



# Employee empowerment in a technology advanced work environment

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## Abstract

**Purpose** – The purpose of this paper is to elicit the determinants of information technology (IT) professional work change and investigates the impact of such changes on IT professionals. Specifically, this paper investigates the effect of work redesign on two personal outcomes: self-perceived psychological empowerment and organizational commitment.

**Design/methodology/approach** – An empirical study is conducted in the field of high-tech industrial organizations in Taiwan. Data collected from 40 technological companies, located in the Taipei and Hsinchu Science Parks ( $n = 428$ ), are analyzed using structural equation modeling.

**Findings** – The results confirm that both work redesign and empowerment generate positive and direct influence on employees' commitment. Specially, the effect of work redesign is amplified on employee commitment through the implementation of employee empowerment.

**Practical implications** – The conceptual structural equation model provides useful information for managers to improve employees' commitment towards their work and the organizations through the proper employee empowerment policies.

**Originality/value** – As technology continues to change at a rapid pace, IT professionals are required to adapt to new tasks and enhanced roles. The paper demonstrates how work redesign indirectly but positively influences employees' work commitment and illustrates the mediate effect of employee empowerment on employee commitment.

**Keywords** Empowerment, Employee attitudes, Organizational change, Communication technologies, Taiwan

**Paper type** Research paper

## 1. Introduction

Employees' organizational commitment is considered a critical factor which influences the employees' behavior of bringing positive benefits to an organization. Jaworski and



Kohli (1993) pointed out that committed employees tend to be more willing to make personal sacrifices for their organizations. In addition, highly committed employees are more likely to relate themselves with the goals and values of the organization. These employees oftentimes devote extra time to work and are proud of being members of the organization. However, given increasing work redesign issues in responding to external as well as internal business environments, many organizations have tried to maintain job effectiveness and efficiency by empowering employees in order to foster more committed workers to overcome problems such as complex job features, demanding customer needs, diverse work groups, flatter organizational structures, and so on. However, employees' commitment oftentimes is sabotaged by downsizing, a business practice aimed at reducing overhead expenses with the goal of enhancing performance (Orr *et al.*, 1999; McClure, 2007).

Studies have yielded evidence which promotes downsizing as a means to trigger business re-innovation (Cameron *et al.*, 2004; Chadwick *et al.*, 2004; Yu and Park, 2006), however, there are scholars who suggested that downsizing has not produced anticipated improvements (McClure, 2007) or decreased employees' loyalty or commitment toward the organizations (Niehoff *et al.*, 2001). Thus, how to sustain employees' commitment toward organizations becomes a question which must be answered for companies that go through an organizational change process.

Blohowiak (1996) suggested that downsized organizations must seek structural integrity in its new form by: providing clear rules of employment, aligning organizational vision, goals, values and structure, and involving people who are willing to adapt to a changing world, as well as managers who lead with integrity and provide support. More specifically, Evan *et al.* (2002) identified both the participation and the acceptances of employees are critical in a change process. As Dafe (2001) pointed out, employee participation and involvement in the change intervention is one of the ways to prevent resistance to change. Niehoff *et al.* (2001) found that employee empowerment and job enrichment have a direct and positive effect on loyalty. Moreover, Mishra and Spreitzer (1998) discovered both empowerment and work redesign have direct and positive influence on work attitudes.

Job redesign, also called job design change, is considered a research area on increasing in the perceived meaningfulness of work for the employees, with the focal point on increasing organizational effectiveness (Varoglu and Eser, 2006). In fact, job redesign may enhance the intrinsic quality of the employees' work (Brockner *et al.*, 1992) and help employees to feel more able to cope with organizational changes, thus, increase the likelihood of more active responses. As technology continuous to change at a rapid pace, it has been a current trend of incorporating technologies into work places (Li and Tsai, 2009; Shamsuzzoha *et al.*, 2009). Consequently, information technology (IT) professionals are required to adapt to new tasks and enhanced roles (Aasheim *et al.*, 2009; Prasarnphanich and Wagner, 2009). These continuous adaptations lead to alternations in their work design, which is characterized by the internalization of changing job tasks, including skill variety, task identify, task significance, autonomy, and feedback from the job itself. In this study, the author looks at the determinants of IT professional work change and investigates the impact of such changes on IT professionals. Specifically, this study investigates the effect of work redesign on two personal outcomes: self-perceived psychological empowerment and

organizational commitment. The research model is shown in Figure 1. A structural equation modeling approach is thus employed to test this model.

