

EMPOWERMENT AND JOB CHARACTERISTICS OF KNOWLEDGE WORKERS: THE CASE OF HONG KONG CONSTRUCTION INDUSTRY

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In construction industry as in other professional service sectors, knowledge workers have the most impact on the growth and competitive advantage of organizations. Using the case of the Hong Kong construction industry, a survey is carried out with the knowledge workers in the three functional roles of cost, design and construction. The study is to explore the relationship between empowerment and job characteristics in the construction industry. Results generally support that the construction subset, which has more autonomy in their job than design and cost subsets, are more self-empowered than others. The results inform the barriers facing empowerment and suggest that there may be opportunity to improve on job characteristics to better empower knowledge workers in the industry.

Keywords: empowerment, job characteristics, knowledge workers.

INTRODUCTION

In construction industry as in other professional service sectors, knowledge workers have the most impact on the growth and competitive advantage of organizations. Knowledge workers, however, are not easily satisfied with the autocratic job environment or its rigid structure of organizations as in the manual work environment. A general view holds that the more satisfied and committed the knowledge workers to their job, their performance would be better and benefit the organizations (Anumba, Egbu and Carrillo 2009; Tuuli and Rowlinson, 2009b), and this emphasized the importance of empowering knowledge workers in the industry. Construction industry is conventionally known to be labor-intensive, and attention is seldom made to knowledge workers. However, given the industry-specific characters of knowledge-intensive jobs in the construction industry, it remains unknown how job characteristics are related to empowerment and poses effect on people performing different functions.

KNOWLEDGE WORKER

As knowledge becomes increasingly important in the society, workers are more valued for the capability to think, to analyze and to resolve problems (Lawler 2001, Drucker, 2002). The emergence of knowledge workers could be attributed to factors such as technological advances that allow for new ways to collaborate and to

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outsource repetitive works to low-cost countries. These emerging factors suggest that the old management model is incongruous with the knowledge-based workforce, in which close supervision and control do not make knowledge workers more productive as the manual labourers do. In *Thinking for a Living*, Davenport (2005: p.10) defined “knowledge workers” as a class of workers having “high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution, or application of knowledge.” In traditional management, managers oversaw and instructed manual workers what and how to do the jobs. The assumption is that the manager knows the best way to perform in the best interest of the organization. In the management of knowledge workers however, managers not only oversee but also perform the work. Knowledge workers are characterized by their preference to work in autonomy. Although they value their knowledge, they do not share it easily. The performance of a knowledge worker is eventually determined by the work of the individuals’ capability to apply knowledge, not by the quantity of work as in factories (Davenport, 2005: p.111, 189-191).

The construction process includes three primary disciplines of design, cost and construction each comprised of professionals possessing different knowledge and performing different functions. Knowledge management (Anumba *et al.*, 2009; Maqsood, Walker and Finegan, 2005; Egbu 2004; Fong 2003) and information technology (Graham and Thomas 2005) have been studied in advancing the construction industry, but research on human dimensions of knowledge workers had attracted comparatively less attention. Nevertheless, these studies have offered valuable insight of the management of knowledge workers. Mohyin *et al.* (2009) studied commitment of knowledge workers in small construction firms from the employers’ perspective. Their study shows that the interests of companies in the knowledge workers’ commitment are mainly driven by financial incentives and business values, whereas approaches used by employers to improve performance include training, skill development, two-way communications, participative decision-making and empowerment.

EMPOWERMENT

Kanter (1977: 116) defined power as “the ability to get things done, to mobilize resources, to get and use whatever it is that a person needs for the goals he or she is attempting to meet.” She described empowerment as “generating more autonomy, more participation in decisions, and more access to resources increases the total capacity for effective action rather than increases domination.” Several views are held on empowerment. First, management scholars argued that empowerment has a deeper level that must be experienced by the individual psychologically rather than being simply management tactics. Spreitzer (1995) commenced that there are four psychological dimension of empowerment -- meaning, competence, self-determination and impact. “Meaning” refers to the connection between an individual’s work and one’s values, whether one is intrinsically motivated not only to achieve goals but also to exceed expectations (Spreitzer 1995, Thomas and Velthouse, 1990). “Competence” referred to a person’s efficacy on one’s capacity as well as the motivation to develop new skills and knowledge (Spreitzer and Quinn 2001). Self-determination is based on Deci and Ryan’s (1987) self-determination theory that persons who are intrinsically motivated remain engaged in the activity regardless of support. “Impact” refers to an individual’s belief that one could make a positive influence and refusal to withdraw regardless of circumstances (Bandura 2000; Thomas and Velthouse 1990).

