

A Survey Investigation into the Use of the Internet among Accounting Firms

Meiping Chen

National Yunlin University of Technology, Taiwan

Chun-Yao Tseng

Tunghai University, Taiwan

Justine Chang

Chinese Culture University, Taiwan

The speedy development of the internet in the past decade has made the global information network of today like the invention of telephone centuries ago, thoroughly changing the ways that businesses operate. How would accounting firms take advantage of the internet to enhance working effectiveness and efficiency, expanding business and assisting clients, are discussed in this paper. The research aims to explore the internet applications of accounting firms in Taiwan. Data were collected through questionnaire surveys of 595 CPA firms selected randomly from the registered list of the CPA Association of Taiwan, of which 73 out of 84 questionnaires returned were effective for analysis. The study found that the main reasons for accounting firms implementing the internet were for sharing internal resources, enforcing communication with clients and cost saving, while the major usage of internet was in database research, documenting and file transmission. Results of analysis about firms after applying the internet, whether internally or externally, were all positive. Differences in internet establishment and level of usage produced different effects on accounting firms.

1. Introduction

With its overwhelming popularity, the internet has been an important device to obtain profit since the end of the last century. The Internet has not only brought nearly revolutionary changes to business in general, it also has had a significant effect on human society. Facing the huge impact of the internet, business could no longer overlook internet applications in enhancing their competitive advantage.

1.1 Background and Motivation

In a service industry, the internet has provided global consumers with various choices around the clock. In the accounting profession, CPAs have always been consultants to business. Those CPAs who wanted to maintain their business could no longer overlook the advantages of the internet. Besides, accounting firms had the first hand opportunity and responsibility to suggest to clients how to use the internet to expand competitive advantage. This study discusses the advantages brought about by the internet.

The information technology applied by accounting firms has been slower than in other industries in Taiwan. The use of e-mail was already a millstone for many accounting firms, some of which even had to found committees for the handling of internet intrusions.

The most common internet applications in global accounting firms are: (1) Communication tool, (2) Information search and documents access, (3) Usenet newsgroups, (4) Software support, (5) Bug fixes, (6) Understanding competitors' movement, (7) Marketing (Kahan, 1998).

Regarding internet application in accounting firms, a related study pointed out that internet usage has effectively upgraded both production and service. Take KPMG in Taiwan as an example. By looking at the ratio of revenue to numbers of employee, the firm's revenue for the year 1996 was approximately 0.8 billion NT dollars, of which each of 800 employees contributed 1 million NT dollars. While the annual salary per employee was not less than 1 million NT dollars, the production value per person was not high. Thus, how to increase production value per working hours or reducing non-value-added activities in work, such as paper work, were critical issues that need to be solved by many accounting firms (Chang, 1997). Therefore, the use of the internet has become an essential part of the firms' development.

1.2 Research Objective

Because of the importance of internet applications to accounting firms and the lack of comprehensive related studies, this study explored internet application of accounting firms in Taiwan. The research aims to investigate the following: 1. To understand the current internet application of CPA firms in Taiwan. 2. To study the relative effects of different organizational features on internet applications. 3. To understand the effect of internet applications in CPA firms.

The next section of the paper reviews related research and hypotheses development, followed by a description of the data, research methods, analysis, discussion and conclusions.

2. Prior Study and our Hypotheses

In Taiwan, there were some studies regarding the application of intranet by accounting sectors of non-professional companies. Only Wu (1999) introduced the application of internet by CPAs abroad. We thus classify internet applications of accounting firms internally and externally, as follows:

2.1 Internal internet application of accounting firms

Because the lack of risk awareness and the conservative conceptions that people usually have, many companies continue to use out of date technology. However, technology today has become a prime tool for business communication, increasing operating efficiency, lowering cost and enhancing profit-gaining ability. The following were how accounting firms increased their working efficiency through the use of the internet: 1. Reduce paper usage and lower telecommunication cost and time. 2. The efficient storage of data as research database and transmission of information (Kepczyk, 1999) 3. Employees training and recruitment (Burke et al., 2000). 4. Marketing tool for promotion (Cohen, 1999). 5. Videoconferencing real-time meetings. 6. Virtual office and telecommuter (Boomer, 1999).