2. Literature review

This section reviews the literature to identify the relevant practices comprising work redesign, empowerment, and organizational commitment.

2.1 Work redesign

Many theorists and researchers have contended the way to increase employee satisfaction and performance is to enrich the employee’s job (Hackman and Lawler, 1971; Hackman and Oldham, 1980). One of the most recognized models for this work redesign and enhancement approach is the job characteristics model (Hackman and Oldham, 1976). The main objective of the majority of the job characteristics research has been to understand the manner in which workers respond to a set of job characteristics present in the environment (Hackman and Lawler, 1971). Much of the research on job design and redesign has been based on the job characteristics model (Hackman and Oldham, 1980). Hackman and Oldham argued that the intrinsic value and motivating potential of a job are based on five core characteristics, namely skill variety, task significance, task identity, autonomy, and feedback. According to the job characteristics model, individuals who have a desire for growth, possess the knowledge and skills to perform a job well, and are relatively happy with the work context are predicted to prosper in a job environment that is high in motivating potential (Kulik *et al.*, 1987). As Lawler and Hall (1969) pointed out, it is generally accepted that the way a job is designed has a substantial impact upon the attitudes, beliefs, and feelings of the employee. Based on the context of the present study, the five components of the job characteristics model are adopted for further analysis.

2.2 Empowerment

The concept of employee empowerment has been historically practiced in a way that restricts individuals from using their innate capacity to achieve their own unique levels of excellence at work, thereby inhibiting the level of individual and organizational effectiveness that could otherwise be achieved (Geisler, 2005; Govindarajulu and Daily, 2004). Fox (1998) defined empowerment as the instilling power in employees and

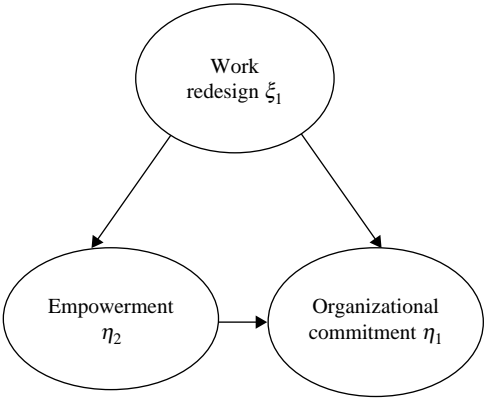


Figure 1.  
Research model for  
structural equation  
modeling analysis

suggested that employee empowerment is historically contemplated as organizations' strengthening employees' sense of feeling of personal power. There has been an increasing interest in the concept of empowerment among both organizational theorists and practitioners (Conger and Kanungo, 1988). Findings have consistently suggested empowering subordinates may serve objectives linked to managerial and organizational effectiveness (Bennis and Nanus, 1985). Thus, empowering is considered a way to encourage and increase decision making at lower levels of an organization, which consequently enriches employees' work experience (Liden *et al.*, 2000). In addition, Conger and Kanungo (1988) viewed empowerment as a motivational construct, and perceived empowerment as an enabling rather than a delegating process. Thomas and Velthouse (1990) suggested that empowerment is a multidimensional construct, in which empowerment is defined as an increased intrinsic motivation manifested in four cognitions that reflect an individual's orientation to his or her work role, including meaning, competence, choice, and impact. However, Spreitzer (1995) pointed out the absence of a theoretically driven measure of psychological empowerment in a work environment. Spreitzer has further identified psychological empowerment as a motivational construct which is manifested in four cognitions, namely meaning, competence, self-determination, and impact. The present study adopts the four components of Spreitzer's psychological empowerment in the research model.

