The Effect of E-Procurement Value to Supply Chain Performance: Supply Chain Integration view

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Abstract

This study aims to explore the effects of participant motive, system integration, and value-added services on supply chain performance, and the role of E-Procurement Value as a mediating role. We collected data via a cross-industry questionnaire, with total 127 survey instruments available. We analyzed our data using regression model. The results show that participant motive, system integration, and value-added services have a positive effect on E-Procurement Value and further affect the supply chain performance.

Keywords: Participant Motive, System Integration, Value-added services, Supply Chain Performance

1. Introduction

E-Procurement Value includes reducing procurement costs, shortening traffic hours, diminishing unconfirmed orders, obtaining more procurement information, improving the control system of supply chain, and shortening the procurement management period. In addition, it also helps the organization to acquire procurement policy and enhance inter-organizational cooperation (Kalakota and Whinston, 1997; Kalakota and Robinson, 1999).Since the mid-1990s companies have also been redesigning their relationships with business partners for indirect procurement (Puschmann and Alt, 2005). In order to promote E-Procurement in Taiwan, the Executive Yuan approved the "Industrial Automation and Electronic Business Act: Project A and B " in June 1999. The Department of Industrial Technology (DOIT), under the Ministry of Economic Affairs (MOEA), then launched several pilot projects. The development of E-procurement has apparently become vital to businesses. Due to the vague identity of E-Procurement Value, however, procurement is regarded as office work; the industry is unable to think about its value from a strategic viewpoint (Chandrasekar and Shaw, 2002). Therefore, this research aims to verify the effects of E-Procurement Value on organizational performance and at the same time provide worthy references for industries implementing E-Procurement. Thus, this research first attempts to analyze the effect on supply chain performance of an organization when a buyer applies E-Procurement. The second section analyzes the effects of practicing E-Procurement Value while participant motive, system integration, and value-added services are provided after implementing E-Procurement. The final section investigates E-Procurement Value adopted by different industries (including traditional and hi-tech companies) through cross-industries analysis, and seeks to find similarities and differences for academic and practical consideration.

2. Literature review and hypotheses

2.1 Participant Motive

For industries with a high degree of market concentration, using information technology may change the industry framework, and new information technology would need to be applied in order to obtain competence advantage.

In such a competitive environment, external pressure would push the organization to enhance administrative performance through innovation. Thus, searching for the newest information technology is a kind of management strategy necessary for industrial survival.

Rosen and Howard (2000) pointed out in their research the reasons for an industry to employ E-commerce. They suggest that such an industry wishes to: lower operation costs and funding to reduce risks. Grewal et al. (2001), and many other scholars hold that participant motive have an effect on the E-market (Kivijarvi, 1995; Junnarkar, 1997; Rindfleisch, and Heide, 1997). They suggest that the motive of E-market organization includes the economic expectation of promoting efficiency and the goal of achieving rationalized principle. Moreover, some studies point out that increasing information investment cannot guarantee the implementation of value; instead, long-term development and learning could truly help establish practical competitive advantages for an organization. Accordingly, motives behind organizational participation and E-market could include efficiency motive, rationalization, and learning. This research thus proposes the first hypothesis:

Hypothesis I: Participant motive has a positive impact on E-Procurement Value.

Hla: Efficiency motive has a positive effect on the "internal value" of E-Procurement.
Hlb: Efficiency motive has a positive effect on the "external value" of E-Procurement.
Hlc: Rationalized motive has a positive effect on the "internal value" of E-Procurement.
Hld: Rationalized motive has a positive effect on the "external value" of E-Procurement.
Hle: Learning motive has a positive effect on the "internal value" of E-Procurement.
Hlf: Learning motive has a positive effect on the "external value" of E-Procurement.

2.2. Relationship between system integration and E-Procurement Value

E-Procurement System is constructed on the fore of the information system in an industry (Sherer, 2005). The input and output of the information system is the back-ground (such as ERP), and so the integrated level of E-Procurement system and some systems like ERP would greatly affect both the operating efficiency of E-Procurement and the capability of reducing cost (vs. merely focusing on automating internal industry procedure). Such development has long been a crucial issue for a successful E-Procurement system because of the following reasons (Davern and Kauffman, 2000; Chandrasekar and Shaw, 2002):

(1) Any type of E-Procurement Chain or integrated travel ordering system depends on easily accessed procurement information. Therefore, to make one single communication standard is vital to a business.
(2) So far, most industries have their own procurement standards, and there are thus too many versions in existence.

