THE EFFECTS OF CORPORATE GOVERNANCE ON ORGANIZATIONAL PERFORMANCE OF NETWORKING EQUIPMENT COMPANIES LISTED IN TAIWAN: CLOUD TECHNOLOGY INVOLVEMENT AS THE MODERATOR

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Abstract

This study seeks to validate the influence of corporate governance on organizational performance of networking equipment companies listed in Taiwan, with cloud technology involvement as the moderator. Interviews are conducted with managers and above in these companies. This paper adopts simple random sampling and constructs a structural equation model (SEM) to verify the goodness-of-fit of the overall model, the structural model and the measurement model. The research findings suggest that cloud technology involvement has significant and positive moderating or interactive effects regarding the impact of corporate governance on organizational performance of networking equipment companies listed in Taiwan. This implies that corporate governance and cloud technology involvement have positive and synergetic influence on the organizational performance of networking equipment companies listed in Taiwan. This also helps to achieve the goal of efficient and intelligent cloud.

Keywords: Corporate governance, organizational performance, cloud technology involvement

INTRODUCTION

Literature suggests that robust corporate governance can prevent and mitigate agency costs. The establishment of the corporate governance and monitoring mechanism can maximize enterprise values and improve organizational performance [1]. However, some studies argue otherwise. The high managerial ownership may incentify managers to choose projects not at the best interest of shareholders and hence undermine the operating performances of companies. Whether the strength of corporate governance affects organizational performance or enterprise values is an important issue[2].

According to the Gartner Group, cloud computing is ranked as the first of the top-ten future trends of IT industry. During times of recession, the use of cloud computing can directly help companies reduce costs and
improve efficiency. Cloud technology changes personal lives, but its impact is more significant on enterprises. An image that specifically represents the cloud is a vast expansive engineering room filled with countless servers, which require good monitoring and control systems. Vendors with related technologies can also benefit from the boom of cloud technology [3]. Furthermore, cloud computing, it can be said, is the critical revolutionary technology that drastically changes the entire ecology of the IT industry, or even the ideals of business operations. In this age of competition with its rapid changes, many corporations are actively involving in cloud technology, hoping to be the first to reduce operating costs, improve efficiency, or even create new operation model and value [4].

While we are at the juncture of the age of a new economy, knowing how to effectively apply new technologies, stimulate innovation, and nurture entrepreneurship is now the fundamental requirement in pursuing economic development. Within this requirement, having, distributing, producing, and using the available knowledge will be the important driving force that is required to smoothly launch and sustain the entire knowledge-based economy. However, the complex and diversified nature of the knowledge itself, and its characteristic of having specific significance are often causing issues of great difficulty in the management of the knowledge. Particularly, with the development of internet network related technologies and applications, the emergence of large volumes of information is making it more difficult to effectively read, extract and apply such knowledge [5]. Cloud computing has completely overturned our modality of internet operation. It is an extension of a concept, not a complex nor a massive science, and as such, the concept is then extended into other technologies. With the integration of the computer and internet, the services they provide are reaching farther and wider. In the future, general tasks will be accomplished simply with a computer and the internet.

The key determinant to competitiveness is whether companies may boost enterprise values with efforts in corporate governance and involvement in cloud technology. Corporate governance should serve as the foundation for new technologies, new products and services, market developments and strategies by leveraging cloud technology. This will drive continuous growth and achieve sustainable operations.

Corporate governance is a prerequisite for any companies to ensure competitive advantages in the constantly changing environment. It is the key to sustainability of businesses and operations. This paper seeks to explore whether there are synergies between corporate governance efforts and cloud technology involvement regarding the organizational performance of companies based on the survey results of networking equipment companies listed in Taiwan. The research model is established with a literature review and the findings are tested to validate the goodness-of-fit
of the model. The research purposes are as follows:

(1) To validate and understand whether corporate governance has significant and positive influence over organizational performance of networking equipment companies listed in Taiwan;

(2) To validate and understand whether cloud technology involvement has significant and positive influence over organizational performance of networking equipment companies listed in Taiwan;

(3) To validate and understand whether corporate governance and cloud technology involvement have significant and positive synergies on the operational performance of networking equipment companies in Taiwan.

According to Patton and Baker[7], at a company where the chairman does not double as the president, the board of directors is able to maintain a relatively higher degree of independence and effectively monitor the management.

