A Study on Perceptions of Electronic Commerce for Taiwan's Small and Medium Enterprises

Yi-Hui Tao

Shih-Hao Su

C. Rosa Yeh

A STUDY ON PERCEPTIONS OF ELECTRONIC COMMERCE
FOR TAIWAN' S SMALL AND MEDIUM ENTERPRISES

Yu-Hui Tao/Shih-Hao Su
Department of Information Management, I-Shou University
1, Section 1, Hsueh-Cheng Rd., Ta-Hsu Hsiang, Kaohsiung County
Taiwan, 84008, R.O.C.
Tel: X-886-6577711 ext. 6562,
Fax: X-886-7-6577056
ytao@isu.edu.tw/ ernes@ms37.hinet.net

C. Rosa Yeh,
Institute of Human Resource Management, National Sun Yat-Sen University
70 Lien-Hai Rd. Kaohsiung 804
Taiwan, R.O.C.
Tel: X-886-7-7319116
rosayeh@ms28.hinet.net

ABSTRACT

Although small and medium enterprises (SME) make up the majority of businesses in Taiwan, with limited resources and technological capabilities, they have historically devoted far less than the large corporations to the electronic commerce (EC) frenzy. In order to understand the effects of company background and their constitution on SME top managers' perceptions of EC, 600 questionnaires were sent out to a random sample of SME top managers in seven industries in the island. The return rate was 10.33%. The results revealed four types of perceptions of SME top managers: profit-making, differential-pricing, practical and supportive, which match closely to the perception types in Cheng's study on EC-implemented companies in Taiwan. SME top managers characterized its company constitution as self-satisfied, self-dissatisfied, conservative-industrial and new-industrial. Although company constitution did not show significant effects on SME top managers' perceptions of EC, cross-tabulation showed certain associated relations. One of the future studies may combine Cheng's results on perception types of EC-implemented companies and the perception types of SME top managers for in-depth EC strategic analyses.

INTRODUCTION

During the booming period of Electronic Commerce (EC), many research explored EC-related studies on EC-implemented companies that were mostly add-on units of large corporations or new businesses, which consisted only a very small percentage of the entire business. Over 97% of the entire business in Taiwan belongs to the small and medium enterprises (SME) segment. They looked forward to EC but lacked enough resources to implement or even understand it. This pioneer study wished to assess the SME perceptions on EC.

LITERATURE REVIEW

The problems of Taiwan's SME include [8] insufficient capital, weak financial structure, narrow marketing channels, low profitability, difficulty in getting management information, facing import competition, pricing competitively, dealing with rapid technology progress, insufficient creativity, high employee attrition rate, lake of core technology, higher requirement of laws in environmental/labor/social benefits, and rising management cost. Yu [10] indicated EC utilizes Internet, Intranet and Extranet as the basis to increase competitiveness, extend business scope, speed up market response, increase earnings and lower cost, and provide 365 x 24 services. Cheng [2] further pointed out that EC has the characteristics of larger market and lower entrance requirement.

Combining the SME problems and EC characteristics, Tao and Yeh [7] concluded that EC would impact SME due to the weak foundation of SME, increasing integrated supply-chain and demand-chain activities among larger corporations, effects of open geographical-boundary by virtual enterprises, and pressure from competitor's adoption of Internet related process improvements. Therefore, even after EC has crush-landed, businesses are still rationalizing their EC business issues, or the decision on the more fundamental issues of electronic business (eBusiness). Therefore, how to understand the impacts of EC or eBusiness for Taiwan's SME is an important issue to be addressed.

There is already many related Taiwanese literature on EC-implemented companies. For example, Chen [1] studied the correlations between factors of implementing EC, such as environment, strategy, training, system development and integration, and performance. Lai [4] also explored how enterprises adopted EC from perspectives of organization, environment, government policy, network technology and network provider. Lin [5] clearly indicated human resources, such as information and marketing personnel, affect the implementation and popularity of computer network. Cheng [2] studied top manager's EC perception types since he believed that perceptions affect behavior, which we think is still an important and yet to be validated question among top SME managers. Almost all of the above references studied the adoption and effects of EC on the EC-implemented enterprises. However, the lack of perception study on EC impacts for the majority of SME who have not implemented EC needs to be addressed.

