

Full Length Research Paper

A study on the influence of organizational change on organizational effectiveness of schools: Using investment for cloud computing technologies as a moderator

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The purpose of this study is to verify the influence of organizational change on organizational effectiveness of schools using a moderating variable of investment for cloud computing technologies and the study subjects are directors at the second level and above and teachers (lecturers and above) from a Technology University in Taiwan. It adopts convenience sampling to select samples from the population, and applies the method of structural equation modeling (SEM) to verify the goodness-of-fit effects for overall model, structural model and measurement model in this study. The conclusion made by this study is that while this case school is implementing its organizational change, the investment for cloud computing technologies has made a significantly interactive influence on organizational effectiveness.

Key words: Organizational change, organizational effectiveness, investment for cloud computing technologies.

INTRODUCTION

Currently, due to the increasing popularity of the “Double Income No Kids” phenomenon which results in a serious issue of a worsening declining birth rate in Taiwan plus the public policies granting easier access to higher education which results in suddenly increasing the number of higher education institutions to two or three fold, this causes enrollment shortage and mergers and acquisitions in some private technology universities.

To deal with the present difficulty of enrollment that has become increasingly competitive, decision makers of many schools aggressively marketed their schools by various enrollment strategies and adopted a series of organizational changes along with setting up relevant development strategies to enhance organizational effectiveness of the school (that is, management effectiveness).

In schools, decision makers must consider how to reduce obstacles to change while developing strategies of organizational change; for instance, soliciting teacher

participation and opinions, more mutual communication, recognition and support from teachers, more training courses, offering material and mental incentives, and so on, which all can help reduce possible obstacles to such change. Owing to teachers being the most important human resource, quality of teachers such as teaching and research abilities are crucial for the success or failure of university education; moreover, it is also a major push to changes in policy making as in university education and curricula.

Hence, decision makers of schools should actively consider the standpoint of most teachers while working on a series of organizational changes and relevant development strategies, and offer help for teachers to understand the school's ideas and visions so that by enhancing their abilities and identifying themselves with the school, the teachers can cooperate with the promoting school policies to enhance organizational effectiveness (Hsieh et al., 2010).

However, if the administration of the school can invest more money to set up advanced internet teaching facilities, that is, the investment for cloud computing technologies while implementing the organizational change along with enhancing teachers' teaching and research abilities, synergies should be achieved. Therefore, this study investigates a Technology University in Taiwan as a case study to set up a research model for verification, and attempts to understand its goodness-of-fit effects. In other words, the specific purposes of this study are listed as follows:

1. To verify and understand whether the school's organizational change has a positively and significantly direct influence on organizational effectiveness.
2. To verify and understand whether the school's organizational change has a significantly direct influence on the investment for cloud computing technologies.
3. To verify and understand whether the investment for cloud computing technologies has a significantly interactive influence on the school's organizational effectiveness when implementing the school's organizational change.
4. The study's conclusions can be used for the case school administration in policy making when implementing organizational change.

LITERATURE REVIEW

The purpose of this study is to verify the influence of organizational change on organizational effectiveness of schools taking the study subject from a Technology University in Taiwan while using a moderating variable of investment for cloud computing technologies. More details have been described based on theory and relevant studies, respectively.

Definition and classification of organizational change

Hu (2007) made a definition of "organizational change": An organization is an open organism that must transform, adjust and change itself to internal and external environments. Internal adjustment lies in improving staff's attitude and behavior, and upgrading organizational culture; external adjustment allows organizational advantages to be highly successful in further achieving the goals of steady growth and better performance. Such adjustments and strategies are called organizational change. Other than this definition of the organizational change, Hu also classified organizational change into two categories of proactive and reactive based on degree of the initiative of business transformation.

Wu (1993) thought the planned change of an organization is via the promoters' systematic effort in order to go toward to the direction of the organization for

change. No matter what change is, essentially, the final end must be better working efficiency and higher organizational effectiveness.

Similar to social change, three models of organizational change have been proposed by Lewin (1964): unfreezing, changeover and unfreezing again, which indicates the organization has a chronic hard-to-break rigidity while promoting organizational change. If the change must be done, the first job is "unfreezing": gradually softening and resolving rooted concepts; next, using them to be the basis of new approaches that can proceed to "change" by these new approaches.