2.2 External internet application of accounting firms

In many developed countries other than Taiwan, accounting firms have rapidly occupied the consulting market for e-commerce. In Taiwan, accounting firms had been late in realizing e-commerce business opportunities. Even some CPAs indicated that their business relied solely on face-to-face interpersonal relationship with clients and their services were provided to satisfy specific clients' needs, which could not be done electronically. In fact, the internet had changed the operational style of many businesses while the top managers in accounting firms had become more like entrepreneurs and paid more attention to clients' needs. Technology consulting also became a major part of accounting firms' service. Because the business environment faced by business is extremely competitive, they need CPAs to provide a service that is much different from conventional ones (Covaleski, 1999). The following are items that CPAs provide customer service via internet: 1. On-line consulting service. 2. Assurances and WebTrust on e-commerce. 3. E-filing tax. 4. Assist clients to establish web sites, e-commerce operation and related technical support.¹

2.3 The development of hypotheses

According to the research objective and related studies, the main hypothesis was developed as follows:

Because accounting firms in many developed countries other than Taiwan started internet applications earlier, accounting firms in Taiwan that are affiliated with foreign accounting firms should have used the internet earlier than other local firms. The study by Lin (1998) found that for organizations that were established over a shorter period of time and had fewer employees, the effect of the internet on reducing the number of employees and starting new lines of business was more significant. Therefore, this study argues that the variance in basic characteristics of accounting firms, such as time of establishment, numbers of employee, relation to an international accounting firms serve as a strong indicator of whether the firms use the internet.

H1: The features of accounting firms differ in relation to their internet application.

Because establishment conditions and internet application levels were different for every accounting firm, with the area affected after applying internet being different, and because the amount invested in the internet differed among accounting firms, there should be differences in its influence. Studies by scholars abroad pointed out that the internet would affect organization internally and externally in every sector. Internet would redefine commercial strategy; change how organizations operate, organizational structure, communication methods to clients and employees performance strategies, etc. (Taylor, 1999; Richardson, etc., 1999; McCausland, 1999; Boomer, 1999; Kahan, 1998, etc.). If accounting firms did not use the internet, their relevance would soon disappear (Primoff, 1998; Boomer, 1999). Therefore, this study purposes to find out whether different degrees of internet application and capital invested would result in any difference in the areas affected in accounting firms.

H2: There was a significant difference in the areas affected in the accounting firms according to differences in the level of internet application.

H3: There was a significant difference in the areas affected in the accounting firms according to differences in capital invested to establish the internet.

3. Research Methodology

To understand research problems in depth, this study went through related papers to build up a conceptual structure as well as to design questionnaires in accordance with research hypotheses. The content and wording of questionnaires were modified through pre-testing. Questionnaires were mailed to CPA firms in Taiwan in random sampling and follow-ups were done on non-returns. Statistical analysis was done on data collected to obtain the results of the study.

3.1 Research Object

Respondents in this study were CPA firms in Taiwan, consisting of 595 CPA firms selected randomly from the registered list of CPA Association. Questionnaires were mailed to collect data. After telephone follow-up, there were 84 questionnaires returned. After eliminating 11 void ones, there were 73 effective samples left and the effective returning rate was 12.27%.

3.2 Research Structure and Questionnaire Design

Accounting firms were classified into two categories: ones that had used internet and ones that had not. For accounting firms that did not use the internet, the underlying reasons for not using one were studied. For accounting firms that had used the internet, the reasons for applying, difficulty confronted during application, main applications, level of establishment and usage, current investing status, and areas affected by application were explored.

This study referred to papers by Lin (1995), Chou (1998) and Wu-Chen (1998) for the questions on internet application and its affect, to be included in the questionnaires. Through personal interview with supervisors of the information department in one of the Big-four accounting firms and a pretest done by four CPAs, the questionnaire was modified further. Responses were on Likert 5-point scales.

3.3 Data Analysis Method

The statistic methods used in the study were:

- (1). Descriptive statistics: To understand the current state of internet application by accounting firms in Taiwan.
- (2). Cronbach α Confidence level on data.
- (3). Factor analysis: To reduce the number of items in accounting firms affected by internet applications.
- (4). Chi square test: To compare accounting firms which have used the internet and nine basic features of the firms.²

- (5). ANOVA: To compare and analyze the relationship between differences in the degrees of internet application and difference in items affected in accounting firms.