Chih [8]said the financial crises will be more accurately predicted when the frequency of Certified Public Accountant (CPA) replacements is taken into consideration as a variable.

Lu[9] added in her discriminant model for financial indicators variables representing the qualities of supervisory-board structure, and found a drastic improvement in the accuracy of predicting financial crises. Previous studies also proved corporate governance an important variable in developing a financial early-warning mechanism.

When the “percentage of pledged shares,” “cash flow” and the “deviated control of a company” are adopted as surrogate variables in order to reduce the risk of expropriation of minority shareholders, Lee and Yeh[10] said a rise in the percentage of shares pledged by committee members and managers would leave a company more susceptible to a financial crisis in the second half of the year. They went on to argue that corporate governance should always be factored into the financial early-warning mechanism, because a company with lackluster corporate governance could suffer a financial crisis regardless of its excellent track record.

From a legal perspective, Lu[11] contended that corporate governance is focused on how a corporate organization with ownership separated
from operations should be effectively monitored, or controlled, through a well-designed legal system, and how that organization may function as expected while avoiding illegal, corrupted business practices. From the economic point of view, some scholars argued that corporate governance is a system aimed to maximize a company’s economic value, which includes the maximum rewards to shareholders, creditors, and employees. Those who emphasize on the “financial management” dimension, nevertheless, believe that corporate governance is intended to ensure company managers use their financiers’ money in the best possible way, and earn rewards due to them.

Lin, Chou and Hsiao[12] divided the corporate governance dimension into four sub-dimensions: (1) deviation in ownership and control; (2) financial transparency; (3) organizational and staff stability; (4) fair treatment of shareholders[13].

In summary, the variables of measuring the corporate governance are divided into four dimensions, as suggested by Lin et al[12]. The sub-dimensions are detailed below:

(1) The deviation of control and ownership consists of: (A) the board structure; (B) ownership structure; (C) the deviated control of a company. The board structure refers to the percentage of independent directors, family-listed companies’ supervisors, and managers on the board of directors, plus the percentage of managers on the board of supervisors. The ownership structure refers to the percentage of shares held by natural persons, supervisors, natural persons with foreign nationalities, and majority shareholders, plus the percentage of shares pledged by directors. As for the deviated control of a company, it is reflected in the percentages of board seats controlled by particular stakeholders, and how much the board seats misrepresent the actual ownership structure.

(2) The transparency of financial reporting: the ratio of a company’s re-involvements to total assets.

(3) The stability of organization and personnel refers to: (A) the company’s frequency of president replacements; (B) total turnovers; (C) the average seniority of employees.

(4) The fair treatment of shareholders refers to: (A) the average remuneration per director/supervisor; (B) the ratio of total director/supervisor remuneration to net income before tax; and (C) the profits/losses from transactions of stakeholders' assets.

Organizational Performance

Definition of Organizational Performance

Evans[14] suggested that organizational performance is the measurement of the achievement level of a company's strategic objectives, and is also an indicator of overall enterprise competitiveness. An appropriate organizational performance assessment affords its manager the understanding of the status of the
organizational performance. Popular assessment indicators are income, productivity and profitability of the organization.

Hsu[15] suggested that "organizational performance" is divided into "efficiency" and "effectiveness". While, Drucker[16] provided a very good interpretation for "efficiency" and "effectiveness", that Efficiency is "doing things right"; effectiveness is "doing the right things". Neither efficiency nor effectiveness should be neglected, but this is not to say that efficiency and effectiveness are equally important. For an organization, it is certainly preferable to improve efficiency and effectiveness at the same time; however, if both cannot be obtained, the organization should focus on effectiveness prior to aiming at improving efficiency.

The research of Lee, Chen and Lee[17] suggested that the operational definition of organizational performance is that it is an indicator of the overall enterprise competitiveness, and it is also the measurement of the achievement level of a company's strategic objectives. While popular assessment indicators for organizational performance are income, productivity and profitability of the organization. Therefore, an appropriate organizational performance assessment affords its manager the understanding of the status of the organization.

Thus, "organizational performance" in this paper is defined as the indicator for examining overall competitiveness of a company, and is also used to measure the achievement of strategic goals of a company.