### *2.3 Organizational commitment*

Organizational commitment is commonly defined as employees' interest in, and connection to, an organization (Hunt *et al.*, 1989; Meyer and Allen, 1997). Employees who are committed to their firms tend to identify with the objectives and goals of their organization (Hunt *et al.*, 1989; Buchanan, 1974; Hrebiniak and Alutto, 1972). Allen and Meyer (1990) defined organizational commitment as psychological state that binds the individual to the organization (i.e. makes turnover less likely). Thus, organizational commitment is important since committed employees tend to be more willing to make personal sacrifices for their organizations (Jaworski and Kohli, 1993). Numerous studies have demonstrated that organizational commitment predicts important variables, including absenteeism, organizational citizenship, performance, and turnover (Farrell and Stamm, 1988; Mathieu and Zajac, 1990; Morrow, 1993; Wright and Bonett, 2002). Organizational commitment has been related inversely to both intent to search for job alternatives and intent to leave the job (Colbert and Kwon, 2000; Quarles, 1994). In addition, organizational commitment has been related to more positive organizational outcomes, including job satisfaction (Tsai and Huang, 2008), attendance motivation (Breedijk *et al.*, 2005). Based on a comprehensive understanding of organizational commitment, Meyer and Allen made an important contribution in proposing the three components model of organizational commitment, which has provided the dominant framework for organizational commitment research in the past decade (Tsai and Huang, 2008). The three component model comprises affective commitment, continuance commitment, and normative commitment (Meyer and Allen, 1991), which are used in the present study to measure organizational commitment of IT professionals.

## **3. Theoretical foundation for hypotheses development**

The relevant hypotheses of the model and questionnaire design are presented below.

### *3.1 The relationships between work redesign and empowerment*

Griffin (1991) examined the long-term effects of work redesign on a number of perceptual, attitudinal, and behavioral variables, and found that employees' perception of work change has positive influences on work attitudes and behavior. Casner-Lotto (2000) pointed out that work redesign should be characterized by strong employee involvement in changing the way work is done, and suggested that work redesign has increased employees' satisfaction and empowerment. Existing studies have identified employment empowerment in relation to organizational work redesign (Mishra and Spreitzer, 1998), to employees' adjustment to new jobs (Vardi, 2000), or to the trust in the work environment (Riemenschneider *et al.*, 2009). Moreover, Hyde (1991) identified that employee empowerment is one of the key factors that determine successful quality efforts and process. However, the process must be supported by adequate measurement system and work redesign. In accordance with the studies presented above, this study proposes the following hypothesis:

*H1. Work redesign positively influences empowerment.*

### *3.2 The relationship between work redesign and organizational commitment*

Griffin (1982, 1991) studied the effects of work redesign on employee perception, attitude and behaviors and found there is a positive and desired association between work redesign and attitude (i.e. job satisfaction and commitment), and increased productivity. Schneider (2003) examined the relationship between job characteristics, organizational commitment, and job satisfaction and discovered that there is a significant correlation between job characteristics and organizational commitment. In studying the implementation of an innovative cooperative effort which involves employees in the day-to-day decision-making process at work, Fields and Thacker (1992) discovered such work change has increased the employees' loyalty to the firm and responsibility toward job tasks. Furthermore, Fiorelli and Feller (1994) claimed that the key to lasting organizational change is for organizational systems designers to build a framework for large systems redesign and gain the commitment of employees to the redesign process. Thus, we hypothesize that:

*H2. Work redesign positively influences organizational commitment.*

### *3.3 The relationship between empowerment and organizational commitment*

Employee commitment continues to be one of the most exciting issues for both practitioners and academicians. Bhatnagar (2007) pointed out that there is a linkage between organizational commitment and strategic human resource (HR) roles, psychological empowerment as well as organizational learning capability. Huang *et al.* (2006) found that participative leadership behavior can produce psychological empowerment, which in turn, leads to organizational commitment for employees of Chinese state-owned enterprises. In fact, existing literature demonstrates the effect of psychological empowerment on employees' organizational commitment (Avolio *et al.*, 2004; Zhu *et al.*, 2004; Alsua, 2002; Knoop, 1995). In particularly, after a survey of 515 employees working in not-for-profit and public sector organizations, Lane (1998) concluded that psychological empowerment is showed to play a central mediating role in the development of organizational commitment. Wiley (1999) also established a statistically significant relationship among lotus of control, psychological

empowerment, and organizational empowerment and organizational commitment. The third hypothesis, therefore, is defined as follows:

H3. Empowerment positively influences organizational commitment.