Once organizational members all agree to such new operation modes, the concepts must be reinforced and the new modes can be gotten used to so as to form a part of organizational norms, which is the real meaning of "unfreezing again". The change process proposed by Lewin considerably complies with the changeover of human behavior, which appears reasonable but in fact is a difficult job to carry out where patience and earnestness are necessary for achieving the prospective purpose of change.

Lippit et al. (1958) expanded Lewin's change models and classified it into five sections: (1) Necessary requirements for change; (2) To ascertain relationship of change; (3) Strict implementation of change measures; (4) The maintenance of steady change; and (5) End of aid relationship.

Wu (2010) pointed out various practical skills of interference that are helpful to implement necessary changes whereby working efficiency of personal, group and overall organization will be improved.

Additionally, Jan (2007) mentioned that staff resistance might occur during change promotion like disobedience, apathy, slow-down, quitting and so on. The reasons that cause such resistance are demand for security, habits and misunderstanding, which will form a big obstacle to change. Therefore, Jan considered it necessary to think of how to reduce obstacles and suggested these approaches: encourage employee participation and expressing opinions; enact more mutual communication, enhance identification and support from employees; and offer more training courses, materials and mental incentives to reduce obstacles.

Moreover, Hsu (2010) believed the processes of organizational change and innovation include strategies, structures, management rules, skills, organizational cultures, production means and technical innovation that are approaches to increase organizational performance. Hence, organizational change must include: Development, transformation, innovation, turnarounds and renewal.

Lee (2010) pointed out that the key for the success of school organizational change lies in an agile mind to creatively respond to crisis, visions, stratified authorization, identification, support, persistence and in-depth cultivation, which all indicate diversity and innovation of an open system in the organization.

Leavitt (1964) stated that an organization consists of four major interactive constructs; task, people, technology and structure are briefly described respectively, as follows:

(1) Task change: Literally, the task means major jobs in the organization such as production, manufacturing and services, which place stress on external control to take account of the jobs the organization should do, and products or services they should provide.

(2) Structure change: Structure represents the systems of communication responsibility control and working procedures that place stress on internal control to take account of permission systems, organizational hierarchy and sectoring departments.

(3) People change: For example, change in the numbers of staff members, in attitude or skills that place stress on internal flexibility, taking account of interpersonal relationships, the value and attitudes of worker inside the organization.

(4) Technology change: It represents process aid tools like work measurement systems or computers that place stress on external flexibility to take account of organizing skills of production systems, management procedures and information technologies.

These four constructs possess high interdependence where any change in one single construct will certainly influence the rest of them. For example, new technologies imported to the organization may impel the changes of original structures (such as communication mechanism, decision-making pattern), task change (such as production, manufacturing and services), staff change (such as number of employees, skills and job contents). Thus, Leavitt held the opinion changes can be investigated from any one or more constructs.

In regard to the conceptual definition of organizational change in this study, summing up the opinions from all scholars previously, we can define it as "for survival and sustainable development, it is necessary for schools to adjust themselves to make adjustments and changes to internal and external environments. Internal adjustment lies in improving teachers' attitudes and behaviors, and upgrading organizational culture; external adjustment allows organizational advantages to be highly successful in further achieving the goals of steady growth and better performance. Hence, the processes of organizational change and innovation are called organizational change, including development, transformation, innovation, turnarounds and renewal.

In addition, most types of organizational change mention people, technology, task and structure in many literatures that have complied with Leavitt's (1964) opinions about constructs of organizational change and such an organizational change model has been extensively adopted till now. Therefore, this study decides to use Leavitt classifications in organizational change

constructs for the case school and the definitions of those classification constructs to be manipulation definitions of this study.

Cloud computing technologies

This term of "Cloud" first emerged in the 1990s, and usually an icon of "Cloud" has been symbolizing the entire Internet networks since and until today. Amazon's Web-based services have begun servicing readers since 2000, Yahoo and Google has been providing some eminent universities with cloud computing for development of new network services since 2006 (Chang et al., 2010).