Moreover, Grewal et al. (2001)have also investigated the electronic implementation value by examining the outcome of E-commerce application in an industry. They believe that there are some difficulties in combining technologies and systems both in an industry and among different industries. Therefore, the cooperation of both up-stream and down-stream manufactures and firms is necessary for E-Procurement System to be able to create a greater value. Therefore, this research proposes a second hypothesis:

Hypothesis 2: System integration has a positive effect on E-Procurement Value in an industry.

H2a: Procurement database has a positive effect on the "internal value" of E-Procurement in an industry.
H2b: Procurement database has a positive effect on the "external value" of E-Procurement in an industry.
H2c: MRP system has a positive effect on the "internal value" of E-Procurement in an industry.
H2d: MRP system has a positive effect on the "external value" of E-Procurement in an industry.

2.3. Relationship between Value-added services and E-Procurement Value

The value-added services that a complete E-Procurement market requires should include such things as credit, purchase management, escrow, payment, transportation insurance, stock, logistics, transportation service, and export documentation. In studying the E-Procurement Website of Formosa Technology Information in Taiwan, we find that E-trade markets should operate by domain know-how and have massive requests for procurement; in addition, the Buyer should play the leading role in the market operation. A complete Buyer's E-Procurement market requires rich content, a great number of traders, stable profit making models, and—most important of all—it must provide more value-added services to promote E-Procurement outcome. In accordance with the above statement, this research makes the following hypothesis:

H3: Value-added services have positive effects on E-Procurement Value.

H3a: Cash-flow service has a positive effect on the "internal value" of E-Procurement.
H3b: Cash-flow service has a positive effect on the "external value" of E-Procurement.
H3c: Information-flow service has a positive effect on the "internal value" of E-Procurement.
H3d: Information-flow service has a positive effect on the "external value" of E-Procurement.

2.4. Relationship between E-Procurement Value and Supply Chain Performance

Information System Spending has been regarded as a tool to intensify the competitive advantage of an industry (Karakaya, 1998). The Internet has changed the characteristics of the global market and at the same time has changed the original business model. It provides a new lesson in management to the electronic industry. Accordingly, the implementation of E-Procurement is the essential path toward promoting operation efficiency, reducing management cost, and increasing competitive advantage.

Considering the relationship between the application of E-commerce and supply value management performance, Kalakota and Whinston (1997) hold that the Supply Chain is a series of independent steps. By following these steps, E-commerce is able to satisfy customer demands and attain good performance. On the other hand, when the authors investigated the different attitude that the industry holds toward E-commerce, they found that the participants did not show a different attitude; regardless of whether having enrolled in the E-market, they all gave it a positive consideration. Moreover, the general agreement is that E-commerce can improve the overall value chain function and supply chain performance. Some scholars have taken examples from the information industry and discussed the relationship between the application of E-commerce and supply chain performance. The result verifies that the more E-commerce is used, the more the positive effect on supply chain performance. In short, when industry spends more on E-Procurement Value, supply chain performance is raised accordingly. Thus, this research makes the following hypothesis:

Hypothesis 4: E-Procurement Value has a positive effect on Supply Chain Performance.

H4a: E-Procurement value has a positive effect on supply chain performance of "time performance measure."
H4b: E-Procurement value has a positive effect on supply chain performance of "flexibility performance measure".