Measurement Dimensions of Organizational Performance

There is a massive amount of previous studies addressing the measurement dimensions of organizational performance. Since the benefits of organizational performance will eventually be fed back to the financial dimension, most scholars in this field adopt financial performance as one of the measurement indicators. In an environment characterized by convenient ways of information delivery and rapid-changing markets, nevertheless, a company nowadays shall never solely rely on financial performance to achieve survival and competitiveness. That is to say, it is impossible to sufficiently gauge the organizational performance using financial performance as the single indicator.

To solve that dilemma, Kaplan and Norton[18] suggested a balanced score card (BSC) system comprising four dimensions: (1) the financial dimension; (2) the customer dimension; (3) the internal business processes dimension; (4) the learning & growth dimension. In their study Chow and Haddad[19] also noted the value of BSC lies in the fact that it connects organizational strategies, frameworks and vision to create a set of corporate performance indicators for both traditional and modern companies. Meanwhile, the BSC method transforms a company’s long-term strategies/goals (e.g., the creation of customer value) into actual organizational actions, internally or externally.

According to Ling and Hung[20], in order to measure both the financial and non-financial
aspects of organizational performance and to correctly gauge the influence of job satisfaction and internal-service quality on organizational performance, financial performance should be defined as the output in terms of financial accounting that can be measured by indices regarding growth and profitability. For example, a company with satisfying financial performance is expected to exceed the average in the same sector regarding the Earnings per Share (EPS) and Return on Sales (ROS) as well. As for the non-financial aspect of organizational performance, it is measured by means of innovation-related performance, which in turn is gauged from the multiple perspectives of organizational innovation that involves both technological and managerial innovations. The technological innovation here refers to technologies required by an organization for manufacturing products or providing services, while a managerial innovation occurs in the organization’s social system and is related to the hiring/management processes and the organizational structure[20].

Summarizing the above, this paper applied the operational definition proposed by[17]for the definition of organizational performance. As for the measurement dimensions of organizational performance, this paper applied a combination of measurement dimensions proposed by[20]and[18], i.e.: (1) financial performance: using EPS as the measurement indicator; and (2) non-financial performance: i.e. customer dimension, internal business processes dimension, and learning & growth dimension.

Involvement of Cloud Technology

Definition of Cloud Computing

The term "cloud" first appeared in the 1990's. It was commonly denoted with the image of "cloud", which is still in use today, to represent the entire internet. The web-based services of Amazon started at around the year 2000, providing services to readers, while Yahoo and Google started offering cloud computing around 2006 to a few well-known colleges for use in the development of new internet services[21]. While "cloud computing" may have been merely a concept, the great enhancements of bandwidth speed of the internet network enables the operation of such an idea. In other words, “cloud computing” is a mode of information flow that provides the freedom of access and storage, just like water or electricity. Users can obtain water and electricity from the supplies of water plant and power plant, simply by turning on the faucet or plugging into a socket at home without the need of building their own water tower or a generator. Therefore, Cloud Computing, by nature, is a new application of Distributed Computing. Its fundamental concept is to take a huge computation program (Process) via internet network, auto-split it into numerous smaller sub-routines (Sub Process), then move it to a system that is composed of multiple servers (Multi-Server), and after the analysis of search and calculation, the result is then sent back to the user. Through this technology, a Service Provider can process millions or even billions of
bits of information in a few seconds, and achieve an internet service effectiveness that equals the power that a supercomputer can provide[22].

Simply put, it is to allow multiple computers on the internet to do one job for you, which significantly enhances the process speed. Some people suggest that Cloud Computing should be translated as "Cloud Calculation", while others interpret it as "Yun Duan Computing". "Yun" (Cloud) is the internet that we use all the time; while "Duan" refers to the end user (Client) or generally refers to how users complete a task using internet service. The ultimate goal is to do-away software installations. All the resources come from the cloud, where the end users only need a device and a simple interface (such as an explorer) to connect to the cloud.

In summary, this paper defines cloud computing as "referring to how users complete a task using internet service. The ultimate goal is to do-away software installations. All the resources come from the cloud, where the end users only need a device and a simple interface (such as an explorer) to connect to the cloud."