"Cloud Computing" is simply a concept, but the model can still be operated under highly upgraded internet bandwidth speed. In other words, "Cloud Computing" is a model for free access of information flows just like water or electricity supply from water and power plants. Users can simply turn on a tap or install sockets at home, and get water and electricity without water towers or generators. Besides, the forming of "Cloud Computing" has been created by substantial upgrading of the conveyor of information flows like the Internet to be a new type and evolved ecology of information and communications technology industry.

Nevertheless, why is it called "Cloud Computing"? The reason is the Internet is usually symbolized by an icon of cloud within computer system flowcharts, and computing is processed and sent to large remote web hosts through the internet, this is so-called "Cloud Computing". And, three derivative service modes from cloud computing are: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). No matter whether Infrastructure Service or software, the services provided by "Cloud Computing" will let those small and medium enterprises short of congenital resources decrease their investment for fixed assets, the cost of hardware, software, personnel expenses and operational cost; and further, they will run business more efficiently (Tsai, 2010).

Further, Ben (2011) specified the so-called "Cloud Computing" is the Internet that comprises e-mail, file transfer, remote access communication, remote dialogue, or online learning, data searching, films, marketing activities, blogs, and so on. Chang (2011) considered the concept of "cloud computing" is by learning and working to calculate mass data into information, transform information to knowledge, and then turn knowledge into intelligence. Chen (2011) stated "cloud computing" is an intelligent management approach that can enhance performance so that in the mean time of stimulating staff's potentiality, the management level must decrease various interference factors among employees. Thereby the employees become creative continuously and learn to make adjustments and integrations from failures and give

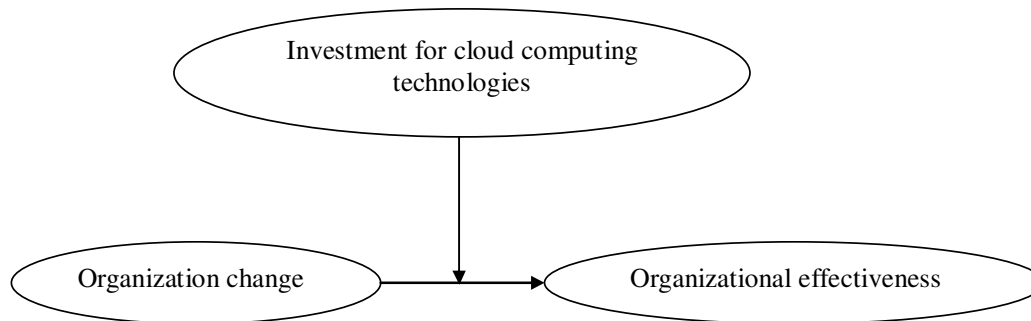


Figure 1. Research framework.

up old stubborn approaches (Merit Times, 2011).

In regard to the conceptual definition of Investment for cloud computing in this study, it is "Use of Internet, Implementation of Distance Learning, Remote Dialogue for curriculum contents and problems discussion, and Searching of various databases of researches and teaching material through the Internet". Therefore, investment for cloud computing technologies in teaching and school organizational development will create multiplicative effects; especially in the present the enrollment has become increasingly more competitive, it becomes a critical issue worth discussing.

Organization performance

Performance primarily implies the degree of success that has two levels of meanings: efficiency and effectiveness. Efficiency is the ratio between output and input, and effectiveness is the degree of organizational goal achievement. For organizational operation, it is the pursuit of integral success covering efficiency and effectiveness. Based on the motivation theory of management science, it is interpreted as "a job that an employee has completed" (Wang and Chen, 1997). For organizational behavior, performance is "the integral success of efficiency, effectiveness and efficacy" (Hsieh, 2006).

Hsu (2010) stated that organizational performance is to measure the level of achievement of business strategies, and indices of the entire business competitiveness.

Proper assessment of organizational performance will help the management understand the current situation of the organization, generally using the assessment indices of incomes, production capacity, and profits of the organization. He also put efficiency and effectiveness together to be organizational performance.

Drucker (1966) gave a good interpretation of efficiency and effectiveness: efficiency is doing jobs in the right ways, and effectiveness is doing the right jobs. Neither efficiency nor effectiveness should be neglected; however, it does not imply they have equal significance. Certainly, we want to enhance both efficiency and effectiveness, but the priority is effectiveness rather than efficiency in case

we cannot take both into consideration.

