THE EFFECT OF SOFTWARE FIT AND BUSINESSADAPTATION ON ACCOUNTING PACKAGED SOFTWARE IMPLEMENTATION SUCCESS: AN EMPIRICAL CASE IN HOCHIMINH CITY, VIETNAM

Bui Quang Hung
Accounting Information Systems Lecturer
Faculty of Accounting and Auditing
University of Economics Hochiminh city, Vietnam
bqhung@ueh.edu.vn

Abstract

A central feature of accounting in today's business world is the integration of accounting professional with the computerized-base information system. One of opportunities to conduct this strategic activity is adopting accounting packaged software in the company. However, the high failure and unsatisfied rate of the implementation has made all people involved intensively and comprehensively consider all factors impact on implementation success. This is an "invisible" process that faces the gap between software vendor's views and adopting company's management requirements. This process also requires the characteristics of adaptation from packaged software, business process and human factor as well. The results from the survey of 68 companies adopting accounting packaged software in HCMC, Vietnam show that the level of software fit, business process adaptation and the interaction among of them play the significant roles in the implementation success. The study results will address some managerial suggestions in the contribution to accounting packaged software implementation success in Vietnam.

INTRODUCTION

A central feature of accounting in today's business world is the integration of accounting professional with the computerized-base information system. Under the radically changing business environment, many firms have changed their information system strategies by adopting application software packages such as accounting packaged software (APS) rather than in-house development because of reduced cost, standardization, rapid implementation and high system quality.

However, implementing accounting is not an easy job or like buying favorite software from market. Implementing accounting packaged software is the mutual adaptation between packaged software and business. There are always certain differences in interests between customer organizations who desire business solutions and packaged software vendors who prefer a generic solution applicable to a broad market. Thus the business fit of accounting packaged software would be important in this process. In addition, the philosophy of APS implementation in general is process-based, rather than function-based, they necessitate organizational changes. Thus, business adaptation is also identified as critical success factor in APS implementation.

Like other developing countries, most of Vietnamese enterprises are small and medium enterprises. Many firms have applied technology in doing their business which accounting activities are often considered as the priority in IT application. APS is one of the sound IT application alternatives from companies. However, the problem they have faced in the pool

ISBN 978-602-19725-8-8

of APS software market is how to select the best one for the company, what critical factors should be considered and to make sure this implementation would bring benefits for them. In this study, we will examine the impact of the business fit of APS, business adaptation as well as the interaction among these factors to the implementation success. The results of study will address some managerial suggestions in the contribution to accounting packaged software implementation success in Vietnam.

LITERATURE REVIEW

The success of business packaged software implementation

In term of business packaged software implementations success, most of previous researches referred to enterprise resource planning (ERP) implementation such as Ngai et al (2008), Zhang et al (2005). Tanis (2000) pointed out that people often mean different things when talking about the ERP success. People whose job was to implement ERP systems often defined success in terms of completing the project plan on time and within budget. However whose job it was to adopt ERP system and use them in achieving business results tended to emphasize business improvement such as inventory reduction and gaining improved decision support capabilities.

In the information system (IS) perspectives and the output of IS i.e. information, there are many measures studied in measuring success of IS implementation. The reason is that information as the output of information systems and communication can be measured at different levels including technical level, semantic level and effectiveness level.Delone&McLean (2003) insisted that there is not one success measure but many such as system quality, information quality, user, user satisfaction, individual impact and organization impact. They also concluded that these measures were interrelated and interdependent and forming an IS success model. In another approach, Tanis (2000) argued that a minimum set of success metrics includes project metrics, early operational metrics and long-term business results.

Business fit of packaged software

There were some definitions regarding the fit of a system or software to business or organization. Markus (1988) defined the organizational fit of ERP as the congruence between the original artifact of ERP and its organizational context. Soh et al (2000) suggested that ERP misfit stems from the firm specific requirements that do not match the capabilities of ERP. Henderson &Venkatraman (1993) emphasized the multivariate fit among business strategy, IT strategy, organizational infrastructure and process. Also, in a traditional software application perspective, Soh et al (2000) examined organizational fit of ERP in terms of data, processand output.