## 4. Method

### 4.1 Questionnaire design

The questionnaire is composed of four parts including: work redesign, empowerment, organizational commitment, and personal background (i.e. gender and age). The questions were answered using a five-point Likert scale. Detailed definitions of the dimensions are described in the following sections.

*I. Work redesign.* The study adopted one of the job characteristics model, proposed by Hackman and Oldham (1976) since many related studies on job design and redesign have been based on this model. The job characteristics model provided measures of the five core dimensions, which are defined as follows:

- (1) *Skill variety*: refers to the degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the employee.
- (2) *Task identity*: refers to the degree to which the job requires completion of a “whole” and identifiable piece of work. For example, doing a job from beginning to end with a visible outcome.
- (3) *Task significance*: refers to the degree to which the job has a substantial impact on the lives or work of other people, including in the immediate organization or in the external environment.
- (4) *Autonomy*: refers to the degree to which the job provides substantial freedom, independence, and discretion of the employee in scheduling the work and in determining the procedure to be used in carrying it out.
- (5) *Feedback from the job itself*: refers to the degree to which carrying out the work activities required by the job results in the employee obtaining direct and clear information about the effectiveness of his or her performance.

*II. Empowerment.* The present study adopted Spreitzer’s (1995) psychological empowerment as a motivational construct which comprises four cognition, namely meaning, competence, self-determination, and impact:

- (1) *Meaning*: refers to the degree to which the employee has a sense of purposes or personal connection about work.
- (2) *Competence*: refers to the degree to which the employee believes that he or she has the skills and abilities necessary to perform their work well.
- (3) *Self-determination*: refers to the degree to which the employee has a sense of freedom about how individuals do their own work.
- (4) *Impact*: refers to the degree to which the employee believes that he or she can influence the organizational system in which they are embedded.

*III. Organizational commitment.* Based on Meyer and Allen’s (1991) three components model of organizational commitment model, three major constructs were considered, namely affective commitment, continuance commitment, and normative commitment:



- (1) *Affective commitment*: refers to the degree to which the employee's emotional attachment to, identification with, and involvement in the organization.
- (2) *Continuance commitment*: refers to the degree to which the employee feels attached to the organization based on the accumulation of values side bets such as pension, skill transferability, relocation, and self-investment that co-vary with organizational membership.
- (3) *Normative commitment*: refers to the degree to which the employee feels obligated to continue his or her employment based on motivation to conform to social norms regarding attachment with the organization.

4.2 Sampling

The data used in this research consists of questionnaire responses from participants in 40 technological companies which are located in the Taipei and Hsinchu Science Parks in Taiwan. The criteria for company selection were:

- the company must be information technological company;
- the member of company must exceed 300 employees;
- the company must recently experienced organizational restructuring or downsizing which caused work redesign; and
- the company has promoted employee involvement in the decision-making process.

There are 40 technological companies which were qualified and willing to participate in the study. Each company received 20 questionnaires to answer. A total of 800 survey forms were circulated through the HR department at each company. The purpose of the study was clearly communicated with the directors of these HR departments. They then selected fit participants to answer the questionnaires. However, the return of completed surveys was not mandatory. A total of 467 surveys were returned and 428 were valid for analysis (valid return rate is 53.5 percent). Table I presents the demographic of the sample. Non-response analysis was conducted to ensure the absence of non-response biases. Following Armstrong and Overton's (1977) suggestion, this study divided the valid questionnaires into two sets (i.e. the former 75 percent and the latter 25 percent) based on the returned times, and examined whether there was significant differences between the two sets of data. According to Armstrong and Overton, the responses of the latter 25 percent participants are closed to the responses of the non respondents. The results show that there is no difference between respondents and non-respondents. Table II shows the description statistics for the dimensions.

