



THE FINANCIAL PERFORMANCE OF CLOUD COMPUTING

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ABSTRACT

With advanced information technology, compare to the past operation, the significant difference is the companies no longer need to set up their own costly the large server, instead an external professional supplier "cloud computing" technology would be increasingly adopted nowadays. The main purpose of this study is to examine the financial performance whether would be improved after enterprises implemented cloud computing technology. According to the analysis results, we found that the cost structure and Return of Sales (ROS) of enterprises adopted cloud computing are significant improved.

Keywords: Cloud computing, Performance valuation, Innovation technology, Value delivery, IT governance, Financial performance.

1. INTRODUCTION

With continuous advancement of Internet, cloud computing has become a corporate emerging information innovation. The cloud computing is a computing service provided by for users through Internet technology. It has large space, extendibility, high flexibility, scalability and instantaneity. The service can be obtained through a browser on any device.

Cloud computing help enterprises improve efficiency, and besides profits of the cloud computing providers can be increased in this technology trend. According to estimate by MIC, the global cloud computing scale will reach 44.5 billion USD in 2016 (Institute for Information Industry, 2012). As cloud service emerges, computing resource is concentrated in server cloud data center. Establishment of the cloud data center can increase demands for servers, storage devices, information security, broadband network and virtual desktop infrastructure, and make providers propose demands for technical support, solutions and consultant service (Institute for Information Industry, 2012).

On the other side, it is doubtless that enterprises or providers make commitment to improving organizational resources, work and financial performance if they announce cloud computing on market. The main purpose of this study is to discuss financial performance change after enterprises or providers announce cloud computing information on market.

2. RESEARCH HYPOTHESES

The cloud computing can be divided into three types: Infrastructure Cloud, Platform Cloud and Application Cloud. The infrastructure cloud has computing and storage capacity similar to the original capacity; the platform cloud is applied managed environment, users can manage development and operation in the cloud platform; the applied could is a specific function application, and users can directly use service through browsers. According to the deployment model, there is public cloud, private cloud and hybrid cloud. The typical cloud structure can be divided into three layers according to the service by the resources: Software as a Service (SaaS), Platform as a Service, (PaaS) and Infrastructure as a Service (IaaS).

According to the investigation of Open Data Center Alliance (ODCA), implementation of cloud computing has many potential efficiencies, including computing resources and service planning can have scalability and agility which can reduce costs of enterprises in investment of IT infrastructure (architecture). In the past, a large sum of investment was made on the purchase of relevant hardware, software and training of relevant maintenance personnel when the enterprises implemented new information system. The purchased scale is much greater than the actual use. The considerable investment often cause heavy burden on the enterprises. If IT business is contracted to the cloud providers, users need to pay large funds at one time for establishing the information system, and only rent infrastructure of the cloud providers, and pay the actual use expenses. The expenses can be adjusted flexibly from time to time as per demands. This can minimize investment costs and avoid financial risks. The cloud providers are responsible for maintenance and repair of all the systems. The enterprises will not invest substantial cost to train personnel (DeFelice, 2010). From the above, the companies can have better performance after they announce cloud computing information. The following hypothesis is established:

H₁: The performance is better after the companies have announced cloud computing information.

3. RESEARCH METHOD

In this study, the Taiwanese listed and OTC traded companies were sampled for investigation. The research period is January 1, 2009 and February 28, 2013. According to the research by [Institute for Information Industry \(2012\)](#), the enterprises often use cloud computing technology service, such as email, information security, video conference and data storage function. Thus, this study uses newspaper electronic database (UDN data) to input several keywords “virtualization”, “implementation of cloud technology”, and “cloud + data storage”. Furthermore, the date of the earliest report is used as event date; after elimination of the unrelated reports or unlisted companies (OTC), the 158 companies were collected; among them, four companies had no complete financial information. Finally, 154 observed values were obtained; the daily stock price and relevant financial information of the sampled companies were sourced from TEJ. The performance measurements in this study as followings:

- (1) ROS: measured by net profit after tax divided by net sales revenue.
- (2) Cost: cost of sales plus operating expenses divided by total assets.
- (3) Financial Leverage: gross liabilities divided by total net value.
- (4) Total Assets Turnover: net sales revenue divided by average assets.

4. EMPIRICAL RESULTS AND ANALYSIS

Table 1 shows the descriptive statistics of the companies.

Table- 1.Descriptive statistics

Variable	Minimum	Maximum	Average	Standard deviation
Panel A: all samples				
ROS	-39.870	35.230	8.289	12.263
Operating Profit Ratio	-17.560	35.210	8.429	11.870
Cost	0.010	4.396	1.218	0.994
Financial Leverage	8.820	2,007.440	106.024	219.948
Total Assets Turnover	0.030	4.461	1.278	0.982

This paper tests whether the capital market has any change after announcement of the cloud computing information, and discusses the changes in the financial performance of the companies after announcement. The financial indicators used for the study analysis include return rate, turnover, cost structure and financial leverage. The t test is conducted for financial indicators in the year before announcement and those between the announcement year and the following three years.

The average ROS of the user samples increased in the second year after announcement of cloud information technology as compared to the ROS in the year before the announcement, and the result reaches a significance level at 10% significance level. This supports that “performance of the companies is better after use of cloud computing technology”. However, average ROA, ROE, gross profit ratio and operating profit ratio have no significant difference. The average ROS, ROA, ROE and gross profit ratio of the provider samples decrease significantly after announcement of using cloud computing technology as compared to the year before announcement. The gross profit ratio and operating profit ratio decrease greatly in the third year after announcement, and below 1% and 5% significance level. It is significantly reduced.

In total asset turnover, inventory turnover of the user samples is significantly reduced by 3.233 at 5% significance level in the first year after announcement than the year before announcement. The accounts receivable turnover and total asset turnover have no significant difference. Accounts receivable turnover of the provider samples is decreased by 0.332, 0.530, 0.422 and 1.743 in the announcement year and the first year, second year and third year after announcement as compared to the year before announcement. The assets turnover is decreased by 0.295 at 10% significance level in the third year after announcement as compared to the year before announcement.

The cost structure and financial leverage of the user samples have no significant difference before and after announcement of using cloud computing. The cost structure of the provider samples decreases significantly in the third year after announcement as compared to the year before announcement, and reaches a significance level at 10% significance level. The financial leverage increases significantly after announcement, and the difference is the greatest and most significant in the third year after announcement.

Overall, regardless of provider samples or user samples, the empirical results partially support the hypothesis that “performance is better after announcement of cloud computing information”.

5. CONCLUSIONS

In the analysis of the financial performance difference before and after announcement, only cost structure of providers and ROS of user samples are significantly improved, and other financial indicators are not significantly improved. The evaluation time may be too short, so most of financial reports are not disclosed during the years after announcement, and number of samples is too small. In addition, the cloud computing technology cannot have effect on the financial performance in short time. Thus, the research result is not ideal. The cloud computing security is a topical subject. Thus, prudent evaluation should be made if the enterprises need to use or provide cloud computing service.

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