Many researches showed the positive impacts and importance of the level of fit, match of software to the successful implementation. In the survey of small business, Janson & Subramanian (1996) hypothesized that packaged software implementation success is positively associated with the degree of vendor fit with user organization and the degree of software fit with user organization respectively. Goodhue & Thompson (1995) reported that IT must be fully utilized and match with task characteristic to enhance individual performance. Chang et al (2003) concluded that the fit between task uncertainty and characteristics of AIS can really enhance the performance of AIS.

***Hypothesis 1:* There is a positive relationship between the APS fit and its implementation success (H_1).**

ISBN 978-602-19725-8-8

Business adaptation

Davenport (1998), Holland &Light (1999), all agreed that the enterprise consensus is required to reengineer a company's core business processes to align them with the model implicit within ERP package. This includes standardization and integration of elementary processes, the flows of functional and organizational processes. Holland& Light (1999), Sommer& Nelson (2001) wrote that, to take a full advantage of an ERP software, business process change is seen as a prerequisite. Davenport (2000) pointed out that the organization structure and culture, the behaviors of workers throughout the enterprise, and business strategy, all have to be restructured.

However, when an organization customizes its business to suit the software, the total cost of implementation rises. The more the customization, the greater the implementation costs. Bingi et al (1999) argued that companies should keep their systems "as is" as much as possible to reduce the costs of customization and future maintenance and upgrade expenses. In order to maximize the benefits of IT investments, the supplementary redesign of business processes promises the highest ROI, but also increases the level of complexity, risks and costs.

The changes in business process could lead to more risk to the project, but to take the advantage of software package, business process change is seen as a prerequisite. Our argument is that, if the level of organization's process adaptation is low, it will take the time of system package implementation, which leads to the more resource consumption and impact on the level of implementation success.

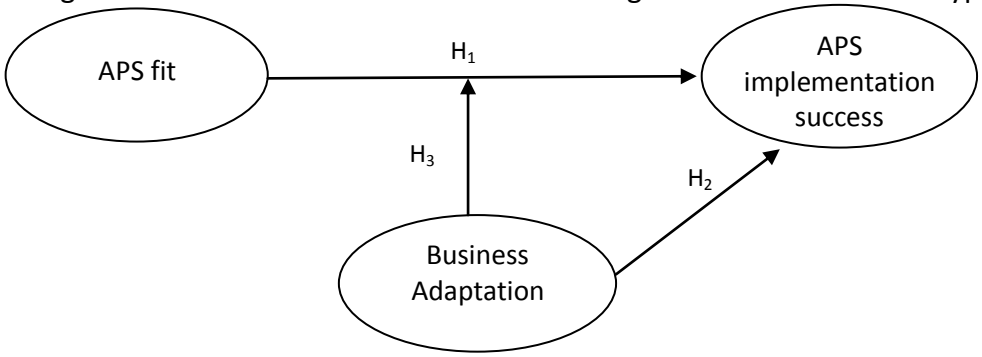
***Hypothesis 2:* There is a positive relationship between the business adaptation and APS implementation success (H_2).**

In addition, APS fit is considered as the objective factor that existed before the APS implementation, business adaptation is a subjective factor that can be controlled. The expectation here is that the objective factor and subjective factor might interact each other and affect to the implementation success. That is in case of low level of businessadaptation, we expect that the fit of package to the adopting organization will be more strongly associated with software package implementation success, because the low level of businessadaptation would not affect significantly the initial fit of packaged software. Conversely, in the case of high business adaptation, we expect that organizational fit of software will not be as strongly associated with implementation success as in low level because high level of the adaptation will reduce the gaps between software package and organization.

***Hypothesis 3:* There is an interaction effect between the level of business adaptation and the fit of software on its implementation success (H_3).**

Figure 1: Research model

The figure 1 will show the research model building on the basis of above hypotheses.