4. Results Analysis

4.1 Reliability and Validity of Research Questionnaires

Questionnaires used in this study were reliable and valid. Cronbach α value of questionnaires collected all exceeded 0.74, showing high internal consistency of questionnaires used in this study. Questionnaires were prepared after studying previous work and modified after advice and pre-testing by selective CPAs and supervisors from information departments of the Big Four accounting firms in Taiwan. The content validity was assured to be relatively high.

4.2 Analysis on Respondents Features

The data from this study showed that 49.21% of accounting firms used the internet while 50.79% accounting firms did not. Studies in the US found that the issue was not whether CPAs used the internet or not, but on how well they used it. Comparative results obtained in this study found significantly more internet application in countries other than Taiwan, showing that there was still a big development gap for Taiwan-based accounting firms in internet applications. According to results from the questionnaires completed, features of accounting firms that were found to use the internet were - in terms of percentages in the particular sample; firms with less than 10 people were 57.14%, percentage of firms that did not have independent information department was as high as 88.89%, 42.86% were joint partnership while 28.57% had branches in other counties or cities. Only 7.36% were international firms. 92.07% had annual sales value less than 50 million NT dollars, 55.56% had been requested by clients to provide assistance in internet applications and consultation on e-commerce, 43.86% had started planning for e-commerce activities to comply with the increasing business opportunities of e-commerce. 36.51% were on research and discussion stage while 20.63% did not consider getting into the e-commerce market.

4.3 Comparison Analysis on Difference in Firms' Basic Features in the Application of Internet

To analyze the relationship between the difference in firms' basic features and whether they used the internet, Chi-Square was applied to the results, of which nine basic features were tested separately. Results showed (Table 1) that there was a correlation between whether accounting firms had started using the internet and four variables; whether the accounting firm is a joint partnership, whether the accounting firm has branch in other counties or cities, possibility of clients' request for internet assistance and firms' policy in terms of e-commerce business opportunities. Thus, Hypothesis 1 in this study was partially supported. For firms that are in joint partnership and have branches in other counties or cities, the possibility of applying the internet was larger than for firms that are not. In addition, firms that never had clients requesting internet assistance were less likely to use the internet. Firms that did not consider entering e-commerce market or

only limited themselves to research and discussion had fewer chances of using the internet.

4.3.1 Reasons for Not Using Internet

The results showed that the reasons for not using the internet were mostly the lack of relative technology support, inability to evaluate internet contribution and immature application environment. Employees' unwilling to apply or feeling that there would be no gain after applying the internet were the least likely reasons for not applying the internet.

4.3.2 Reasons for Using Internet, the Obstacles Confronted, Area of Usage, and Current Investment Status

Based on the survey of accounting firms that had implemented the internet, issues regarding reasons for introducing internet, difficulties faced upon implementation, areas of application and recent capital invested were analyzed.

4.3.2.1 Reasons for Introducing Internet

Regarding the reasons for introducing the internet by accounting firms, there were three main purposes: internal resource sharing (26.98%), enforcing communication with clients and cost saving (25.40%), and cost saving (23.81%). From the viewpoint of global accounting firms with internet application, the three main reasons for introducing internet into the firm are:

Table I. Comparative Analysis of Difference in Firms' Basic Organizational Characteristics in Relation to Whether or Not the Firms Use the Internet

Basic features of Firms	Chi-Square	P-Value
Times since establishment	1.301	0.86
Number of employees	7.764	0.10
Have an information department specifically in charge	1.556	0.21
Joint partnership	3.578	0.05*
Have branch(es) in other counties or cities	5.341	0.02*
International CPA firm	1.137	0.10
Annual Sales	3.842	0.43
Possibility of clients requesting for Internet assistance	7.042	0.03*
Firms' policies toward e-commerce	15.713	0.01*

Note: Significant at the 5% level.