Construct	Classification	Number	Percentage
Gender	Male	173	40.400
	Female	255	59.600
Age	< 30	63	14.720
	31-40	112	26.168
	41-50	226	52.804
	> 50	27	6.308

Table I.  
Sample characteristics

### 4.3 Reliability and validity tests

Reliability and validity tests were then conducted for each of the constructs with multivariate measures. Cronbach  $\alpha$  reliability estimates were used to measure the internal consistency of these multivariate scales (Nunnally, 1978). In this study, the Cronbach  $\alpha$  of each constructs was greater than 0.927, which indicates a strong reliability for our survey instrument (Cuieford, 1965). In addition, measures with item-to-total correlations larger than 0.6 are considered to have high-criterion validity (Kerlinger, 1999). Since the item-to-total correlations of each measures was at least 0.676 (Table III), the criterion validity of each scale in this study is considered to be satisfactory. Meanwhile, to ensure that the instrument has reasonable construct validity, both exploratory and confirmatory factor analyses were used. The result of exploratory factor analysis is presented in Table III.

The confirmative factor analysis which consists of the convergent and discriminant validity was analyzed following Campbell and Fiske's (1959) criteria. The results show that the correlations are all greater than zero and large enough to proceed with discriminant validity. Furthermore, discriminant validity was examined by counting the number of times an item correlates higher with items from other factors than with items from its own factor (Aldawani and Palvai, 2002). Campbell and Fiske suggest that this number should be less than 50 percent. Results also show adequate discriminant validity. Jointly, the constructs in this study exhibit both convergent and discriminant validity.

Dimension	Number of items per dimension	Mean	SD	Order	Cronbach's $\alpha$
Work redesign	23	3.413	0.579	3	0.953
Empowerment	15	3.538	0.484	1	0.942
Organizational commitment	11	3.514	0.497	2	0.927

**Table II.**  
Survey structure and  
description statistics for  
dimension

Dimension	Factor	Percentage of variance	Cumulative (%)	Item-to-total correlations	Cronbach's $\alpha$
Work redesign	Skill variety	7.070		0.676	0.886
	Task identify	4.830		0.764	0.939
	Task significance	49.586		0.680	0.906
	Autonomy	6.035		0.678	0.862
	Feedback from the job itself	7.884	75.406	0.725	0.903
Empowerment	Meaning	55.622		0.815	0.935
	Competence	8.547		0.735	0.900
	Self-determination	9.849		0.803	0.920
	Impact	6.801	80.819	0.746	0.882
	Affective commitment	9.383		0.668	0.850
Organizational commitment	Continuance commitment	12.336		0.701	0.891
	Normative commitment	57.944	79.663	0.830	0.940

**Table III.**  
Factor analysis and  
internal consistency  
values for the  
questionnaire



5. Analysis and result

The structural equation modeling approach was applied to test the proposed model and hypotheses. The structural equation modeling approach is a multivariate statistical technique for testing structural theory (Tan, 2001). This approach incorporates both observed and latent variables. The analysis for the present study was conducted using LISREL 8.52 and utilizing the maximum-likelihood method. In the proposed model (Figure 1), work redesign is considered exogenous variables, and organizational commitment is considered an endogenous variable. Employee empowerment serves as both an endogenous variable (to work redesign) and exogenous variable (to organizational commitment). The individual questionnaire items were aggregated into specific factor groups. The following four rules were utilized for the hypotheses' structure:

- (1) each observed variable has a nonzero loading on the latent factor within the structure, but have a loading of zero towards other latent factors;
- (2) no relationship among measurement errors for observed variables;
- (3) no relationship among the residuals of latent factors; and
- (4) no relationship among residuals and measurement errors.

The reliability results are illustrated in Table IV.