RESEARCH DESIGN

The first research question was to find out what are the EC perception types of top SME managers? The next question was then how do these EC perception types compared to those who had implemented EC in Cheng's study [2]? The last add-on question was whether the company constitution affects how the top SME managers perceive EC? To answer the above three questions, a survey was conducted to top SME managers on their perceptions of current company profile, company constitution, and EC perceptions, with the constructs as described below:

1. Company profile —industry type, years since established, number of employees, capital, geographic location, number of information employees and number of marketing employees
2. Perceptions of EC—eleven factors [2], including resource integration, profit maximization, interactions with customers, values creation, customer satisfaction, globalization, future trend, global logistics, advertise marketing, differential pricing, and decision capability.
3. Company Constitution—human resource, financial status [5], computer applications [6], marketing strategy, marketing channels, customer groups [9], and management strategy [3].

The above research questions were analyzed by descriptive statistics for company profile, K-means cluster analysis for segmenting EC perceptions and company constitution, and ANOVA for the effects of company profile and company constitution segment toward perceptions segments. The questionnaire was designed for Taiwan's SME that had not implemented EC. The questionnaire included three parts with a total of 94 questions. Each questionnaire took about 20 minutes to fill out and had been modified based on the results of a 12-person pretest.

The questionnaire was designed for the SMEs that had not implemented EC. According to database of China Credit Information Service, the SME sample was drawn with the criteria of employee size between 11 and 200, and capital between 10 to 150 millions NT dollars. Six hundred questionnaires were sent out to a random sample of SME top managers in seven industries with a return rate of 10.33%. The Cronbach's was 0.9375 for EC perceptions and 0.8812 for company constitution, which were both high in reliability. The internal validity on perceptions was statistically significant for all but two questions.

ANALYSIS AND RESULTS

Profile Analysis

Before discussing results of the three research questions, the profile of sample companies is summarized as follows: the coverage across seven industries was acceptable; the highest percentage of the companies had been established for under fifteen years; most of the companies had less than fifty employees, and ninety percent fell under the capital category under 90 million NT dollars. The above statistics further confirmed that the sample companies were qualified as SME. Nearly fifty percent of the companies located in the north. The highest percentage of companies had 1-3 information employees while 14.5 percent of the companies did not have

any, a percentage that was considered high. On the number of marketing employees, the highest percentage of companies chose 1-3 person(s) and only 2.2 percent had no marketing staff.

Analysis of EC Perception Type

This research utilized K-Means cluster analysis for obtaining the four perception types defined as profit-making, differential-pricing, practical, and supportive:

1. Profit-making — agreed on "Profit Maximization", "Value Creation", "Globalization", "Future Trend", and extremely agreed on "EC Value" and "Unlimited Development". Seventeen samples fell into this category, which was about 27.42% of the responding companies.
2. Differential-pricing — agreed on "Resource Integration", "Profit Maximization", "Customer Interaction", "Value Creation", "Globalization", and "Price differentiation". This cluster understood market change and consumer characteristics, and represented 14 of the samples, about 22.58%.
3. Practical — showed fluctuation between "somewhat disagree" and "unstable". This cluster thought EC was difficult to execute. Five samples fell under this group, which was about 8.06% of the responding companies.
4. Supportive —all showed "agree" on every categories and thus supported and accepted EC. This cluster contained 26 samples and was about 41.94%.

Except the "practical" group who had no confidence on EC due to the belief that computer network could never replace traditional commerce activities, the other three types showed positive support for EC. Particularly, they held positive views on "Globalization" and "Customer value".

Analysis of Company Constitution

The same K-Means cluster analysis applied. Four types of company constitution were analyzed. They were self-satisfied, self-dissatisfied, conservative-industrial and new-industrial:

1. Self-satisfied — Except for "somewhat agree" on "Network Usage", the respondents all voted "very agree" on other categories. Companies in this group were very satisfactory with current situation. Twenty companies were in this group, which was about 38.71%.
2. Self-dissatisfied –Companies in this group were mostly not satisfied or had no comments. Twenty were in this group, which was about 32.26%.
3. Conservative-industrial – Companies in this group were only somewhat satisfied with current operation. They were very confident financially, but did not believe the execution of computer network can be successful. Nine were in this group, which accounted for 14.52%.
4. New-industrial – Companies in this group were high in acceptance level of EC and performed well on network usage and financial aspects. Nine were in this group, which was about 14.52%.

The "conservative-industrial" type dared not try to run their companies with computerized process, especially when their financial status was still satisfactory and thus less willing to change. The "self-dissatisfied" type performed not well financially so was more willing to try out computer network

as a way to strengthen the operation. Relatively speaking, the other two groups were active in applying computer network and were financially strong.