Dimensions of Cloud Technology Involvement

The formation of "cloud computing" is a new creation of, and an ecological change of the ICT industry, enabled by the substantial improvement in the delivery of information flow of the internet network. The service models derived from cloud computing are: (1) Infrastructure as a Service, IaaS; (2) Platform as a Service (Paas); and (3) Software as a Service (SaaS). Therefore, services offered by "cloud computing", whether they are providing infrastructure or software, may render lower involvements in fixed assets, less software-hardware, and reduce personnel and operating costs for small to medium sized enterprises (SME) that lack inherent resources, thereby promoting better efficiency for the SMEs[23].

Furthermore, Yong Ben[24] suggested that the so-called "cloud technology" refers to activities enabled through the use of the internet network that range from email, file transfer, remote registration communication, remote dialog, or taking online courses, information researching, video viewing, merchandize marketing, personal blogging, and others. Zhang[25] believes that the concept of "cloud technology" is turning large amounts of data into information through calculation, then turning information into knowledge through "learning by doing", subsequently turning knowledge into wisdom by applying methodologies. Chen[26] pointed out that "cloud technology" is an intelligent management method that enhances performance. While stimulating employees’ potential, management must reduce the factors that interfere with the employees, so that they may continuously innovate, learn how to integrate through failure, and detach from the methods to which they were previously so attached[40].

The study of Lee[27] suggested that the conceptual definition of cloud technology involvement is "Using the Internet to configure a
Cloud Computing environment as a virtual environment, which for example has proven to provide good access to Telecare platforms, is an effective and flexible network architecture. That is the involvement for cloud technologies.” In this paper, the dimension of cloud technology involvement is divided into three dimensions: (1) network learning; (2) network databases; and (3) network software and hardware equipment.

In summary, this paper adopted the dimensions proposed by Lee (2012) concerning cloud technology involvement.

Influence of Corporate Governance on Organizational Performance

According to Zahra and Pearce [28], the larger the board of directors, the better it functions as the company’s monitor and advisor. A board of directors consists of internal and external directors, the former being those doubling as non-directors and the latter directors holding no position whatsoever in the company. Compared to the internal directors, the external ones usually display more professionalism and independence, and achieve the goals of corporate monitoring more easily: they make it less possible for high-ranking managers to connive with one another and/or to use company assets abusively.

Yermack [29] said a small-sized board of directors tends to be less effective than a larger one; hence the positive correlation between board size and Tobin’s Q. A company’s enterprise value (EV) grows in proportion to the percentage of shares held by external directors, or the percentage of board seats controlled by them. In other words, external directors’ functioning as independent auditors/evaluators ensures increased efficiency in corporate decision making.

According to Hung [30], the shares held by institutional investors and extraordinary corporate governance both exert a significantly positive effect on the performance of a company, whether it is incorporated or not. The shares held by foreign investors, among all stakeholders, are the most influential.

Wang [31] said the ownership and board structures both have critical influence on EV. Companies with a good corporate governance system tend to attract more investors since it ensures all investors a reasonable return on their money. That explains why corporate governance affects the performance in a positive, significant manner [32].

Whilst the abovementioned literature covers different industries or firm sizes, similar concepts should still apply. This paper hence develops the hypothesis:

\[ H_1: \text{Corporate governance has significant and positive influence over organizational performance.} \]

Influence of Cloud Technology Involvement on Organizational Performance

Research articles directly related to cloud computing and organizational performance are still lacking so far. But within the research articles of Lin [3], Huang [22], and Lin [33], this paper found that there is some relevance.
between the concept of cloud computing involvement and organizational performance. This paper hence develops the hypothesis:

H2: Cloud technology involvement has significant and positive influence over organizational performance.

Influence of Corporate Governance and Cloud Technology Involvement on Organizational Performance

To sum up the abovementioned literature, whether the accumulation of intellectual properties and the involvement of cloud technology create synergies to benefit organizational performance is a pertinent issue. This paper hence develops the third hypothesis:

H3: Corporate governance and cloud technology involvement create significant and positive synergies to organizational performance.

RESEARCH METHOD

Figure 1 illustrates how motivations, research objectives and literature review cited in the previous passages led to this paper’s hypotheses and conceptual research framework:

Research Structure

Questionnaire Design

The questionnaire of this paper was compiled on the basis of Itemization Survey method and the afore-mentioned observable dimensions. On a 7-point Likert Scale, the answers were measured with 7 denoting Strongly Agree and 1 denoting Strongly Disagree. A higher score represents a greater level of agreement, and vice versa. The sample data collected was then “centralized” so the sum of scores given to all questionnaire items is zero after deducting the average. Centralization erases multicollinearity between the independent and moderating variables, in order that their synergies are tested more accurately, as shown in the mathematical equation below:
\[ \sum (Y_i - \bar{Y}) = \sum X_i = 0 \]

The questionnaire design on corporate governance is based on the four dimensions developed by [12], i.e. deviation of control and ownership, transparency of financial reporting, stability of organization and personnel and fair treatment of shareholders. There are a total of 12 questions.