Second, researchers in organizational behavior generally held the view that although empowerment could be exercised by external actions, its effect is the “internal motivational process” of an individual (Thomas and Velthouse, 1990: 666) and had similar effect like that of Herzberg’s hygiene factor (Herzberg, 2002). Third, the case of empowerment is supported by intangible consequences rather than direct economic outcome. Empirical research by Spreitzer (1995) found significant relationships between empowerment and managerial effectiveness and innovative behavior. The case of empowerment is that by contributing to positive outcomes such as managerial effectiveness and innovative behavior, two qualities in worker environment in which “formal rules and procedures” are not prescribed. A longitudinal study of the nursing industry by Heather *et al.* (2004) suggested that fostering environment has enduring effect on psychological empowerment and job satisfaction.

Four, questions have been raised as to whether empowerment is relevant in collective society. Kirkman and Shapiro’s (2001) comparative study of self-managing teams in Belgium, Finland, Philippines, and the United States found that teams in higher-collectivism are more empowered, and teams that are more inclined to do the work are more empowered. Chiang and Jang’s (2007) study of hotel workers in Taiwan supported the high relevance of empowerment to Asian workers and that leadership, trust and organizational culture are antecedent positive to empowerment.

Empowerment research in the construction industry also showed compatible findings. The empirical study of Tuuli and Rowlinson (2009a) of management-level staff in Hong Kong construction industry showed that empowerment is positively associated with performance and there existed a psychological moderating effect. Another study by Tuuli and Rowlinson (2009b) indicated that empowering climate was accounted for empowerment at both individual level and team level, and the empowering work climate could be through the access to information, support, resources and opportunity, and formal and informal access to the sources to power (Kanter, 1977).

JOB CHARACTERISTICS

Empowerment has been examined in different forms including leader-member exchange (Chen *et al.*, 2007), interpersonal relationships (Linden, Wayne and Sparrowe 2000), motivational process (Huang, Iun, Liu and Gong 2009) and team-based human resources policy (Kirkman and Rosen 1998). Among the wide range of possibility, the model of job characteristics is proposed as a structural approach to empowerment (Kanter 1977: 255-257; Spreitzer 1995). Hackman and Oldham’s (1980) theory job design refers to the structuring of work via addressing the “reasonably objective, measurable, changeable properties of work.” Five job characteristics are identified: skill variety, task identity and task significance, autonomy and feedback on the job, which contribute to three psychological

states: experienced meaningfulness, experienced responsibility for outcome, and knowledge of the actual result of the work. These three psychological states, in turn, aggregate to the outcome of high internal work motivation. However, individuals may differ in their growth need to challenging jobs (Hackman and Lawler 1971: 31; Hackman and Oldham 1976 and 1980). “Growth need strength” refers to individual aspiration for personal accomplishment and development beyond status quo. It is suggested that workers with low competence and low growth need may not be ready for challenging jobs not only because of the lack of skills but also for the reason for avoiding failure, or remaining status quo. These personal differences are generally

contradictory to the concept of competence, high growth need, and dissatisfaction with status quo characterized by knowledge workers (Davenport 2005).