When members of the organization are seeking efficiency, they would always like to invest less resource but receive maximum output; however, it is very likely that they cannot do a perfect job to satisfy the organization's demands; on the other hand, even if they achieve organizational goals, all resources provided by the organization will be used up. Hence, Drucker believed effectiveness is more important than efficiency; whether organizational goals can be perfectly achieved or not is one thing, but we should concentrate on effectiveness.

This study intends to explore "The influence of organizational change on organizational performance" and previous argument mainly discusses the "organizational effectiveness" of the organizational performance.

Based on the literature review described in the foregoing, the following hypotheses are proposed by the study:

H₁: In this study, the case school organizational change has a positive and significantly direct influence on organizational effectiveness.

H₂: In this study, the case school organizational change has a significantly direct influence on the investment for cloud computing technologies.

H₃: The investment for cloud computing technologies has a significantly interactive influence on organizational effectiveness while the case school in this study is implementing organizational change.

RESEARCH METHOD

Based on the motive, purpose and literature review described previously, the conceptual research framework for this study is established as shown in Figure 1.

Research framework

Design of the questionnaire

The questionnaire design of this study adopts "Itemization measurement" in accordance with each observable construct. The

Table 1. Numbers of questionnaire items for “implicit variables” and “observable variables”.

Implicit variables	Explicit variables	Number of items	Reference for questionnaire
Organizational change (X)	Task change	4	Jin (1996),
	Structure change	4	Long (2001) and
	People change	4	Hua-Chung Tseng (2006)
	Technology change	4	
Investment for cloud computing technologies (MO)	Internet teaching	6	Chang (2010) and
	Network database	4	Tsai (2010)
	Network software and hardware equipment	6	
Organization effectiveness (Y)	Inner orientation	8	Rodsutti and Swierczek (2002),
	Outer orientation	8	Sun (2002) and Huang (2004)

questionnaire uses Likert's seven-point scale to grade the degree of agree or disagree from points 7 to 1, 7 means “strongly agree” and 1 “strongly disagree” where the higher point represents higher degree of agreement and vice versa. Then, it proceeds to “centralize” the data of collected samples, that is, every item of points minus its average is summed up to be 0, which will eliminate the multicollinearity of independent and moderating variables in favor of processing the test of interaction between independent and moderating variables. Here is the formula of “centralization”:

$$\sum(X_i - \bar{x}) = \sum Y_i = 0$$

The questionnaire design of “organizational change” combines these scales about organizational change from Long (2001), Jin (1996) and Tseng (2006) that have been divided into four variables: task change, structure change, people change and technology change following the questionnaire design of “itemization measurement” of four items per variable to make a total of 16 items accordingly.

The questionnaire design of “investment for cloud computing technologies” has made reference to literature reviews of Chang et al. (2010), and Tsai (2010) to design their own questionnaire.

Owing to this study's emphasis on the effectiveness of organizational performance, the questionnaire design of “organizational performance” divides variables into inner orientation and outer orientation in accordance with Rodsutti and Swierczek's (2002) classification of effectiveness. Additionally, the scale of the study on leadership, organizational culture and organizational effectiveness, made by Sun (2002) and Huang (2004) whose focus was on Taiwan regional technology colleges under the competing values framework (CVF) is used, with the questionnaire items revised into two variables. There are 8 items per variable, 16 items in total.

Sampling

This study adopts convenience sampling from directors at the

second level and above and teachers (Lecturers and above) from a Technology University in Taiwan to do the questionnaire survey. It sent out 10 copies of an expert questionnaire for a Pilot-test, which was modified based on suggestions from experts to go into a Post-test. Afterward, 230 copies of formal questionnaires were distributed with 173 copies valid samples returned for a response rate of 75.2%.

Data and measurement model of the questionnaire

Structural equation modeling (SEM) has been applied to the confirmatory factor analysis (CFA) on the research framework in order to verify the proposed one in this study. This study has divided the questionnaire into three Latent Variables, wherein each has been divided into the following observable / explicit variables with several items respectively for survey. Then, the received data after survey will be processed to set up original questionnaire files.

In connection with the configuration of this research framework's measurement system, though the questionnaire design has been done by “itemization survey”, “dual measurement” or “single measurement” will be implemented while considering smoother processes of computer software (Chen, 2010). Numbers of questionnaire items for implicit and explicit variables in this study and their reference resources are shown in Table 1.