ISBN 978-602-19725-8-8

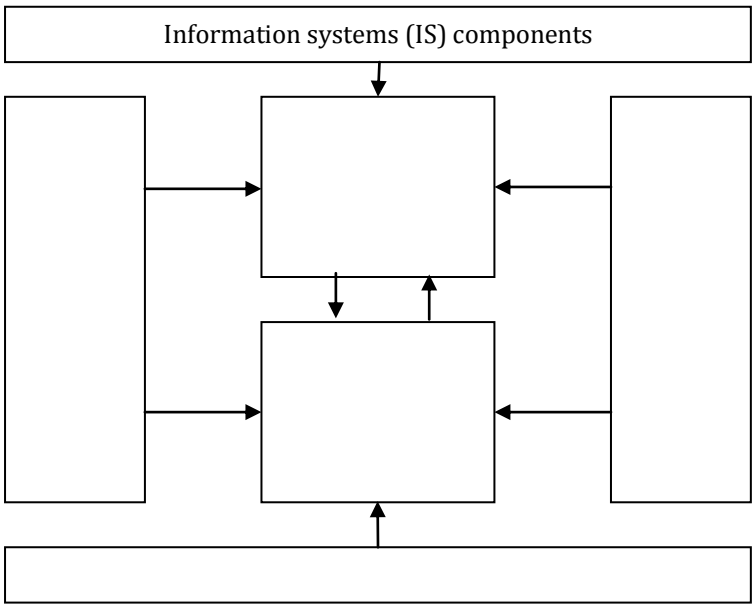
RESEARCH METHODOLOGY

Linking APS implementation with ERP implementation

From reviewing previous studies, we could see that there were a few researches studied in APS implementation. Most of them focus on ERP, which is the highest level of APS (Johnson & Kaplan,1987).

But, regardless to the difference in size characteristics, both of them are information processing systems with three important components such as system data, system processes (including control and feedback processes) and system outputs. In addition, as the package software, Both ERP and APS must bring one typical characteristic in implementation of this kind of software. That is the existing gap between what the software provides and what the adopters need in using EPR and APS because software package is functioned not only for one user but also for many users with standardized operations. Both EPR and APS implementation processes should be the compromising processes between software vendors and adopters. This compromise process is influent by many factors;: the existing fit of software to business needs, the adaptable ability of software, business process and the human factor. (See figure 2).

Figure 2: Common features between ERP and APS



Measurement of model variables

a) APS implementation success (APSSUC)

In this study, we used the project approach to measure APS implementation success in terms of the deviation from the expected project goals such as cost overrun, schedule overrun, system performance deficit and failure to archive the expected benefits. (See table 1)

Table 1: Measured items in APS implementation success

Measured factor	Items	Objective	Method
Accounting software implementation success (APSSUC)	Cost (APSSUC1)	Comparing to expected cost	Reverse seven-point Likert scaled
	Time (APSSUC2)	Comparing to scheduled time	
	System performance (APSSUC3)	Comparing to expected level	

ISBN 978-602-19725-8-8

	Benefit (APSSUC4)	General evaluation of benefit to the company	

b) APS fit (FIT)

The previous studies showed the definition of business fit of packaged software as the congruence between "ideal profile" of packaged software and existing business or organizational contexts. In addition, as mentioned in figure 1, APS implementation is basically characterized as the integration of data, processes and outputs within the organizations. Thus, our definition of APS fit is the match or congruence of APS to the adopting company in terms of data, processes and outputs between them. (Table 2)

Table 2: Measured items for APS fit

Measured factor	Items	Objective	Method
Fit of Accounting Packaged software to business (FIT)	Data (FIT1)	The level of correspondence in name, meaning, format	Seven-point Likert scaled
	Process (FIT2)	The correspondence of design and sequence to present or future need	
	Output (FIT3)	The correspondence of structure to work, user capability, business needs	

c) Business adaptation (BUSADAPT)

The general findings of the business adaptation concept in literatures are the standardization and integration of elementary processes, the flows of functional and organizational processes. In addition, in our system approach, the effects on business process will lead to all documents and data which are the input and output of the processes have been required to alter in order to align with the packaged software. Our definition for this concept is the changes, integration and standardization in terms basic process, flow sequence of adopting company and all data or outputs related to them in order to match with APS requirements. These items are measured in the reverse seven-point Likert-type scale. (See table 3)

Table 3: Measured items for business adaptation

Measured factor	Items	Objective	Method
Business adaptation (BUSADAPT)	Basic process	Evaluating time and efforts of change, integration, standardization	Reverse seven-point Likert scaled
	Flows	Evaluating time and efforts to change the sequence	
	Related data and documents	Evaluating time and efforts to alter	

Sample and data collection

The target of this study was the APS adopting companies that have implemented APS in HCMC. We use the key informant method for collecting information on a social setting by interviewing or email surveying a selected number of participants through a questionnaire. The companies were selected by randomly from this list of customers from software vendors or from other sources that make sure that these kinds of companies are using the APS. Thus, the sample size of survey was not specified in advance. We try to contact the companies as much as possible. But for the significant of sample and statistics analysis, we set the minimum number of sample size was 30 companies. Finally, the survey has collected 68 respondents; most of them were conducted by direct interviews with accounting

ISBN 978-602-19725-8-8

packaged software users, the rest were received via email. The limitations might appear to this method of data collection and research sample. First, it was very ambiguous to identify the key person in adopting companies. This kind of person was assigned from the company and on the perception of the company. So that, the information provided might be subjective. Second, because of time limitation and it is not easy to receive the acceptance from the selected companies and the interviewed persons, the survey could not conduct a broad sample.