4.3.2.2 Difficulties in Implementing the Internet

The difficulties that accounting firms confronted when implementing the internet were mostly the inability to integrate the internet with firms' current software (38.46%) and the lack of sufficient knowledge (30.77%). Comparatively few firms lacked support from top management (3.23%). Such results differed from the findings of Chang (1997), whose study argued that the impact on accounting firms of the implementation of the internet would flatten the organization. As employees became more autonomous in an internet environment, top management would face the challenge of releasing power. If managers were unwilling to accept the releasing of power, there would be a subjective misunderstanding about internet information technology. The main cause of the difference between this study and Chang's was that the questions in this study were mostly answered by top management, who did not deem themselves as being an obstacle to implementing the internet.

4.3.2.3 Area of Internet Application

Regarding the area of internet application, accounting firms used the internet mostly in database search and transmitting documents and files. Internet application in billing to clients, virtual office, electronic videoconference and employee training remained rare.

4.3.2.4 Current Status of Capital Invested in Internet

Concerning current status of capital invested in internet; about 32% of accounting firms had less than 10% of computers that can be used for the internet while 29% the firms can use 11 to 30% of computers. 55% of accounting firms invested less than NT\$100,000 in the internet. Only 9.68% of the firms invested NT\$510,000 to NT\$1,000,000.

4.4 The Effect on Accounting Firms after Implementing the Internet

This study focused on 29 items that affected accounting firms after applying the internet. Through factor analysis, several main aspects were filtered out. Then the main factors were tested on whether there was a significant effect due to the difference in the degree of internet application in accounting firms.

4.4.1 Analysis of the Items of how the Internet Affects Accounting Firms

Based on data obtained from accounting firms that had applied the internet regarding what effect internet had on them, the effects were classified into two parts: internal and external, consisting of 29 items. The results found that after using the internet, although the effects on accounting firms differed in degrees, they were all positive. Internally, internet application saved a great deal in paper usage, communication and copying expenses, as well as working hours. CPAs tended to disagree that internet application would encourage employees to work at home. As for the external effect, internet application would increase employees' communication with clients, increasing their ability to respond to clients' demands. On the other hand, CPAs tended to disagree that accounting firms which provided a web site designing service to clients and smaller

size accounting firms would have less business in the future. The latter finding was similar to that of Richardson et al. (1999). There would be two types of accounting firms remaining: sole practice and combined firms. Sole practice accounting firms provide a variety of services such as personal finance consulting and technology service to clients to compete with large accounting firms that owned affluent resources and world-class technology.

4.4.2 Factors Analysis of Items about the Effect of the Internet on Accounting Firms

Factors analysis was done on 29 items about how the internet affects accounting firms. Principal components were used to extract six common factors with eigenvalues greater than 1, in which the accumulated explanatory loading was 85.35%. To explain the factors, the varimax method was further used to transform the factors and take variables that had a loading larger than 0.5 to explain the extracted factors. Based on the content of the relevant items, the six factors were named individually as: use internet to expand related business, increase employees' communication and participating abilities, save office expense and time, change communication and marketing method with clients, other factors and raising clients' satisfaction, as shown in Table 2. Among the factors, using the internet to expand related business was the most important factor which had high explanatory variation of 42% while increasing employees' communication and participation abilities was the second most important factor. From the above analysis, the effects on accounting firms due to the use of the internet could be classified as:

- (1). Benefits to external business, such as expanding related business, changing communication and marketing methods with clients and raising clients' satisfaction.
- (2). Benefits to internal application, such as increasing employees' communication and participation abilities and saving office expense and time. The findings were similar to those of Kahan (1998), Kepczyk (1999) and Woodlock (2000).

4.4.3 Internet Application and Current Investment Status

Table 3 shows whether there was a significant difference between common factors that affected accounting firms in terms of depth in internet application and current capital invested, partly supporting hypothesis 2. Hypothesis 3 was not supported. The results here were as follows:

- (1). Difference in depth of web site affected accounting firms in using the internet to expand related businesses. If an accounting firm had a fully set up web site, then the expansion of related business was significant. On the other hand, accounting firms that did not have or did not plan to have a web site could not control or execute the affects of the internet on the change and expansion of business.
- (2). Degree of e-mail usage had an effect on the saving of related office expense and working time in accounting firms. The higher degree of usage of e-mail by the accounting firms, the more benefit they got in saving telecommunication expenses, paper usage, copying expenses and working time.