RESULTS AND ANALYSIS

Linear structural model analysis

The confirmatory factor analysis (CFA) is an opposite approach to the exploratory factor analysis (EFA). This study has made a confirmatory factor analysis (CFA) on these three unobservable variables (implicit variables): “organizational change”, “investment for cloud computing technologies” and “organizational effectiveness”.

Table 2. Judgment indicators of internal measurement model.

Unobservable variables (implicit variables)	Observable variables – centralized double measurement	Factor loading	Variance extracted, VE
Organizational change (X)	X1C	0.86	0.63
	X2C	0.87	0.59
Investment for cloud computing technologies (MO)	Z1C	0.84	0.58
	Z2C	0.81	0.57
X*MO	X1Z1C	0.73	0.56
	X2Z2C	0.79	0.56
Organization effectiveness (Y)	M1C	0.83	0.57
	M2C	0.85	0.58

Structural equation modeling (SEM) consists of structural and measurement models that can effectively solve the cause-effect relation between implicit and latent variables. Besides, the verification of models in this study has covered three parts: (1) Goodness-of-fit for the Measurement Model; (2) Goodness-of-fit for Structural Model; and (3) verification of overall goodness-of-fit effects to make sure of their conformity to goodness-of-fit indices; that is, overall goodness-of-fit effects SEM for the SEM model can be judged by using related goodness-of-fit indices (Diamantopoulos and Sigauw, 2000).

Analyzing fit of measurement model

The factor loading for each unobservable variable, latent/implicit variable, and observable variable, manifest/explicit variable mainly measures linear-related strength of explicit and implicit variables. If factor loading is close to 1, it indicates the observable variable is able to make a better judgment on the unobservable variable.

In this study, every observable variable’s factor loading is between 0.7 and 0.9 that shows excellent reliability. Consequently, the model’s “measurement system” has “observable variables” (that is, manifest variables) that can individually make proper judgment on “Unobservable Variables” (Latent Variables). Moreover, average variance extracted (AVE) determines the explanatory power of variance between “unobservable variables” (latent variables) versus “observable variables” (manifest variables); higher ve value inclined to a latent variable (unobservable variable), and higher reliability and greater convergent validity. Usually, VE value must be larger than 0.5 to indicate the explanatory variance is larger than measurement error (Fornell and Larcker, 1981).

In this study, all AVEs are larger than 0.5 showing that explicit variables have accomplished excellent reliability and convergent validity (Table 2 and Figure 2).

ANALYZING FIT OF STRUCTURAL MODEL

Path analysis results of structural model

After the overall model has passed the goodness of fit test, this study lists the results in the Table 3: parameter estimates and S.E. between implicit variables, and critical ratio (C.R.). Besides, Table 3 tells us that organizational change and investment for Cloud Computing Technologies (X*MO) versus organizational effectiveness (Y) has made significant interaction ($c = 0.671$); that is to say, the school administration can set up prior advanced internet teaching, software and hardware equipment, that is, investment for cloud computing technologies while implementing a series of organizational changes, and this will accomplish multiple synergies.

Coefficient of determination

Degree of explanation is the R^2 value [squared multiple correlation (SMC)] that comes from “independent variable” versus “dependent variable” of each implicit variable. Therefore, the adjusted R^2 value shown in Tables 4 and 5 indicate that the implicit independent variables have adequate explanatory ability on the implicit dependent variables, respectively. Table 5 is extracted from Table 4.

The indices of fit of the overall model

The purpose of using the structural equation modeling (SEM) for this study’s research model lies in exploring the relationship between unobservable variables within the structural model, and whether the measurement model does have measurement reliability or not, and measuring overall goodness-of-fit effects for this study, for which the