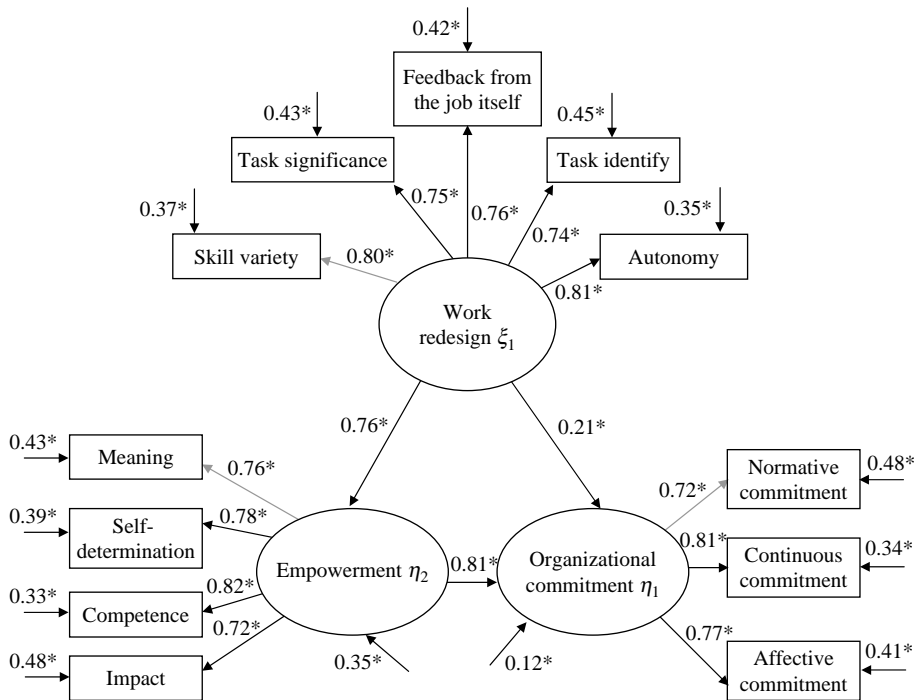
Additionally, the analytical results of the LISREL model reveal a satisfactory fit for our sample data. The final result of LISREL analysis is shown in Figure 2.

The final SEM model analysis is shown in Figure 2. The absolute fit measures (goodness of fit index (GFI) = 0.99, adjusted goodness of fit index (AGFI) = 0.98, and root mean square error of approximation (RMSEA) = 0.046) indicates that the structural model either meets or exceeds recommended levels, and thus represents a satisfactory fit for the sample data collected. The  $\chi^2$ -statistic divided by the degrees of freedom also indicates a reasonable fit at 1.89. It can be concluded that the proposed model maintains good construct validity (see Table V for the statistics of the fit test of the model).

Based on Figure 2, all three hypothesized relationships (*H1-H3*) show statistical significance (Table VI).

Dimensions	Factors	Observed indicator reliability
Work redesign	Skill variety	0.63
	Task identify	0.55
	Task significance	0.57
	Autonomy	0.65
	Feedback from the job itself	0.58
Empowerment	Meaning	0.57
	Competence	0.67
	Self-determination	0.61
	Impact	0.52
Organizational commitment	Affective commitment	0.59
	Continuance commitment	0.66
	Normative commitment	0.52

**Table IV.**  
Observed indicator  
reliability of factors



**Figure 2.**  
Results of theoretical  
model analysis

Measures	Indicators
Absolute fit measures	$\chi^2$ with 51 degrees of freedom = 96.52 ( $P = 0.00$ ) GFI = 0.99 RMSEA = 0.046 $P$ -value for test of close fit (RMSEA < 0.05) = 0.68 Expected cross-validation index (ECVI) = 0.35 90 percent confidence interval for ECVI = (0.30; 0.43) ECVI for saturated model = 0.37 ECVI for independence model = 3.78 AGFI = 0.98
Incremental fit measures	Normed fit index (NFI) = 0.94 Non-normed fit index (NNFI) = 0.96 Comparative fit index (CFI) = 0.97 Incremental fit index (IFI) = 0.97 Relative fit index (RFI) = 0.92
Parsimonious fit measures	Parsimony normed fit index (PNFI) = 0.73 Parsimony goodness of fit index (PGFI) = 0.64 Critical $N$ (CN) = 343.37 Normed $\chi^2$ 96.52/51 = 1.89

**Table V.**  
Fit test of the model

6. Discussion

The following discussion is based upon the results of the LISREL analysis (shown in Figure 2). It is first noted that work redesign has a positive direct influence on both empowerment and organizational commitment (*H1* and *H2* are supported). Second, employees' self-perceived empowerment has a positive and direct impact on organizational commitment as well (*H3* is supportive). Third, the results also show that the indirect effect of work redesign on organizational commitment (through psychological empowerment, *H1* and *H3*) is greater than the direct effect of work redesign on organizational commitment (*H2*).