The reliability and validity

Reliability is the accuracy or precision of a measuring instrument that is the extent to which the respondent can answer the same or approximately the same questions the same each time. The internal consistency reliability was assesses by calculating Cronbach's alpha values. The results showed that the internal consistency (Cronbach's alpha) of construct ranged from 0.74 to 0.96, above the common applied standard of 0.70, suggesting reasonable item convergence.

In order to obtain evidence of the construct validity of an instrument, we use of both a convergent validity and discriminant validity. For convergent validity, we evaluated the item-to-total correlation, based on the correlation of each item to the sum of the remaining items. The test shows that the correlation for each of research variables whose item-to-total score was greater than 0.4, the common applied score; For discriminant validity, we used factor analysis which calculated the factor loading of each item and compared with the common applied factor loading i.e. 0.5. We see that the discriminant validity was confirmed when items for each variables loaded onto single factors with loadings of greater than 0.5. Therefore, the construct validity of this study should be reasonable.

RESULTS

The relationship between APS fit and APS implementation success

The correlation analysis was used for testing the relationship between APS fit and APS implementation success. The results in Table 4 indicated that the relationship between APS fit and APS implementation success was significant at the level 1% random sample (r= -0.472, P = 0.00), supporting the hypothesis 1.Independently, the more APS fit is, the more chance of APS implementation success we have.

Table 4: Correlations between FIT and APSSUC

		APSSUC	FIT
Pearson Correlation	APSSUC	1.000	-.472
	FIT	-.472	1.000
Sig. (1-tailed)	APSSUC	.	.000
	FIT	.000	.

The relationship between business adaptation and APS implementation success

The results of correlation analysis in Table 5 indicated that the relationship between organizational process adaptation and APS implementation success was significant at the level of significance 1% random sample (r= 0.364, P = 0.001), supporting the hypothesis 2. The more or less level of organizational process adaptation will lead to the more or less chance of APS implementation success respectively.

Table 5: Correlations between BUSADAPT and APSSUC

		APSSUC	BUSADAPT
Pearson Correlation	APSSUC	1.000	.364

ISBN 978-602-19725-8-8

	BUSADAPT	.364	1.000
Sig. (1-tailed)	APSSUC	.	.001

The interaction between APS fit and business adaptation on APS implementation success

In this part, we measured the interaction between APS fit and business adaptation on APS implementation success to test the hypothesis 3. We used the multiple regression models as a basis for examining the effect.

The empirical results of the multiple regression models interaction in Table 6 show that the interaction between APS fit and process adaptation was significant at the significant level of 1%, random sample (P value = 0.012). Thus, the hypothesis is supported. This means that the evidence of business adaptation and the APS fit taken together having an effect on the APS implementation success is existed. The standardized multiple regression models can be built as follows:

IS = 0.193F + 2.036BD – 1.722 F x BD M_1

With: IS: implementation success
BD: Business adaptation
F x BD: Interaction

Table 6: Model of interaction between FIT and BUSADAP on APSSUC

	Mean	S.D	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
			B	Beta		
(Constant)			.399		.212	.833
FIT	5.2412	.8295	.250	.193	.765	.447
BUSADAPT	3.5265	1.4741	1.478	2.036	2.878	.005
Interaction	17.9994	7.7629	-.237	-1.722	-2.575	.012