Spreitzer (1995) articulated that although empowerment and job characteristics are often implicitly linked, there are differences. First, empowerment dimensions are measured from viewpoint of the individual whereas job characteristics address the job and individual differences (Hackman and Oldham 1980). Second, empowerment assumed that the individual has an "inner voice" in the larger organizational context. Lawler and Hall (1970) identified that professionals in high-profiled research institutes are motivated by challenges and spend less time on administrative works than counterparts in lower profiled institutes. Other researchers have examined the association between empowerment and job characteristics. Kraimer, Seibert and Liden (1999) studied job characteristics as objective factors and the effect on psychological empowerment of psychological states. Results indicated that meaningfulness and job autonomy in job characteristics are consistent with the meaning and self-determination dimensions of empowerment. Task feedback is related to competence and impact. Linden, Wayne and Sparrowe (2000) had examined mediating effects of empowerment, job characteristics, leader-member and team-member exchanges in a field study. They found that two of the empowerment dimensions, meaning and competence, mediated job characteristics and work satisfaction.

METHODOLOGY

Questionnaire Survey Design

The questionnaire survey is designed in reference to the "Survey Research Method" by Fowler (1993) and "Scale Development" by DeVellis (2003). In attempting to measure the psychological state, the survey questions are not intended to involve sensitive subjects or confidential materials (Fowler 1993). Item difficulty is designed to be understandable by respondents in the construction industry. As respondents were expected to express 'opinions' how they feel about their job, their reply remained anonymous throughout the questionnaire and they had the voluntary options of entering email address via responding with hard copy of the questionnaire.

The survey comprises twelve ordinal scale and fifty-three Likert-scale type of questions. The ordinal questions collect factual data of subjects work environment, such as project collaborators and how to be held accountable on the job. The scales are seven-point, "agree-disagree" scales in declarative sentences measuring subjective perception. Responses are measured from "strongly disagree" to "strongly agree", with "neutral" as mid-point response. Of the 53 scales, twelve items referenced Spreitzer's scales on empowerment and seven items referenced Hackman and Oldham's Job Diagnostic Survey. The remaining 34 scales are developed in this research for conditions in the construction industry. The following explains the design and development of the scales:

Empowerment - Empowerment is measured using Spreitzer's twelve-item Psychological Empowerment Instruments (1995). Three items each measure one of the four empowerment dimensions, competence, meaning, self-determination and impact.

Job Characteristics - Seven items were taken from Hackman and Oldham's (1980) job diagnostic survey measuring psychological states in the job characteristics model. An example is "I have considerable opportunity for independence and freedom in how I

do my job. Two of the seven items measure internal motivation, two items measure growth need strength and three items measure affective outcome.

Skill Variety - Although members in a project are generally clear about their job functions as dictated by the definitions of cost, design, construction, individuals' tasks could vary. For instance in the design function, an architect's or engineer's daily tasks may be about statutory applications or team coordination rather than design. Similarly in the cost function, a more experienced surveyor may spend more time on client-facing activities. General administration such as coordination may be delegated to less-experienced surveyors.

Task Identity - Questions are based on the subjects' participation through project phases. The three functions alternate through project stages. One may or may not be fully immersed in a project from inception to completion.

Task Significance - Each of the three functions is significant in project delivery in complementing tasks, but task significance may not be reflected at the individual level. Task significance may be defined by external factors such as one's role in a team or the project. For instance, in the cost function, it could be inferred that as economic gatekeeper of construction project, the surveyor has a significant role in terms of task significance. However, at individual level, task significance of individual surveyor is subject to project objective or client's expectation.

Autonomy - The knowledge worker's autonomy in inter-team and intra-team environment may differ. The individual may be responsible for passing around information or decision already made, but does not have autonomy in decision-making. Positions may inherently require job incumbents to make decision or to utilize high-level skills, allowing for autonomy to form opinion or to initiate actions (Kanter 1985: 259). Given the multi-party work environment in construction industry, conflict of interest is common and individuals must make sound judgment in balancing transparency and confidentiality (Fewings 2009: 26).

Job Feedback - Feedback in job characteristics refers to one's perception of achieving or failing the tasks by actually doing it. The feedback is generated from the worker himself and therefore differs from the official channels such as company procedure and agents. In an organizational context, official channels for feedback include annual appraisal or human resources procedures. Feedback via agents may be from supervisors, colleagues, consultants or other specialist collaborators. Two ordinal questions asked if there is alignment of the subject's collaborators and the entity providing feedback, as the agents providing feedback may or may not be the same as the one works with.