2.5. E-Procurement Value is Mediator Variable

In discussing the effect of the Mediator Variable on E-Procurement Value, this research concentrates on the e-process of industry. Some scholars indicate that factors inside and outside the organization influence the level of electronic connectivity of the firm and further affects performance. Grewal et al. (2001), consider that the attitude of administrators in high status, motive, capability and marketing orientation are the factors that influence E-business level and affect organizational performance. Therefore, this study assures that E-Procurement is part of the electronic process in industry, and the following hypothesis is made:

Hypothesis 5: E-Procurement Value is a Mediator Variable of Participant motive, system integration, and value-added services to supply chain performance.
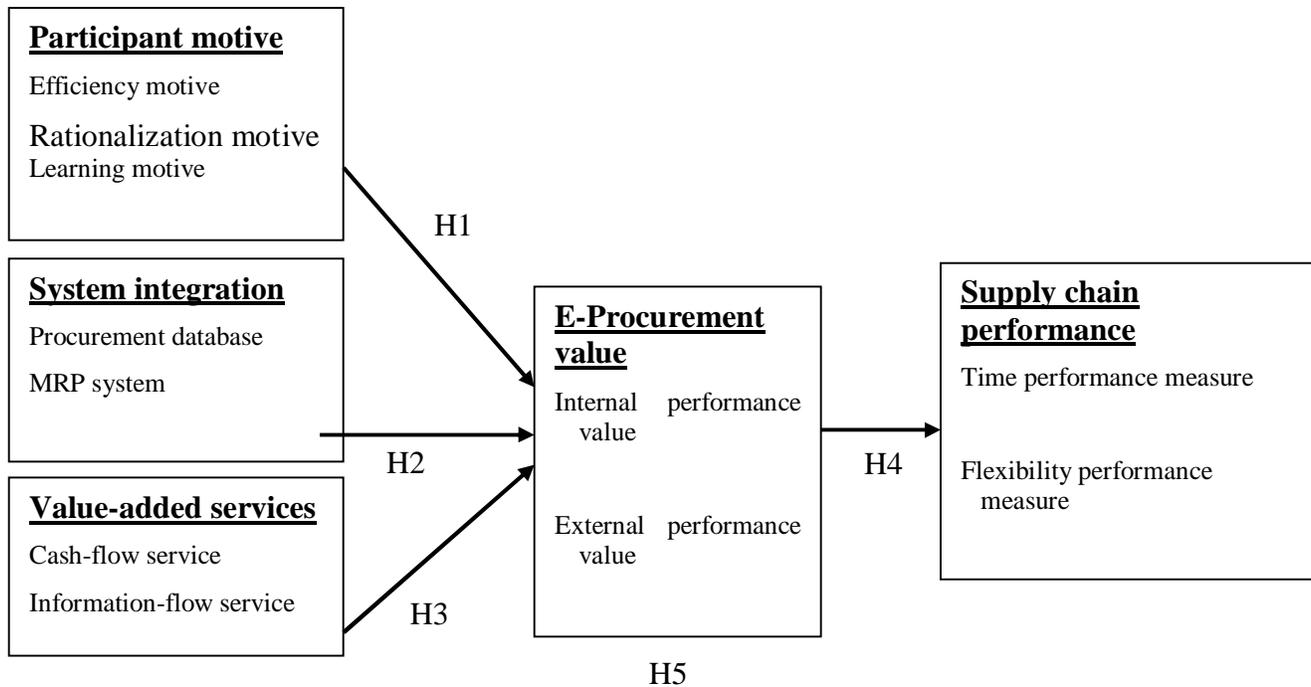
Figure 1: Research framework and hypothesis

3. Research design

3.1. Measurement of variables

Based on the findings of literature review and research framework, the questionnaire is designed. Table 1 illustrates the consideration for research variables in various constructs:

Table 1: Definition of research variables

Constructs	Factors	Definition
Participant motive	Efficiency motive	Referring to the concerns and motive aroused inside the business when participating in E-Procurement and E-market.
	Rationalization motive	
	Learning motive	
System integration	Procurement database	Integrating the information application system and E-Procurement related system that the firm has already adopted, in order to make all kinds of application systems to be able to exchange business information.
	MRP system	
Value-added services	Cash-flow	Procurement on the Internet provides E-market with procurement service, some added value, as well as some services related to procurement.
	Information-flow	
E-procurement Value	Internal implementation value	Referring to businesses that spend Information Technology between buyer and supplier, and that use the Internet to deal with product procurementor service; consequently, such obtain profits far above what traditional procurement systems could have ever achieved.
	External implementation value	
Supply chain performance	Time performance measure	Referring to evaluating overall supply chain performance instead of merely evaluating the performance of individual supply chain members.
	Flexibility performance measure	

3.2. Sampling design

This study considers 15 different kinds of industries that have taking part in E-marketing. Due to time limitations, however, a general survey is not possible. Thus, after participating in several projects held by the Industrial Department of Economic Ministry in Taiwan—suchas E-business applications and promoting in manufacturing industry—this research has decided to focus on some traditional manufactures such as food, metal and plastic chemistry, and hi-tech information industry. In addition to having case interviews with some food manufacturing industries, the author also constructed a lot of sample questionnaires for some other manufacturing industry. The rationale behind the sample population is explained below.

