
c.14 I am willing to put greater effort than normally expected in order to make the construction profession successful.	1	2	3	4	5	6	7

Impact of commitment on project outcomes

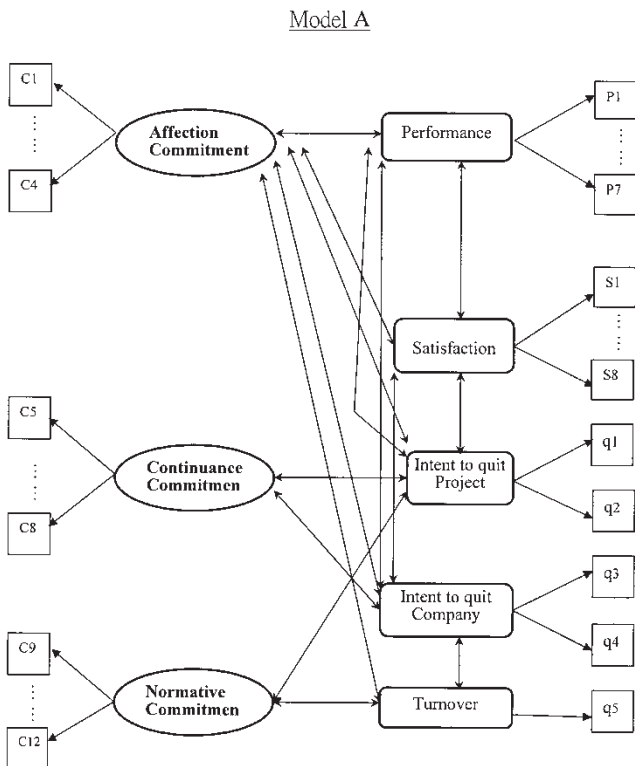
Instruction: Base on your **SELECTED PROJECT** (see Section A), please circle on a 7-point scale.

Job performance	Very poor						Excellent
p.1 Overall performance	1	2	3	4	5	6	7
p.2 Quality of the works	1	2	3	4	5	6	7
p.3 Good use of time & resources	1	2	3	4	5	6	7
p.4 Completion of works within budget	1	2	3	4	5	6	7
p.5 Co-operation with project team	1	2	3	4	5	6	7
p.6 Working attitude	1	2	3	4	5	6	7
p.7 Lateness for and absence from work	Rarely	1	2	3	4	5	Frequently
	Very	1	2	3	4	5	Extremely
Satisfaction	Dissatisfied						Satisfied
s.1 Increment of salary	1	2	3	4	5	6	7
s.2 Promotion	1	2	3	4	5	6	7
s.3 Supervision of seniors	1	2	3	4	5	6	7
s.4 Relations with seniors	1	2	3	4	5	6	7
s.5 Relations with co-workers	1	2	3	4	5	6	7
s.6 Nature of works	1	2	3	4	5	6	7
s.7 Hours of works	1	2	3	4	5	6	7
s.8 Recognition by peers and my company	1	2	3	4	5	6	7
Turnover	Strongly Disagree						Strongly Agree
q.1 I think a lot about leaving the project.	1	2	3	4	5	6	7
q.2 I am searching actively for an alternative project.	1	2	3	4	5	6	7
q.3 I think a lot about leaving the company*.	1	2	3	4	5	6	7
q.4 I am searching actively for an alternative company.	1	2	3	4	5	6	7
q.5 I have already left the company*.	<input type="checkbox"/> Yes						<input type="checkbox"/> No

*'company' is the one that you have worked/are working in while undertaking the selected project

Appendix B1

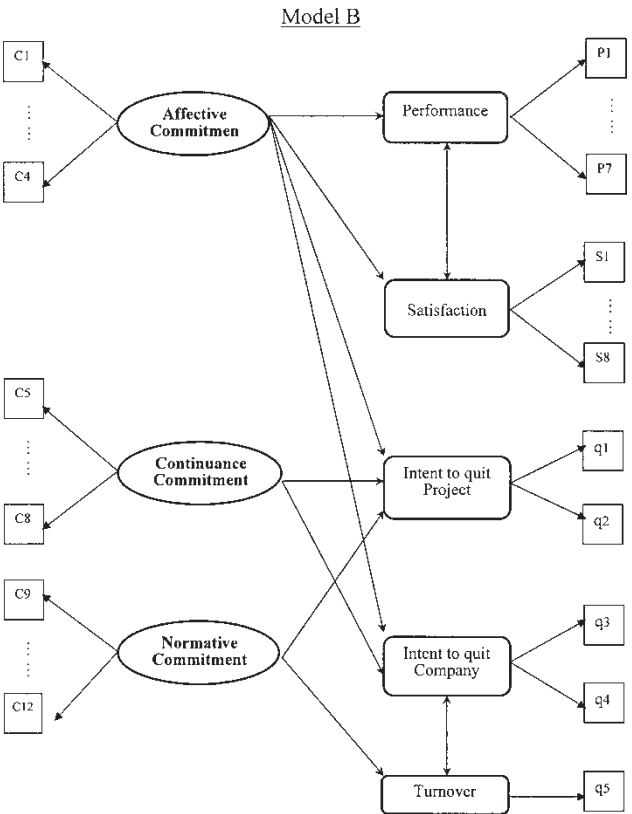
A full structural equation model (Model A)