The questionnaire design on organizational performance is constructed on the four dimensions developed by [18] for balanced score cards. These four dimensions are financials, customers, internal business processes and learning & growth. There are a total of 12 questions.

The questionnaire design on organizational performance is centered on the three dimensions developed by Lin [3], Huang [22] and Lin [33], i.e. network learning, network databases and network hardware and software equipment. There are a total of 9 questions.

**Sampling Method**

This paper uses simple random sampling techniques to collate data from managerial personnel in finance, human resources and marketing in the networking equipment companies listed in Taiwan. A total of 30 expert questionnaires were issued as the pilot test. Modifications were made according the feedback from experts before a post test was conducted by releasing 1,000 questionnaires. The number of effective questionnaires collected was 195, at a sample recovery rate of 19.5%.

**Data Obtained from Questionnaire and Measurement Model**

To validate the research structure, this paper adopts Structure Equation Modeling (SEM) for Confirmatory Factor Analysis (CFA). The questionnaire measures three latent variables, i.e. corporate governance, organizational performance and cloud technology involvement. Each latent variable can be divided into observable/explicit variables, for which multiple questions are developed. The collated survey data is processed and the data file for the questionnaire responses is established. The questionnaire is designed into individual sections for the measurement system of the research model. Although Itemization Survey method is applied to the design of the questionnaire, Double Measurement was adopted to ensure the computer software efficiently handled and/or measured all data [34].

**RESULTS AND ANALYSIS**

**Linear structure model analysis**

This paper includes a Confirmatory Factor Analysis (CFA), an analytical method contrary to the Exploratory Factor Analysis (EFA), on the three unobservable/latent variables of corporate governance, organizational performance and cloud technology involvement. The structural equation modeling (SEM) is made up of structural and measurement models to efficiently tackle the cause-effect relations among implicit/latent variables. The three parts of model-testing in this paper are: (1) goodness-of-fit of the measurement model; (2)
goodness-of-fit of the structural model; (3) the overall model’s conformity with goodness-of-fit indicators. In other words, goodness-of-fit indicators were applied to a test of the overall goodness-of-fit effect of SEM ([35] ; [27]).

Analyzing Fit of the Measurement Model

To a large extent, factor loading is intended to measure the intensity of linear correlation between each latent/implicit variable and a manifest/explicit one. The closer the factor loading is to 1, the better a manifest/explicit variable is in measuring latent variables. Since this paper’s reliability is supported by the fact that factor loadings for all manifest/explicit variables range between 0.8 and 0.9, all manifest/explicit variables in the measurement model appropriately gauged the latent/implicit ones. The Average Variance Extracted (AVE), on the other hand, gauges a latent/implicit variable’s explaining ability of variance with regard to an observable one, with the AVE value growing in proportion to the reliability and convergent validity of that particular latent/implicit variable. As a rule, AVE must be larger than 0.5 for a manifest/explicit variable’s explainable variance to exceed the measurement error[36]. As Table 1 and Figure 2 show that all AVEs in this paper exceed 0.5, the explicit variables have excellent reliability, convergent validity and discriminant validity.

<table>
<thead>
<tr>
<th>Latent Variables (Implicit Variables)</th>
<th>Explicit Variables: Centralized Dual Measurement</th>
<th>Factor loading</th>
<th>Average Variance Extracted, AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Governance (X)</td>
<td>X1C</td>
<td>0.86</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>X2C</td>
<td>0.85</td>
<td>0.69</td>
</tr>
<tr>
<td>Cloud Technology Involvement (Mo)</td>
<td>M1C</td>
<td>0.81</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td>M2C</td>
<td>0.82</td>
<td>0.64</td>
</tr>
<tr>
<td>X*Mo</td>
<td>X1M1C</td>
<td>0.87</td>
<td>0.72</td>
</tr>
<tr>
<td></td>
<td>X2M2C</td>
<td>0.86</td>
<td>0.71</td>
</tr>
<tr>
<td>Organizational Performance (Y)</td>
<td>Y1C</td>
<td>0.84</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>Y2C</td>
<td>0.83</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Analyzing fit of the Structure Model