From the perspective of industry characteristics, for instance, cost for plastic chemistry is the greatest pressure because the component cost would be affected by international market. That is to say, the chemical industry depends on the upstream Supply Chain more than the downstream Demand Chain. Therefore, the sample population of manufacturing industry is aimed at plastic chemistry, metal, and food manufactures. Finally, in order to analyze the variations caused by traditional and hi-tech industry implementing E-Procurement, this research deals with information industry as the last object.

4. Result Analysis

First, the sample structures are explained; then measurement construct reliability is examined, and finally, the hypothesis and mediator variables are verified by means of the Regression method.

4.1. Descriptive samples

In this research, samples were first sent out609 in April, 2016, and the deadline for returning samples was inMay, 2016. The collection work was done at the third week after the sending date, and 137 questionnaires were returned, in which 10 were invalid ones due to incomplete information. Table 2 shows that the information industry gives the best response in returning questionnaires among manufactures, the industry that also returned the most of questionnaires (25.2% of all samples). This response is probably derived from the characteristics of the industry itself. The information industry has adopted the electronic system earlier than traditional manufactures, and so it has a more advanced E-Procurement system. In all the services and other manufactures, the Distribution service had the fewest samples returned, only 5.4%. In fact, in the sample population, the Distribution service industry is also the one with the fewest samples returned. Therefore, the situation of returning questionnaires meets the ratio of the industry of matrix samples.

Table 3 shows the size distribution of samples from the returned questionnaires. The returned samples indicate that most of the manufactures with the size from NTD$ 2 billion to 5 billion (USD 60 million to 150 million) responded the questionnaires, constituting 29.1% of all returned samples. The fewest number of samples returned—9.4%—was the manufactures with funds below 100 million (USD 2.9 million) and over 10 billion (USD 300 million).

Table 2: Industry distribution of samples

Type of industry	Type of Individual industry					
Manufacturing Industry	Information industry	Food industry	Plastic chemistry industry	Metal industry	Others	Total
	32 (5.2%)	10 (7.9%)	21 (16.5%)	19 (15.0%)	0 (0%)	82 (64.6%)
Service Industry	Distribution service industry	Information business industry	Tourist and restaurant industry	Retailing industry	Others	Total
	7 (5.4%)	9 (7.1%)	11 (8.7%)	7 (5.5%)	11 (8.7%)	45 (35.4%)
Total	39 (30.6%)	19 (15.0%)	32 (25.2%)	26 (20.5%)	11 (8.7%)	127 (100.0%)

Table3: Samples distribution (NTD$)

Size	Number of samples	Percentage (%)	Type of industry	
			Manufacturing	Service
under 100 million (USD 2.9 million)	12	9.4%	4	8
From 100 million to 1 billion (USD 2.9 million to 30 million)	23	18.1%	13	10
From 1 billion to 2 billion (USD 30 million to 60 million)	28	22.0%	17	11
From 2 billion to 5 billion (USD 60 million to 150 million)	37	29.1%	29	8
From 5 billion to 10 billion (USD 150 million to 300 million)	15	11.8%	8	7
Above 10 billion (USD 300 million)	12	9.4%	11	1
Total	127	100%	82	45

4.2. Levels of implementing E-Procurement in the samples

Among the returned samples, there were only 6 manufactures still at the third stage of E-Procurement (the stage representing system connection and information sharing among industries), constituting 4.7% to all returned questionnaires. 59 manufactures have preceded the second stage (cross-department integration), accounting for 46.5%. In other words, more than half of the manufactures are applying E-Procurement integration acrossdepartments.