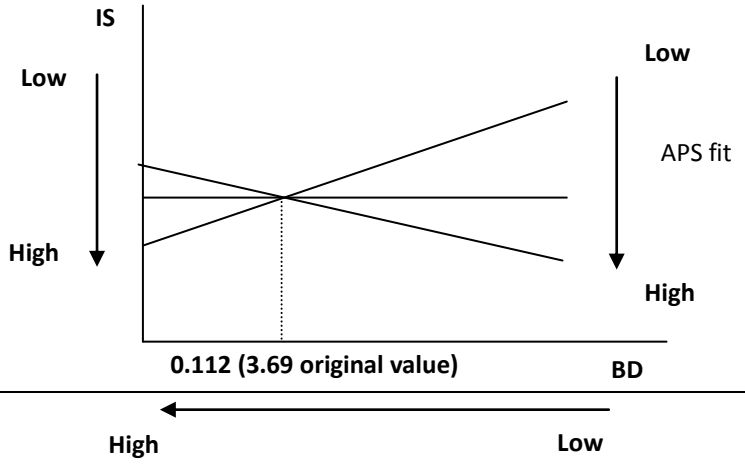
Dependent Variable: APSSUC, R^2 = 0.341; Adj R^2 = 0.310; F = 11.038, Sig = 0.000

To obtain the additional insight of the nature and direction of the interaction effects of APS fit (F), we computed the partial derivative of M_1 over the extent of APS fit (F). The partial derivative is:

$$\frac{\delta IS}{\delta F} = 0.193 - 1.722BD \quad (1)$$

The equitation (1) will be zero when business adaptation variable (BD) has the value of 0.112 (0.193/1.722). This is the inflection point i.e. the intersection point of all relationship lines of business adaptation variable (BD) and APS implementation success at any level of APS fit (See the figure 3)

Figure 3: The relationship of IS and BD at each APS fit level.



ISBN 978-602-19725-8-8

We had used the standardized variables in standardized multiple regression models. Hence the orginal inflection point of business adaptation variable (BD) is calculated folllowing:

$$BD_{orginal} = 0.112 \times S.D_{BD} + Mean_{BD}$$
$$= 0.112 \times 1.47 + 3.53$$
$$= 3.69$$

The business adaptation (BD) variable is ranged from 1 to 7 and in reverse sacle. From figure 3 we can see that if BD variable level is more than 3.69 (above 3.53 of BD means value) we need the high level of APS fit because in this case, the higher level of APS fit will have smaller value of IS variable, in other means, the high APS implementation succes. The more fit level we have, the more chance of APS implementation success we will get.

Conversely, in case of BD variable is less than 3.69, which means the we have the high level of business adaptation, the high value if APS fit will lead to the high value of IS varible in comparison with low APS fit. Thus, in this situation, the high APS fit level will not contribute to more chance of APS implementation success.

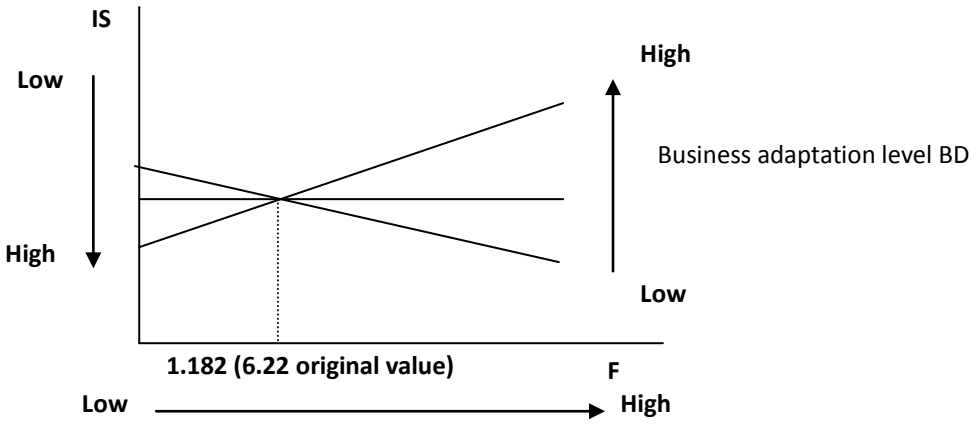
Similarly, the level of APS fit that can reflect the improtance of level of business adaptation (BD) to the APS implementation success can be calculated from the zero-partial derivative of (M_1) over the extent of business adaptation (BD).

$$\frac{\delta IS}{\delta BD} = \mathbf{2.036 - 1.722F = 0} \quad \mathbf{(2)}$$

Hence, the value of F is equal to 1.182 or original value is 6.22 {(1.182 x 0.829(SD_{Fit}) + 5.24($Mean_{Fit}$)). The level of APS fit is range from 1 to 7. If this value of F is more than 6.22 (i.e. very high level) the high level of business adaptation will be not considered in APS implementation success because it will have higher value of IS variable than low level of business adaptation; Thus it make less chance of APS implementation succes. (See figure 4)

But, if the value of F is less than 6.22, direting from high to low fit level, the high level of business adaptation is significant to the level of APS implementation success because it have smaller value of IS variable than low level of business adaptation in an certain fit level. Thus it will bring more chances of APS implementation success than the lower one. (See Figure 4.)