The results of current study support the findings of prior studies concerning the influence of work redesign on empowerment (Griffin, 1991; Hyde, 1991; Holpp, 1993; Rankin and Gardner, 1994; Mishra and Spreitzer, 1998; Casner-Lotto, 2000), the influence of work redesign on organizational commitment (Griffin, 1982, 1991; Fields and Thacker, 1992; Fiorelli and Feller, 1994; Schneider, 2003), and the influence of empowerment on organizational commitment (Avolio *et al.*, 2004; Zhu *et al.*, 2004; Huang *et al.*, 2006; Bhatnagar, 2007; Park and Rainey, 2007; Proenca, 2007). In particularly, the study also learned that employee empowerment serves as a mediating role which enhances the positive effect of job redesign on organizational commitment of the members in the organization. Similarly, Lane (1998) also found that empowerment is showed to play a central mediating role in the development of organizational commitment in the public sector. In their work, Liden *et al.* (2000) suggested that work satisfaction is explained largely by job characteristics (through empowerment) but that leader-member exchange, team-member exchange combine with job characteristics and empowerment to explain variation in organizational commitment and job performance. These are in line with our results.

In addition, analytical results of the model reveal that among five factors within work redesign, job characteristics, such as skill variety and autonomy, appeared to be most influential factors within the work redesign dimension. Existing literature provides evidence in support of our findings. For instance, Mishra and Spreitzer's (1998) identified that job variety and autonomy were two attributes of the task dimensions. They further suggested that work redesign which is focused on increasing job variety and autonomy will enhance personal resources to cope with the changing work environment. Brockner *et al.* (1993) argued that employees' attention can be focused on coping with the demands of their increased job scope that often required a variety of skills as a result of restructuring instead of being distracted, consumed and often frustrated by it.

The study also concludes that employees' competence and self-determination are the most influential factors with the empowerment dimension. Studies have shown that self-determination and impact can add certainty to a context of ambiguity and facilitate less rigid or mechanistic employee responses (Sutton and Kahn, 1987; Sutton and D'Aunno, 1989). Weick (1988) argued that individuals who believe they have capability

Table VI.  
Summarized  
observations from model  
analysis

Hypothesis	Path	Results
H1	Work redesign → Empowerment	Statistically significant
H2	Work redesign → Organizational commitment	Statistically significant
H3	Empowerment → Organizational commitment	Statistically significant

(i.e. competence in our empowerment construct) will be less defensive and will accept more opportunities to deal with change. Feelings of competence provide the self-confidence (Bandura, 1989) required to task challenges, try new things and be innovative (Spreitzer, 1995). Bandura suggested that competence also affects individuals' willingness to persist in the face of obstacles and adverse experience.

Furthermore, statistical analysis reveals that continuance commitment is the most contributing factor of the IT professionals' self-perceived organizational commitment. That is, IT professionals' commitment to their firm mostly is instrumental. According to Meyer and Allen (1997), continuance commitment may be negatively linked to certain work behaviors. One explanation is that employees with strong continuance commitment believe they are "trapped" in a "no choice" situation. Tsai and Huang (2008) further pointed out that when people are more satisfied with their pay, they will have too few options to consider leaving the organization, because the cost of leaving the organization is high.

## 7. Conclusion

This study has focused on the discussion and analysis of organizational commitment within an organization. Specifically, the study was designed to determine the effect of work redesign in the constant-changing technological working environment and the IT professionals' self-perceived empowerment on their commitment to the organizations. An empirical investigation using structural equation modeling shows that both the job characteristics of work redesign and the extent of self-perceived employee empowerment are significant aspects in accommodating higher organizational commitment toward the organization. However, it must be highlighted that although three hypotheses of the present study have been proven to be true, the direct impact of job characteristics, as a result of work redesign, on organizational commitment is less than the indirect impact of job characteristics on organizational commitment (through employee empowerment). In other words, the present study reveals that empowerment serves as catalysts to facilitate and stimulate organizational commitment in high-tech industry. Increased employee empowerment, in turn, serves as the channels for higher employees' commitment toward the company. The job characteristics resulting from work redesign can thus be seen as a part of a larger chain, where employees' empowerment forms the middle ring which links those factors with commitment of workers (Lane, 1998; Mishra and Spreitzer, 1998; Liden *et al.*, 2000; Geisler, 2005).