Table 4: Levels of implementing E-Procurement

Stages of E-Procurement implementation	Number of samples	Percentage (%)	Type of industry	
			Manufacturing	Service
Improvement of interior procurement procedure (First stage)	62	48.8%	39	23
Cross-department integration (Second stage)	59	46.5%	40	19
System connection and information sharing among industries (Third stage)	6	4.7%	3	3
Total	127	100.0%	82	45

4.3. Measure reliability

The measurement of reliability in all constructs and factors in this research utilizes Item to total correlation coefficient to present effectiveness, and examines condense level of variables with Cronbach's α. According to Hair, Anderson, Tatham, and Black (1995), if α is over 0.7, the variable represents high reliability. In addition, in Item to total correlation, they suggest that if the correlative coefficient variable in Item to total is under 0.4, it should be ignored or deleted. The result of this study shows that all variables in Cronbach's α, the variable of cash-flow in value-added services is 0.7108, the lowest reliability of all factor variables, and yet it still meets the basic requirement of Cronbach's $α > 0.7$ level. This proves that all the items in the constructs of this research have high reliability. As for Item to total correlation, all the items in the questionnaires were more 0.4, which assures that all the items in the constructs of the research are able to represent all constructs of industry. Therefore, in this research, the reliability of all factors is convincing.

4.4. RegressionModels

Based on the "internal value" and "external value" of E-Procurement Value, a mediator variable, this research discusses the "efficiency motive," "rationalization motive" of participant motive (a contingency factor), "system integration," and "cash-flow service" and "information-flow service" of value-added services. In the contingency factors, Buyers have somesignificant impact on E-Procurement Value; the result is shown in Table 5.

First of all, in model 1, the construct of participant motive, "efficiency motive" and "internal value" of E-Procurement present significant positive effects, which indicates that when buyers consider efficiency as priority in adopting E-Procurement, the internal value of E-Procurement would raise accordingly. On the other hand, if buyers take rationalization and organizational learning as the main concerns while adopting E-Procurement, the external value of E-Procurement would be higher. Besides, when E-procurement is adopted, if buyers owned higher level of system integration, the internal value of E-Procurement would also be raised. Finally, when buyers provide more information related service, both internal and external values increase markedly. Thus H1to H3 are partial supported.

The result in model 2 shows that E-Procurement value has significant positive impact on supply chain performance. Therefore, H4 is supported. When buyers have high E-Procurement values, more benefits would be obtained from "time performance measure" and "flexibility performance measure" of supply chain performance. Studying mediating effect in those variables, Regression Analysis, purposed by Baron and Kenny (1986), is applied to verify the function of mediator. This method includes three steps. First, the independent variable must have a significant association with the dependent variables. Second, the independent variable should have significant association with the mediator variable. Third, the standardized beta coefficient of independent variable responds to dependent variable would be weakened or even diminished because of the involvement of mediator variables.

In model 3, the research takes contingency factors—including participant motive, system integration, and value-added services—to execute Regression Analysis on supply chain performance, as shown in Table 5. The finding indicates that contingency factors react to time performance measure of Supply Chain Performance, where efficiency motive, rationalization motive, and value-added services in information-flow demonstrate obvious correlations. In addition, those contingency factors, efficiency motive, rationalization motive and value-added services also impact on the flexible performance measure. Furthermore, the F value proves that participant motive and value-added services help to promote supply chain performance.

In model 4, the research analyzes the effects of contingency factors, mediator variable, as well as E-Procurement Value on supply chain performance, as shown in Table 5. When contingency factors together with Mediator variables are made to execute Regression analysis on supply chain performance, the relationship in some constructs is non-significant; in contrast, the significant impact can only be found in efficiency motive and cash-flow service. Moreover, the mediator variables of E-Procurement reacting to all the constructs almost present a significant relationship. According to the above discussion and the implication of the F value, the result verifies that the function of E-Procurement Value as a mediator variable is significant. Thus H5 is supported.