Figure 4: The relationship of IS and APS fit at each BD level



ISBN 978-602-19725-8-8

CONCLUSION AND MANAGERIAL IMPLICATIONS

The results in HCM city supported our expectation on this relationship set before and having the same results as previous studies. Because of its significant role, any adopting companies, APS project managers, APS providers and related parties must evaluate the level fit of APS before embarking on an APS implementation job. This fit analysis requires a comprehensive understanding of critical organizational process, the data used and the needs from APS users. Through this analysis, we will reduce the escalating risks over the course of implementation.

Business adaptation has a considerable effect on APS implementation success. However, this effect will be more significant if we use both business adaptation and an appropriate fit level of APS. If the APS fit level is so high, this effect is not much important; we do not need to adapt the business with the APS adopted. Once investing in new technology, the company has an opportunity to reform its business to have more competitive advantages. However, these changes should be relevant with the fit level of implemented APS to take advantage the organizational fit characteristics of this APS.

REFERENCES

Bingi, P., Godla, J., & Sharma, M. (1999).Critical issues affecting an ERP implementation. Information Systems Management, 16(3), 7-14.

Chang, R., Chang, Y., & Paper, D. (2003). The effect of task uncertainty, decentralization and AIS characteristics on the performance of AIS: An empirical case in taiwan. Information & Management, 40(7), 691-703.

Davenport, T. H. (1998). Putting the enterprise into the enterprise system.UNITED STATES: Harvard Business School Press.

Davenport, T. H., &NetLibrary, I. (2000). Mission critical: Realizing the promise of enterprise systems / [electronic resource]. Boston, MA: Harvard Business School Press.

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems, 19(4), 9-30.

Goodhue, D. L., & Thompson, R. L. (1995). Task-technology fit and individual performance.MIS Quarterly, 19(2), 213-236.

Henderson, J.C &Venkatraman, N. (1993). Strategic alignment: leveraging information technology for transforming organizations. IBM Systems Journal 32(1), 4-16.

Holland & Light (1999). A critical success factors model for ERP implementation. IEEE software, May/June, 30-35.

Janson, M. A., & Subramanian, A. (1996).Packaged software: Selection and implementation policies.INFOR, 34(2), 133.

Johnson, Kaplan. (1987). Relevant Lost, The rise and fall of management accounting. Boston, MA: Harvard Business School Press.

Markus, M. L. (1988). Information technology and organizational change: Causal structure in theory and research. Management Science, 34(5), 583-598.

ISBN 978-602-19725-8-8

Ngai, E. W. T., Law, C. C. H., &Wat, F. K. T. (2008).Examining the critical success factors in the adoption of enterprise resource planning.Computers in Industry, 59(6), 548-564.

Soh, C., Kien, S. S., &Tay-Yap, J. (2000). Cultural fits and misfits: Is ERP a universal solution?. New York: Association for Computing Machinery.

Somers, T., & Nelson, K. (2001). The impact of critical success factors across the stages of enterprise resource planning implementations. In ***Proceedings of the 34th Annual Hawaii International Conference on System Sciences (HICSS-34)-Volume 8 - Volume 8*** (HICSS '01), Vol. 8. IEEE Computer Society, Washington, DC, USA, 8016.

Tanis, M. L. M. C. (2000). The Enterprise System Experience - From Adoption to Success. In R. W. Zmud& M. F. Price (ed.),Framing the Domains of IT-Management: Projecting the Future Through the Past (pp. 173-207). Pinnaflex Educational Resources.

Zhang, L., Zhang, Z., Lee, M. K. O., Huang, P., & Huang, X. (2005). A framework of ERP systems implementation success in china: An empirical study. International Journal of Production Economics, 98(1), 56-80.

ISBN 978-602-19725-8-8