While the empirical data collected have largely supported the proposed model, it is necessary to point out the limitations of this research. Even though the responding individuals consisted of well-informed and active members of the organization, the existence of possible biases cannot be discounted. Furthermore, it is evident that employee empowerment approaches can differ among organizations in different countries, industries, or even those in the same industry working on dissimilar business models. Therefore, the current data collected from the participating high-tech organizations in Taiwan may not be fully representative of other scenarios. A further constraint to note is that the study did not analyze the effect of the personal background (i.e. gender, age) factors within the proposed model. In addition, rather than using a technically oriented approach, the survey presented items from a user-orientated perspective. As a result, questions which were concerned with user-friendliness were thus designed to be included within the acceptance factor.

In conclusion, for future practices, the present study suggests that organizations are likely to improve organizational commitment by redesign jobs that require a variety of skills and provides work autonomy, and at the same time strategically empower workers in seeking opportunity to enhance their competency as well as self-determination ability. Furthermore, organizations are reminded that job characteristics of work redesign must be supported by various forms of psychological empowerment, i.e. meaning, self-determination, competence, and impact, without which organizational commitment may not occur. For future studies, it may be useful to explore the same theoretical framework using a qualitative method to uncover insight information. That aside, the effect of personal factors, such as gender, age, education background, years of work experience and so on may be investigated to shed more light as how to design and implement effective and efficient work structures or empowerment strategies.

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Appendix

Dimension	Factor	Items
Work redesign	Skill variety	1. It requires multiple skills to get my job well done 2. It requires complex knowledge acquisition to get my job well done 3. It requires specific attitudinal performance to get my job well done 4. My job is not routinely repeated day after day 5. It takes a series of work-related activities to get my job well done
	Task identify	6. My job can be clearly divided to a number of works 7. Each work can be clearly identified with its purpose, input, process, and outcome 8. Each work is clearly correlated with the others 9. I am able to present the result of my work
	Task significance	10. I believe that my job is of values to my co-workers 11. I believe that my job is of values to my department 12. I believe that my job is of values to my company 13. I believe that my job is of values to the community 14. I believe that my work contributes to the society
	Autonomy	15. My job provides me with substantial freedom in time 16. My job provides me with substantial freedom in space 17. My job provides me with substantial independence in work execution 18. My job provides me with substantial discretion to make work-related decisions

(continued)

Table AI.  
Items on the survey  
questionnaire  
(a translated version)

Dimension	Factor	Items
Empowerment	Feedback from the job itself	19. I am able to obtain regular information from my co-worker about the effectiveness of my performance 20. I am able to obtain useful feedback from my co-workers to improve my performance 21. I am able to obtain regular information from my superordinates about the effectiveness of my performance 22. I am able to obtain timely feedback from my superordinates to improve my performance 23. I am able to obtain useful feedback from my superordinates to improve my performance
	Meaning	1. I am able to identify the purpose of my work 2. I am able to relate my personal career planning with my current position 3. I am able to relate my values to my work 4. I am able to relate my personal needs to my work
	Competence	5. I believe that I have skills necessary to perform my job well 6. I believe that I have knowledge necessary to performance my job well 7. I believe that I have attitude necessary to perform my job well
	Self-determination	8. I believe that I am qualified to perform my job 9. To a reasonable extent, I am able to decide when to begin my work 10. To a reasonable extent, I am able to decide how to perform my work 11. To a reasonable extent, I am able to request necessary resources in order to complete my work 12. To a reasonable extent, I am able to make necessary decisions in order to complete my work
	Impact	13. I believe that my work influences the performance of my work team/group 14. I believe that my work influences the performance of the department/division 15. I believe that my work influences the performance of the company
	Organizational commitment	1. I am emotional attached to the performance of the company
		2. I am identified with the company
		3. I am involved with work or non-work-related activities in the company
		4. I am attached to the company based on the pension plans
		5. I am attached to the company based on the extent of skill transferability in the company
		6. I am attached to the company based on the relocation policies
		7. I am attached to the company based on the self-investment policies

(continued)

Table AI.

Table AI.

Dimension	Factor	Items
	Normative commitment	8. I maintain my employment because my co-workers expect me to 9. I maintain my employment because my subordinates expect me to 10. I maintain my employment because my superordinates expect me to 11. I maintain my employment because the board expects me to

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