Table 5: Regression Analysis of Supply Chain Performance

Dependent Independent Variables	Variable	E-Procurement Value (Model 1)		Supply Chain Performance (Model 2)		Supply Chain Performance (Model 3)		Supply Chain Performance (Model 4)	
		Internal Value	External Value	Time performance	Flexibility Performance	Time performance	Flexibility Performance	Time performance	Flexibility Performance
Participant Motive	Efficiency motive	0.488***	0.027			0.245**	0.155*	0.237***	0.089
	Rationalization motive	0.054	0.447***			0.265**	0.324**	-0.073	0.138
	Learning motive	-.059	0.150*			-0.029	0.018	-0.099	-0.036
System Integration	System Integration	0.187***	-0.072			0.059	0.093	0.022	0.100
Value-added Service	Cash-flow Service	-0.092	0.036			-0.054	0.157**	-0.068	0.153*
	Information-flow service	0.347***	0.253***			0.306**	0.195*	0.116	0.054
E-Procurement Value	Internal value			0.477***	0.252***			0.328***	0.113
	External Value			0.387***	0.514***			0.414***	0.402***
R^2		0.540	0.450	0.582	0.472	0.391	0.437	0.615	0.546
Adjust R^2		0.518	0.423	0.575	0.463	0.360	0.408	0.589	0.515
Model F		23.53***	16.38***	86.36***	55.37***	12.837**	15.497**	23.566**	17.730**

Note: *:$P<0.1$,   **:$P<0.05$,   ***:$P<0.01$; standardized beta

5. Conclusion

According to the results of the above Regression Analysis, participant motive gives partial support to E-Procurement and provides positive significant effect. The competitive environment pushes manufacturing industry to adopt E-Procurement to ensure punctual goods delivery, quick response time, and prompt confirmation of orders in order to improve performance efficiency.

The result also fits with the assumptions of some scholars. They state that in a competitive environment, manufactures bear the pressure from their peers. In order not to be inferior to their competitors, they search for innovations in order to improve their service efficiency by applying IT as a management strategy (Kimberly and Evanosko, 1981; Iacovou et. al., 1995). This research also verifies that when E-Procurement is adopted by an industry to improve organizational learning capability, there is a positive impact on external value. As Buyers had higher system integration, they would get more procurement information, allowing them to cut price and improve quality of products during negotiations. Meanwhile, the Buyers are able to reduce costs by integrating the functions of the Procurement department with other departments in the organization.

In value-added services construct, though cash-flow service does not display a significant effect on E-Procurement Value, information-flow service presents a highly positive effect. It implies that if buyers wish to collect a group of suppliers to reduce the cost in purchase and save on the expense of searching for suppliers, then they need to consider providing massive value-added services for upstream suppliers on E-Procurement website—suchas inventory tracing, procurement knowledge database, and procurement information inside the organization. In doing so, they are able to attract suppliers to deal with procurement on-line. The result, as well as the case study method used by other scholar, specifies that keeping inventory tracing could make it easier for purchase departments to adjust the stock, and for the firm to improve its cash flow, so as to enhance E-Procurement value (Susan, 1999). In addition, Carbone (1999) also finds the significance of value-added services of E-Procurement and believes that because of the existence of value-added services, the suppliers are pleased to do business on-line. This research finds there is a positive effect in E-Procurement value and supply chain performance. The Internet not only changed the essence of the global market but also changed the business model. The industry strengthens competitive advantage by using information technology and seeks ways to improve organizational and supply chain performance (Hittand Brynuolfsson, 1996).

To sum up, the benefits for jumping in to the E-Procurement market are: reducing purchase costs, increasing the accuracy and efficiency of operation and information access, and increasing the information of suppliers through IT. In addition, it allows the industry to reply quickly to the market and improves the industry's competitiveness and competitive advantage.

6. Implication

If buyers and suppliers cooperate with each other for a long period of time, they would depend more on the service in cash-flow and information-flow. This result is especially true for flexibility performance measure. When buyers and suppliers cooperate long enough, they would have a tacit understanding that would continue even if the industry implements E-Procurement.

From the perspective of E-Procurement value, internal value of E-Procurement implementation in a hi-tech industry is superior to a traditional one. Hi-tech manufacturing believes that implementing E-Procurement can really enhance efficiency, obtain more purchase information, and reduce inventory and stock cost; in addition, E-Procurement could help the organization expand and create professional knowledge. In a way, traditional manufactures have lower concern or expectation in IT when compared to hi-tech manufactures.