Impacts of Company Profile on Perception Type

We used ANOVA for testing whether company profile had any impacts on management perceptions on EC? The general hypothesis was H_0: $\mu_i = \mu_j$, where μ was the perception type, and i and j were the individual item in the company profile. Under the significant level of 0.05, applying ANOVA proved the F values greater than the critical values, which verified that no item in company profile had any significant impact on management perceptions on EC. However, cross-tabulation did show certain relationships between each other.

Impacts of Company Constitution on Perception Type

Similar to the above session, we used ANOVA for testing whether company constitution had any impacts on management perceptions on EC? The results verified that no item in company constitution had any significant impact on management perceptions on EC. Similarly, cross tabulation showed some relationships between company constitution and perception types.

Comparison of perception types of other research

In addition to the eleven EC factors, Cheng [2] also clustered perception types of EC-implemented enterprises with service function, service quality, investment strategy and adoption timing. Accordingly, the EC perception types are opportunity, blindness, pro-activeness and steadiness. We found out that our supportive, differential-pricing, profit making and practical types were comparable to Cheng's opportunity, blindness, pro-activeness, and steady type, respectively. Assuming our perception types had equivalent distribution and associations with Cheng's perception type, it may imply that SME perception did not change much after EC bubblization.

DISCUSSION AND CONCLUSION

The discussion and suggestions of the above results were summarized below accordingly.

1. Based on the analysis for the second research question, our perception types had equivalent distribution and associations with Cheng's perception types [2], which implied EC perceptions had not changed between sampled SME and EC-implemented companies, and before and after EC's roller coaster ride in year 2000. More over, if "e" trends steadily develop, we might predict the behavior of SME from previous related studies. For instance, our supportive type, like Cheng's opportunistic type, might seek investment in EC; our practical type, like Cheng's steady type, might hold back on their investment in EC; our differential-pricing type, like Cheng's blind type, might seek a post-period EC investment; our profit-making type, like Cheng's pro-active type, was prone to invest as early as possible.
2. Even though the result for the third research question

showed insignificant relations between the company profile and company constitution and EC perception types, cross-tabulation analyses did show some associations and relationships. As a result, it deserves an insightful investigation in the future, which can be achieved by expanding the constructs of company profile and company constitution or applying qualitative approaches such as interviews or case studies.

3. In addition to utilize previous research results in predicting future SME's EC behavior, another future work is to extend the research structure to SMEs that are willing to implement EC to understand their perceptions in EC intention, goals, expectation, strategy and reward. These research results will directly assist the majority of Taiwan's SME with proper preparation to face the EC impact.

REFERENCES

[1] Chen, H., A Study of the Environment and Implementation Strategies for Adopting Electronic Commerce, *unpublished Master thesis of Fu-Ren University*, Taiwan, 1998.

[2] Cheng, A., The Cognition of Firms to Electronic Commerce on Internet, *unpublished Master thesis of Da-Yeh University*, Taiwan, 1999.

[3] Huang, S., A Study on Positioning and Strategy of Internet Banking, *unpublished Master thesis of Da-Yeh University*, Taiwan, 1999.

[4] Lai, W., A Study of the Decision Factors on Adoption of Electronic Store, *unpublished Master thesis of Da-Yeh University*, Taiwan, 1999.

[5] Lin, F., A Study of Building A Financial Analysis Model Applying Genetic Algorithm Maximize Neural-net, *unpublished Master Thesis of Chiao-Tung University*, 1995

[6] Lu, S. and Cheng, S., A Study of Corporate Culture, Organizational Structure and Willingness to Introduce Intranet, in *Proceedings of the 5th Information Management and Practice*, Shih-Hsin University, 1999, 524-531.

[7] Tao, Y. and Yeh, R. EC Business Models for Small and Medium Enterprises, *in Proceedings of the 3rd Business Logistics of the Republic of China*, Kaohsiung First Institute of Technology, 1999,.203-210.

[8] White Paper for Taiwan's Small and Medium Enterprises, Published by *Department of Economic Affairs*, 1999.

[9] Wu, Z., Liu, S., Tsai, I. And Lin, C., A Study of Factors Affecting Web Usage Intention —Example of Portal Sites, in *Proceedings of the 5th Information Management and Practice*, Shih-Hsin University, 1999, 500-507.

[10] Yu, C., Introduction to IBM Electronic Commerce, in Proceedings of *EC Technology*, Ya-Dong Institute of Technology, 1998.