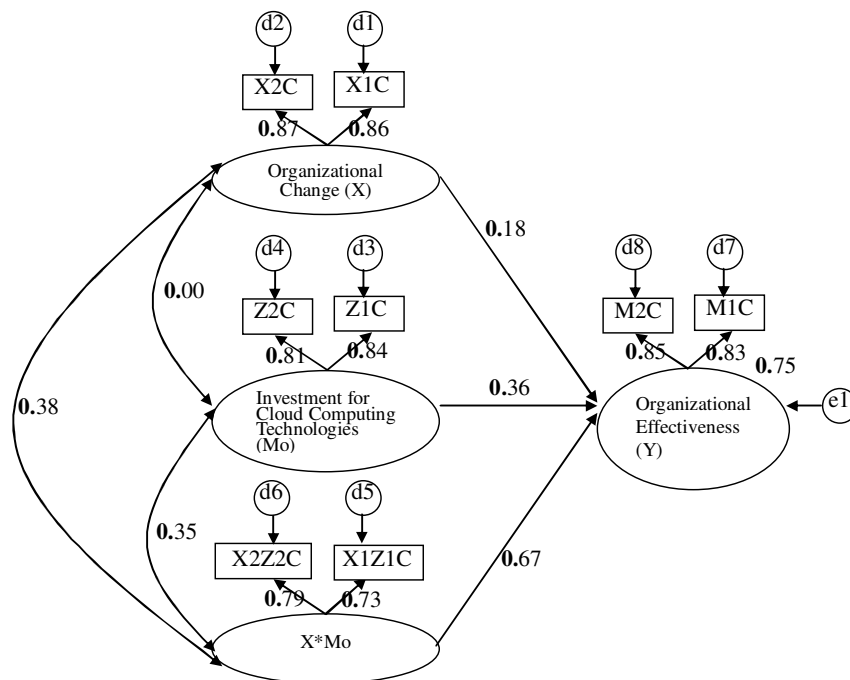


Figure 2. Standardized results of SEM analysis.

Table 3. Path analysis results of structural model.

Path coefficients between implicit variables		Estimate	S.E.	C.R.	P	Label
Organizational change (X)	→ Organization effectiveness (Y)	0.181	0.093	1.946		a
Investment for cloud computing technologies (MO)	→ Organization effectiveness (Y)	0.362	0.021	17.238	***	b
X*MO	→ Organization effectiveness (Y)	0.671	0.024	27.968	***	c
X	→ X1C	0.861	0.161	5.347	***	
X	→ X2C	0.872	0.162	5.382	***	
MO	→ Z1C	0.843	0.333	2.531	***	
MO	→ Z2C	0.812	0.313	2.594	***	
X*MO	→ X1Z1C	0.732	0.284	2.577	***	
X*MO	→ X2Z2C	0.792	0.291	2.721	***	
Y	→ M1C	0.834	0.152	5.486	***	
Y	→ M2C	0.851	0.153	5.562	***	

Remark: * indicates $P < 0.05$, ** $P < 0.01$, and *** $P < 0.001$.

indices are χ^2 , d.f., GFI, AGFI, NFI, CFI, RMR, RMSE, and so on. Usually, they are $\chi^2/d.f. < 5$; $1 > GFI > 0.9$; $1 > NFI > 0.9$; $1 > CFI > 0.9$; $RMR < 0.05$; $RMSEA < 0.05$ (Bagozzi and Yi, 1988).

Generally, the overall goodness-of-fit of this study is $\chi^2/d.f. < 5$, and GFI, AGFI, NFI are all larger than 0.90, but RMR values smaller than 0.05 for good goodness-of-fit effects for this study are shown as in Table 6.

Table 4. Coefficients^{a,b} (Hierarchical Regression).

Model	R	R square	Adjusted R square	Std. Error of the estimate	Change statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.887 ^a	0.787	0.783	6.916	0.787	179.218	2	97	0.000
2	0.895 ^b	0.802	0.795	6.711	0.015	7.024	1	96	0.009

a. Predictors: (Constant), MO and X. b. Predictors: (Constant), MO, X and MO*X.

Table 5. Coefficients^a.

Coefficients of determination	R ²
Organizational change (X), Investment for cloud computing technologies (MO) versus organizational effectiveness (Y)	0.783
Organizational change (X), Investment for cloud computing technologies (MO) and X*MO versus organizational effectiveness (Y)	0.795

Table 6. Overall goodness-of-fit effects scale.

Determination index	χ^2	DF	GFI	NFI	AGFI	CFI	RMR	RMSEA
Fit value	12.705	14	0.913	0.914	0.916	0.925	0.021	0.033

Table 7. Coefficients^a.