Path Analysis Results of the Structure Model

After the overall model passed the goodness-of-fit tests, this paper continues to examine the parameter estimates and standard deviations of all the latent variables. Table 2 summarizes the critical ratios (CR). Figure 2 illustrates the significant and interactive effects
of corporate governance and cloud technology involvement (X*Mo) on organizational performance (Y). The coefficient of 0.713 indicates that synergy created by corporate governance and cloud technology involvement on organizational performance.

Table 2 Path Analysis Results of the Structural Model

<table>
<thead>
<tr>
<th>Path Coefficients between Implicit Variables</th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th>P</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Governance → Organizational</td>
<td>.532</td>
<td>.061</td>
<td>8.721</td>
<td>***</td>
<td>a</td>
</tr>
<tr>
<td>Cloud Technology Involvement (Mo) →</td>
<td>.393</td>
<td>.037</td>
<td>10.621</td>
<td>***</td>
<td>b</td>
</tr>
<tr>
<td>X*Mo → Organizational Performance</td>
<td>.713</td>
<td>.144</td>
<td>4.951</td>
<td>***</td>
<td>c</td>
</tr>
<tr>
<td>X → X1C</td>
<td>.521</td>
<td>.142</td>
<td>3.605</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>X → X2C</td>
<td>.543</td>
<td>.131</td>
<td>4.145</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Mo → M1C</td>
<td>.402</td>
<td>.104</td>
<td>3.865</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Mo → M2C</td>
<td>.383</td>
<td>.082</td>
<td>4.670</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>X*Mo → X1M1C</td>
<td>.743</td>
<td>.271</td>
<td>2.741</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>X*Mo → X2M2C</td>
<td>.792</td>
<td>.273</td>
<td>2.901</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Y → Y1C</td>
<td>.732</td>
<td>.134</td>
<td>5.462</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Y → Y2C</td>
<td>.691</td>
<td>.132</td>
<td>5.234</td>
<td>***</td>
<td></td>
</tr>
</tbody>
</table>

Note: *denotes P<0.05; **denotes P<0.01; ***denotes P<0.001.

Coefficient of Determination

Coefficient of determination, also known as Squared Multiple Correlation (SMC), represents the explaining ability of dependent variables to dependent variables of individual latent variables. In other words, the adjusted R² value shown in Table 3 indicates that the implicit independent variable has adequate explaining ability on the implicit dependent variable respectively.

Table 3 Path Coefficient of Determination

<table>
<thead>
<tr>
<th>Table 3 Coefficientsa</th>
<th>[Hierarchical Regression]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td>R</td>
</tr>
<tr>
<td>1</td>
<td>865</td>
</tr>
<tr>
<td>2</td>
<td>875</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Mo and X
b. Predictors: (Constant), Mo, X and Mo*X
Table 4 was derived from Table 3:

<table>
<thead>
<tr>
<th>Coefficients of Determination</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate governance (X), cloud technology involvement (Mo) on organizational performance (Y)</td>
<td>0.748</td>
</tr>
<tr>
<td>Corporate governance (X), cloud technology involvement (Mo), X*Mo on organizational performance (Y)</td>
<td>0.766</td>
</tr>
</tbody>
</table>

**Indices of Fit of the Overall Model**

The purpose of adopting SEM in the modeling phase of this paper is to explore how unobservable variables are interconnected within the structural model, to determine if the measurement model has measurement reliability, and also to measure this paper’s overall goodness-of-fit effect using such indices as $\chi^2$.

In most cases, it is required that $\chi^2$/d.f. <5, 1>GFI>0.9, 1>NFI>0.9, 1>CFI>0.9, RMR<0.05 and RMSEA<0.05 [39]. The goodness-of-fit of the overall model proved satisfactory because $\chi^2$/d.f. <5 and GFI, AGFI and NFI all exceed 0.90, with the RMR smaller than 0.05 (see Table 5).