On the other hand, in supply chain performance, the characteristics of hi-tech manufactures consist of rapid circulation of products, high replacement ratio, and intensive competition. Consequently, in contrast to traditional manufactures, hi-tech industry is concerned with performance such as the ability to rapidly response to suppliers, quickly confirm purchases, and accurately deliver goods. Nevertheless, hi-tech manufactures must think that E-Procurement is essential for an industry to retain competitive advantage, rather than taking it as a sufficient requirement as traditional manufactures suppose.

References

Baron, R. and D. Kenny, "The Moderator-Mediator Variable Distinction in SocialPsychological Research: Conceptual, Strategic, and Statistical Considerations ," *Journal of Personality and Social Psychology*, Vol.51, No. 6(1986), 1173-1182.

Carbone, J., "Nortel Evaluates Its Outsourcing Strategy", *Purchasing*, Vol.125, No.9(1999), 71-75.

Chandrasekar, S. and M. J. Shaw, "A Study of the Value and Impact of B2B E-Commerce: The Case of Web-Based Procurement,"*International Journal of Electronic Commerce,* Vol. 6, No. 4(2002), 19-40.

Davern, M.J. and R.J. Kauffman, "Discovering Potential and Realizing Value from Information Technology Investments," *Journal of Management Information Systems*, Vol. 16, No. 4(2000), 121-143.

Grewal, R., J. M. Comer, and R. Mehta, "An Investigation Into the Antecedents of Organizational Participation in Business-to-Business Electronic Markets," *Journal of Marketing*, Vol.65, No. 3(2001), 17-33.

Hair, Jr., R.E. Anderson, R.L. Tatham, and W.C. Black, *Multivariate Data Analysis with Readings*, NJ: PrenticeHall, 1995.

Hitt, L.M. and E.Brynuolfsson, "Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value," *MIS Quarterly,*Vol. 20, No. 2(1996), 121-142.

Iacovou, C., I. Benbasat, and A.Dexter, "Electronic Data Interchange and Small Organizations: Adoption and Impact of Technology," *MIS Quarterly*, Vol.19, No.4(1995), 465-485.

Junnarkar, B., "Leveraging Collective Intellect by Building Organization Capabilities," *Expert System With Applications*, Vol.13, No.1(1997), 29-40.

Kalakota, R. and A. B.Whinston, *Electronic Commerce: A Manager's Guide*, NY: Addison-Wesley, 1997.

Kalakota, R. and M.Robinson, *E-Business : Roadmap for Success*, NY: Addison-Wesley, 1999.

Karakaya, F., "Doing Business of the Internet," *Sam Advanced Management Journal*, Vol. 63(1998), 10-14.

Kimberly, J. R. and M.Evanosko, "Organizaional Innovation: the Influence of Individual, Organizaional, and Contextual Factors on Hospital adoption of Technological and Administrative Innovations," *Academy of Management Journal*, Vol.24, No.4 (1981), 689-713.

Kivijarvi, H. and T.Saarinen, "Investment in Information System & the Financial Performance of the Firm," *Information & Management*, Vol.28, No.3(1995), 143-163.

Oliver C., "Determainants of Interorganizational Relationships: Integration and Future Direction," *Academy of Management Review*, Vol. 15, No.2(1990),241-265.

Project A and B (2003), http://www.find.org.tw/eng.

Puschmann, T. and R. Alt, "Successful Use of E-procurement in Supply Chains,"*Supply Chain Management: An International Journal*, No.10(2005), 122-133.

Rindfleisch, A. and J. B. Heide, "Transaction Cost Analysis: Past Presentand Future Applications," *Journal of Marketing*, Vol.61(1997), 30-54.

Rosen, K. and A.Howard, "E-Retailing: Gold Rush of Fool's Gold," *California Management Review*, Vol.42, No.1(2000), 71-100.

Sherer, S. A., "From Supply-chain Management to Value Network Advocacy: Implication for E-supply Chains,"*Supply Chain Management: An International Journal*, No.10(2005), 77-83.

Susan, A., "Inventory Tracking is Value Added Services," *Purchasing,* Vol.127, No.8(1999), 109-110.

Thong, J. Y. and C. S. Yap, "CEO Characteristics, Organizational Characteristics and Information Technology Adoption in Small Business," *OMEGA*, Vol.23, No.4(1995), 429-442.