Table 2. Analysis of Factors about how Internet affects Accounting Firms

Factors	Items	Factor Loadings	Eigenvalue	Explanatory Variation	Accumulated Explanatory Variation
Factor 1 Use Internet to expand related business	Provide e-commerce attesting service	0.856172			
	Provide consulting service on Internet trade safety	0.866849			
	Expand business	0.838041	13.86538	47.81%	47.81%
	Tight relationship with technology members	0.852793			
	On-line tax filing	0.591597			
	Effects on competitors	0.780926			
	Inspiration to competitors	0.807167			
	Increase on Internet application consulting service	0.791689			
Factor 2 Increase employees' communication and participation abilities	Encourage expressing opinions	0.878129			
	Increase frequency of informal communication	0.881028	3.75247	12.94%	60.75%
	Reduce telephone and mail usage	0.849455			
	Support on more business	0.789964			
Factor 3 Save office expense and time	Participate in more external activities	0.745316			
	Works change	0.712116			
	Save communication expense	0.587949			
Factor 4 Change communication and marketing method with clients	Save paper usage	0.832154	2.68450	9.25%	70.00%
	Save copying volume	0.756089			
	Reduce working hours	0.854399			
	Clients contact autonomously	0.812625	2.02602	6.99%	76.99%
Factor 5 Other factors	Raise service added-value	0.816267			
	Replace traditional marketing with autonomously providing information	0.828939			
	Clients collect information from web page before hand	0.638939			
Factor 6 Raise clients satisfaction	Employees work at home	0.721614	1.40426	4.84%	81.84%
	Provide web page design service to clients	0.740420			
	Reduce business for small firms	0.820783			
Factor 6 Raise clients satisfaction	Tight communication with clients	0.642014	1.01978	3.51%	85.35%
	Increase clients satisfaction	0.691225			
	Increase responsiveness to clients' need	0.663731			

5. Conclusions

This study investigates the internet application of accounting firms in Taiwan. Among respondents, approximately half of the accounting firms had started to use the internet in business related activities. If accounting firms, as knowledge intensive professional service industries, do not implement the internet, while the firms' clients have transmitted their data through internet to the firms, the CPA's ability to assist clients in enhancing added value is questionable. Research findings indicate that among accounting firms which have joint partnerships or have branch offices in other counties or cities and have clients requesting support service on internet, or have planned on developing e-commerce, the possibility of using the internet are higher. The main reasons that accounting firms had not used the internet were the lack of related technology support, an inability to evaluate the contribution of the internet and an immature application environment. Although some accounting firms had not used the internet to service clients, they have to pay attention to the effects brought by the internet and respond early in order to maintain competitive advantage.

The main reasons for accounting firms using the internet were for sharing internal resources, enforcing communication with clients and cost saving. The major use of the internet was in database research, documenting and file transmission. Compared to accounting firms in developed countries other than Taiwan that have been using the internet to provide clients with consulting and billing services, virtual office and educational training, the internet usage by Taiwan-based accounting firms was still in its infancy and was mostly for internal purposes.

Significant differences in common factors that affected accounting firms are the difference in depth of internet applications as well as the amount of capital invested in the internet and the ratio of computers that could be used for the internet. Results of effects on firms after applying the internet, whether internally or externally, were all positive. Differences in internet establishment and level of usage produced differences in the effects on accounting firms.

Table 3. Comparison of Differences in the Effects on Accounting Firms due to Differences in Degree of Internet Application and Current Investment Status

Items of analysis	F Value	P Value
1. Current condition of web sites set up and use of internet to expand related business	4.496899	0.011
2. Current condition of e-mail usage and saving of office expense and time	5.225799	0.012

Note : Other items analyzed were all insignificant, with significant level lower than 0.05.

While we have provided details about the use and application of the internet by Taiwanese accounting firms at the present time, a limitation of the study is that the analysis was based on only 63 respondents. However, Cronbach values and accumulated explanatory variations have reached acceptable standards. There has been no in-depth study on the special application of the internet yet by accounting firms. Subsequent research could focus on virtual office, telecommuting, long distance educational training, etc., for detailed study. Also, further studies could be conducted on different industries and on the impact of the internet on organizational structure and human resource management, thus providing information to industries in general on using the internet more wisely and widely for future benefits.