<table>
<thead>
<tr>
<th>Determination index</th>
<th>$\chi^2$</th>
<th>DF</th>
<th>GFI</th>
<th>AGFI</th>
<th>NFI</th>
<th>CFI</th>
<th>RMR</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit value</td>
<td>12.705</td>
<td>14</td>
<td>0.924</td>
<td>0.913</td>
<td>0.911</td>
<td>0.910</td>
<td>0.027</td>
<td>0.020</td>
</tr>
</tbody>
</table>

**Standardized Results of SEM Analysis**

The model’s overall framework was resulted from computer-aided standardization, as shown in Figure. 2[37].
Analytical Testing of Path Effects for the Structural Model

To test the moderator, this paper performed a hierarchical regression analysis (see Table 3), followed by centralized regression analyses and t-tests of Y versus X, Mo and X*Mo in order to examine whether the hypothesis about a significant regression coefficient $c$ is substantiated (i.e. whether $c$ is zero or not). The test results are shown in Table 6.

Table 6 Coefficients$^a$

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
</tbody>
</table>

Figure 2 Standardized results of SEM analysis
Moreover, as shown in Fig. 2, the 0.784 Path Coefficient of Mo*X versus Y suggests a moderating effect of Mo*X on Y.

The following results were derived from analyses mentioned above:

(1) Corporate governance has positive and significant effects on organizational performance. Standardized coefficient is estimated to be 0.532. Therefore, H₁ is substantiated.

(2) Cloud technology involvement has positive and significant effects on organizational performance. Standardized coefficient is estimated to be 0.393. Therefore, H₂ is substantiated.

(3) Corporate governance and cloud technology involvement have positive and significant interactive effects on organizational performance. Standardized coefficient is estimated to be 0.713. Therefore, H₃ is substantiated.

CMV test

The CFA tests suggest that the questionnaire does not have issues concerning common method variances, as shown in Table 7.

<table>
<thead>
<tr>
<th>Model</th>
<th>χ²</th>
<th>DF</th>
<th>Δχ²</th>
<th>ΔDF</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single factors</td>
<td>1326.2</td>
<td>97</td>
<td>884.9</td>
<td>99</td>
<td>0.001</td>
</tr>
<tr>
<td>Multi factors</td>
<td>441.3</td>
<td>196</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSION AND SUGGESTIONS

Conclusions

From the afore-mentioned data analyses and results were derived this paper’s conclusions, as detailed in the following passages:

(1) Regarding the verification of SEM, this paper has a good model fit as the SEM is constructed with satisfactory goodness-of-fit in the measurement, structural and overall models.

(2) Practical Implications

This paper finds that corporate governance and cloud technology involvement have significant, positive and interactive effects on organizational performance of networking equipment companies listed in Taiwan. In other words, cloud technology involvement as a variable exhibits positive and moderating effects. The significant and positive synergy created by corporate governance and cloud technology...
involvement helps the organizational performance of networking equipment companies listed in Taiwan to achieve efficient and smart cloud.

(3) Chen [38] indicated that when both moderators and independent variables have significant and interactive effects on dependent variables, neither moderating variables nor independent variables have meaningful impacts on dependent variables on their own. This is evidenced by the moderating effects on cloud technology involvement, and the absence of correlation between corporate governance (as an independent variable) and cloud technology involvement (as a moderator). In other words, these two variables are independent from each other (Figure 2).

Contribution of This Paper

(1) Practical Implications of Research Issues
This paper synthesizes academic findings, constructs a model and validates goodness-of-fit of this model. Confirmatory factor analysis (CFA) techniques are applied to explore the practical implications of the research issues. Follow-up studies are advised to investigate further in relevant domains. The results can serve as a decision-making template for managers in the networking equipment companies listed in Taiwan.

(2) Innovations of Research Methods
Most academic studies conduct literature reviews and apply multi-regression for an explanatory factor analysis (EFA) without considering the confirmatory factor analysis (CFA) framework to explore the moderating effects of latent variables. As the major dimensions in this paper are implicit variables, the structural equation modelling (SEM) method as a CFA technique is a more suitable tool for measurement.

Research Limitations & Suggestions

(1) This paper used simple random sampling and the resulting recovery rate was low at 19.5%. It is possible that the sample cannot truly represent the population. Follow-up studies may employ other sampling methods to boost the recovery rate of effective observations.

(2) This paper only conducts a CFA on the networking equipment companies listed in Taiwan. Follow-up studies may examine different industries in order to compare and contrast the goodness-of-fit of the same model used for different sectors.

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