Context Satisfaction - Three scales measure context satisfaction. The first scale asked about satisfaction about financial reward. Although intrinsically motivated workers are motivated by financial reward only to a certain extent (Deci and Ryan 1987; Herzberg 2002), workers are less likely to deviate from standards or take initiatives when they are unsecured about their job (Spreitzer and Quinn 2001: 111- 119). Second scale measures whether individuals have sufficient resources and information at work; the third scale measures whether the individuals contribute to an empowering environment. Kanter (1985: 159) proposed that there are three power tools in knowledge-based workplace: information, including data, technical knowledge, expertise and political knowledge; support, including endorsement, backing, and legitimacy; and resource, including fund, material, time and space.

Growth Need Strength - "Growth need strength" refers to individual aspiration for personal accomplishment and for developing oneself beyond status quo. Four subscales measure the subject's perception of identities at four levels – work unit, team membership, legal, and ethical. As knowledge workers, subjects were presumed to have basic competence for employment in the industry. However it is questionable if the individuals were committed to continual improvement over career.

Data collection and analysis

Data collections were conducted in multi-state, involving professional societies, alumni networks and individual contact. As a typical knowledge worker draws previous experience as an individual (Fruchter and Demian, 2005), only subjects with work experience are invited to participate in this research. Both paper survey and electronic survey are used for data collection. Data were analyzed in two stages with statistical methods. First stage examined cross-group comparison of empowerment profile. Second stage examined cross-group comparison of job characteristics.

Empowerment

Table 1 summarizes first stage of analysis on empowerment. Empowerment profiles of the three knowledge workers subsets were studied in absolute scores, percentile ranking in ANOVA using SPSS. The percentile ranks were drawn from Spreitzer and Quinn's (2007) empowerment percentile scores aggregated in respect of the twelve-item scale. Table 1 presents empowerment scores of the overall dataset with means and percentiles. When the data were compared in absolute scores, overall empowerment scores of the dataset is 4.86 on the 7-point Likert scales. In the external dimensions, mean scores are 5.17 on meaning and 5.44 on competence; in the internal dimensions, mean scores are 4.90 on self-determination and 3.63 on impact. Compared to Spreitzer and Quinn's ranking (2007), the overall empowerment score at 4.86 only put the sampling of knowledge workers in the Hong Kong construction industry at 35 percentile. For the subgroups' empowerment score and percentile ranking, cost subgroup score 4.60 and ranks at 15 percentile; the design subgroup scored 4.80 and ranked at 20 percentile; the construction subgroup scored 5.06 and ranked at 30 percentile. Finally, ANOVA results ($p < .05$, $df = 2$) show statistically significance cross-group difference on a scale on impact, "The work I do is meaningful to me." The scale measures impact in "Psychological Empowerment Instrument" and originates from task significant measurement in Hackman and Oldham's (1980) "Job Diagnostic Survey."

Table 1: Empowerment Profile – Professionals in HK Construction Industry

	Meaning		Competence		Self-determine		Impact		Empowerment	
	X	%	x	%	x	%	X	%	X	%
Overall	5.01	25	5.20	25	4.90	30	4.15	35	4.86	20
Cost	4.69	15	5.12	25	4.69	20	3.91	30	4.60	15
Design	5.23	25	5.00	20	4.65	15	4.33	35	4.80	20
Construction	5.12	25	5.53	40	5.35	45	4.22	35	5.06	30

Job Characteristics

In the second stage of analysis, the three subgroups are compared on their job characteristics scores in ANOVA again using SPSS. Comparison results indicated statistical differences among the subsets in three of the seven items on psychological states. The differentiated items include two on affective outcome and one on internal motivation (Table 2). Scores of the construction subset is highest in all three items. Descriptive data from the nominal questions on motivation, decision-making power,