Note: Error terms are excluded from the figure for clarity.
The items (c1–12, p1–7, s1–8 and q1–5) are used to measure the latent factors (see App. A);
→ One-way causal relationship; and ↔ Two-way causal relationship.

Appendix B2

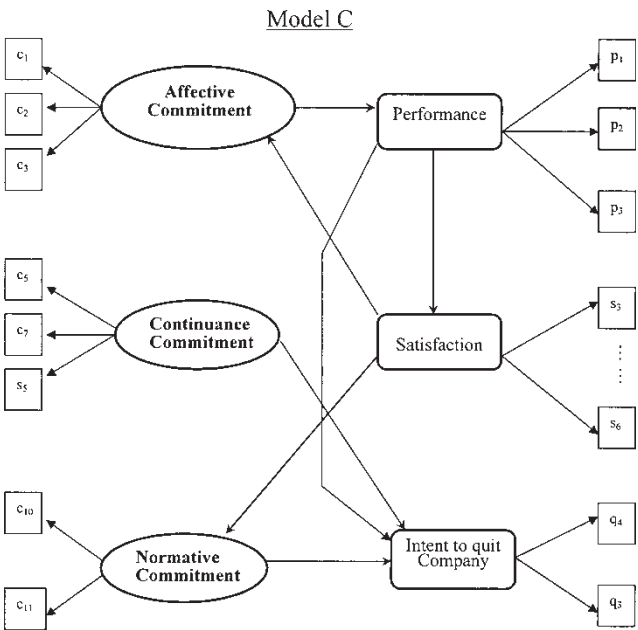
A modified structural equation model (Model B)



Note: Error terms are excluded from the figure for clarity.
The items (c1–12, p1–7, s1–8 and q1–5) are used to measure the latent factors (see App. A);
→ One-way causal relationship; and ↔ Two-way causal relationship.

Appendix B3

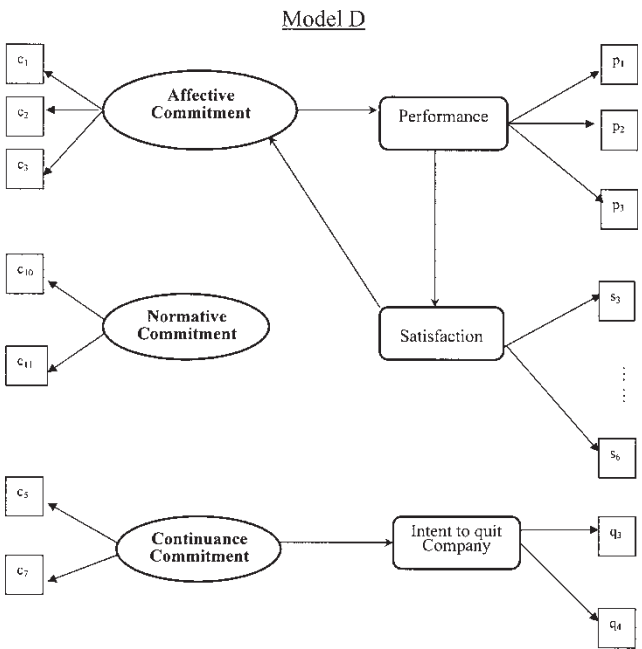
An optimized structural equation model (Model C)



Note: Error terms are excluded from the figure for clarity.
The items (c1–12, p1–7, s1–8 and q1–5) are used to measure the latent factors (see App. A);
→ One-way causal relationship.

Appendix B4

A structural equation model – based on the three analytical techniques (Model D)



Note: Error terms are excluded from the figure for clarity.
The items (c1–12, p1–7, s1–8 and q1–5) are used to measure the latent factors (see App. A);
→ One-way causal relationship.