Model	Unstandardized coefficients		Standardized coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	3.807	4.180	0.456		3.911	0.000
X	9.753	0.903	0.183		1.935	0.375
Mo	6.875	0.421	0.363		17.344	0.000
2 (Constant)	22.036	10.561	0.451		3.086	0.000
X	3.197	2.625	0.181		1.375	0.376
Mo	1.373	2.116	0.362		17.236	0.000
X*Mo	1.407	0.531	0.671		27.965	0.000

a. Dependent variable: Organizational effectiveness (Y).

Analyzing and verifying path effect of structural model

For the test of moderating variables, this study performs prior hierarchical regression analysis (Table 4), and next centralizes the hierarchical regression between Y versus X, Mo, X*Mo, and uses the *t*-test in order to text the significance of coefficient c whether it is supported or not (that is, whether c is zero or not) (Table 7).

Based on Table 7, it is known that the path coefficient of Mo*X versus Y is 0.671, which accordingly makes moderating effect on Mo*X versus Y.

This study has obtained the following test results from the analysis.

1. School organizational change makes a positive but not significantly direct influence on organizational effectiveness with a standardized path coefficient 0.18 to make Hypothesis H₁ partially supported (hypothesis partially supported).
2. Investment for cloud computing technologies makes a significantly direct influence on organizational effectiveness with a standardized path coefficient 0.36 to make hypothesis H₂ fully supported (hypothesis fully supported).
3. While confirming and understanding the school's implementation of organizational change, the investment for cloud computing technologies makes a significantly interactive influence on organizational effectiveness with a

standardized path coefficient 0.67 to make Hypothesis H₃ fully supported (hypothesis fully supported).

CONCLUSIONS AND SUGGESTIONS

Based on data analyses and results presented previously, the following concrete conclusions have been made:

(1) As for SEM model verification: the SEM that this study has established and its measurement model, structural model and overall model all possess excellent goodness-of-fit to reveal quite a good model fitting.

(2) As for practical verification: The investment for cloud computing technologies makes a significantly direct and interactive influence on organizational effectiveness while the school is implementing the organizational change. As a result, it can be known that procurement and installation of cloud computing technologies investment such as internet teaching, internet databases, network software and hardware equipment for the case school's implementation of innovative change indeed has an absolutely positive effect on inner-and-outer orientated organizational effectiveness. The moderating effect is much more significant instead of conclusions 1 and 2 mentioned-previously in this study.

Contribution of the study

1. Innovation of research methods: According to literature review, most multi-regression analyses were applied in exploratory research with less consideration given to the moderating effect of implicit variables and the research framework of confirmatory factor analysis. Major constructs of the study topic are implicit variables where multi-regression is not an appropriate analysis for such; instead, it is necessary to use confirmatory factor analysis (CFA) and structural equation modeling (SEM), respectively for a measurement tool and model framework in this study; therefore, this study has used quite innovative research methods.

2. As for practical interest: Scholars were inclined to stress exploratory factor analysis (EFA) in their past research topics. Now, this study combines prior relevant research results from those scholars and sets up its model and verification of goodness-of-fit of the model to understand whether such a model possesses excellent goodness-of-fit effects or not. Thus, the topic of this study is an important practice of confirmatory factor analysis (CFA) worthy of further research reference for related fields of studies in the future. In addition to this, the results can be referred by the case school administration to set up strategies for organizational change; therefore, this study provides a most valuable reference.

Restrictions and suggestions of the study

1. Due to limited research resources, this study adopts

non-random convenience sampling, which select samples only giving consideration to access or measurement convenience; however, it might make greater sampling bias and affect the reliability of the results. It is suggested for upcoming researchers to use alternative simple random sampling or stratified random sampling methods for sample selection.

2. This study is a confirmatory factor analysis (CFA). CFA modeling should be best designed as a simple verification model to prevent it from becoming a complicated model producing poor goodness-of-fit (Chen, 2010). Hence, this study only considers the influence of organizational change on organizational performance, and uses investment for cloud computing technologies as a moderator.

3. This study is limited to confirmatory factor analysis (CFA) for this case. In the future, upcoming researchers can consider expanding their fields of study or verifying different industries, or compare various industries to see if there are differences in goodness-of-fit.

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