significance and feedback agency are investigated. Frequency data on motivating factors showed that personal interest ranks as the highest-frequency motivation factors in both design subset and construction subset. However, the two subsets differ on the second highest frequent motivation. The design subset indicated self-fulfillment in the design subset whereas the construction subset chose just-a-job. For the cost subset, just-a-job and money are the two highest frequency motivating factors. For actual power on decision-making (Mills and Ungson, 2003), two scales ask whether the workers have legitimate decision-making power in intra- and inter-team conditions. All three groups responded the flow of information more necessary inter-group than in intra-group context. The construction subset has relatively higher decision-making power in both inter- and intra-team settings ($x_{inter} = 4.86$, $x_{intra} = 4.83$). The design subset reported higher dependence on information from both inside and outside parties ($x_{inter} = 5.19$, $x_{intra} = 5.00$). Although ANOVA results indicated that the differences are not of statistical significance, the mean scores of the design subset are higher than those of the construction subset ($x_{inter} = 5.03$, $x_{intra} = 4.67$) and the cost subset ($x_{inter} = 5.15$, $x_{intra} = 4.65$).

Table 2: ANOVA Results of Psychological States and Empowerment ($\alpha = .05$, $df = 2$)

Scale	F	Sig.	Cost	Design	Construction
Internal motivation	3.70	.027	4.69	4.98	5.43
Affective outcome 1	4.13	.018	4.08	3.76	4.65
Affective outcome 2	3.35	.038	4.76	5.41	5.14

DISCUSSION

Knowledge workers in the three functions each serve distinctive purpose in the construction industry: subjects in the cost subset are to serve as economic gatekeepers of construction projects; subjects of the design function are to provide the vision and to determine systems of projects; and subjects in the construction subset are responsible for realizing the construction projects. Scores in the three functions are consistent with the general findings that subjects score higher competence but lower in impact. Spreitzer and Quinn (2001) suggested this difference in dimensional score indicated that subjects are mostly comfortable with their skills and knowledge but do not make use of skills for larger organizational goal. In the workplace, it is safer to follow command-and-control instead of taking initiatives. The comfort is that without actually making decision, one could avoid accountability and being blames when effort failed. The workers generally could have developed competence from doing the same thing in the same context but not stretching themselves to learn new skills or putting themselves in an unfamiliar and uncomfortable situation (Spreitzer and Quinn 2001). Competence is a prerequisite for one's professional identity in the construction industry (AIA 2007; RICS 2005). Therefore, the competence score should be interpreted as meeting minimal requirement of a knowledge worker rather than having special achievement.

Hackman and Oldham (1980) were explicit that job design is based on assumptions that workers are generally satisfied with the work environment and have sufficient skills. The job characteristics model presumes that workers are relatively satisfied with their hygiene factors, including pay, security, and coworkers relationship. Similarly, Thomas and Velthouse (1990) had also proved that empowerment needed to take place in an empowering context. Results of this study showed that knowledge workers in the local construction industry may not be satisfied with hygiene factors (Hertzberg 2002), which ranges from financial reward to resources to complete tasks

(e.g. Information flow). Fundamental concerns of knowledge workers may need to be addressed at organizational level. This may be the reasons echoed in the findings of the empirical research by Yip and Rowlinson (2006) which had found high rate of severe stress, burn out, role ambiguity, low promotional opportunity and overloading in the construction knowledge workers.

LIMITATION

This research on empowerment and job characteristics models in the context of construction industry is nonetheless imperfect. There are at least three areas of limitations. First, our research was based on three primary job functions in the Hong Kong construction industry. By generalizing the class of professionals we examined in the survey, we have not been specific enough about other factors such as organization, projects type, or intra-team relation. Second, measurements of the knowledge workers are conducted at individual level. Studies of specific class of knowledge workers are not distinguished in the study, for example, engineers responsible for project management but not design. Third, the empowering context for knowledge workers have not been addressed or considered in the study.

CONCLUSIONS

This study suggests that knowledge workers in the construction industry are relatively low in both empowerment and job characteristics. There is a general lack of autonomy and self-determination and the issue is at both individual and organizational levels. Although part of the issues may be cultural, there exists also psychological barrier in the human sector. The findings also inform that knowledge workers of the construction function are relatively better empowered than those of the design and the cost functions. Regardless of the job functions, more effort is required to enhance job characteristics to better empower knowledge workers in the industry. Nevertheless, future studies are necessary to investigate further whether the industry provides a sufficiently empowering context for its knowledge workers.

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