Footnotes

1. Summary of Relative Studies are in the Appendix.
2. The nine features of accounting firms are: Times since establishment, numbers of employees, having an information department specifically in charge, a joint partnership, having branch(es) in other counties or cities, an international CPA firm, annual sales, possibility of clients requesting internet assistance, firms' policies toward e-commerce.

References

- Boomer, G. L. (1999). The CPA Journal Millennium Series: the Bridge to success the Internet into the next millennium. **The CPA Journal**, (November): 32-36.
- Burke, L, and Slavin, N. (2000). Just-in-time accounting education. **The CPA Journal**, (April): 46-51.
- Chang, K.J. (1997). Intranet Reconstructs Company's Future. **Accounting Research Monthly**, v.136: 20-23.
- Chang, R. H. (1997). Establishment of Intranet. **Accounting Research Monthly**, v. 136: 11-15.
- Chen-Wu, M. R. (1998). **Effect of Intranet to Accounting Workers**, Master Thesis, Graduate School of Accounting, TamKang University.
- Chou, K.C. (1998). Current Status of Internet Application among Domestic Companies. Information and Computer, **Accounting Research Monthly** (September): 112-118.
- Cohen, E. E. (1999). CPA Firm Marketing on the Internet: Once You Have Woven the Web, Keep Pulling Them in. **Infotech Update**, (Jul/Aug): 1-4.
- Covaleski, J. M. (1999). The firm of the future: 21 century accounting. **Accounting Technology**, (May): 4-6.
- _____. (1999). A Clear View of the Future. **The Practice Accountant**, (June): 2-4.
- Crell, B. (2000). Website Design: What do I Need to Know? **Pennsylvania CPA Journal**, (Spring): 15-19.

- Dobbs, K. (2000). Who's in charge of e-learning? **Training**, (June): 54-58.
- Gray, G.L. (1998). The Electronic Frontier. **Journal of Accountancy**, (May): 32-38.
- Helms, G. I. (1999). Information Technology Issues for the Attest, Audit, and Assurance Services Functions. **The CPA Journal**, (May): 62-63.
- Kahan, S. (1998). Making Sure the Internet Works for You. **The Practical Accountant**, (March): 35-38.
- _____.(1999). Promoting e-filing. **The Practical Accounting**, (October):. 69-73.
- Kepczyk, R. H. (1999). Business weapons: Technology tools for the next millennium. **Infotech Update**, (Sep/Oct): 10- 11.
- Kotryo, R. J. (1999). Ahead of the Curve. **Journal of Accountancy**, (February): 93-95.
- Louwers, T. J, Pawewark, W. R, and Typpo, E. W. (1999). Accounting Firm Internet Sites that Work (and Those That Do Not). **The CPA Journal** (March): 69-71.
- Lin, R. J. (1995). **Effect of Implementing Internet on Organization**, Master Thesis, Graduate School of Business Management, National Central University.
- McCausland, R. (1999). CPAs: Online. On the Web. On target? **Accounting Technology**, (May): 16-22.
- Middlemiss, J. (1998). The Urge to Merge. **CA Magazine**, (October): 20-27.
- Primoff, W. M. (1998). Electronic Commerce and Web Trust. **The CPA Journal**, (November): 14-20.
- Richardson, D., Boomer, G. L, Matherne, L. J. (1999). Visionaries Speak out. **Accounting Technology**, (June): 6-10.
- Schulz, W. E. (1999). Internet-a Low Investment Can Produce Big Returns. **The Practical Accountant**: 10-11.
- Stimpson J. (1999). Prefabricated Web Sites. **The Practical Accountant**, (December): 51-53.
- Taylor, M. (1999). Accountants and the Net-New Ways, New Means. **Australian CPA**, (May): 67.
- Wolosky, H. (1999). Grow or Die. **The Practical Accountant**, (May): 30-36.
- Woodlock, P. (2000). Will My Client Benefit from Web Trust. **The National Public Accountant**, (Dec1999/Jan 2000): 46-48.
- Wu, T.F. (1999). **Accounting Information System**. Best-wise Publishing, Taiwan: Taipei.