Understanding Change Agent's Behavioral Intention in Activity-Based Cost Management Implementation: An Empirical Examination of Technology Acceptance Model*

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Abstract

This paper adopts technology acceptance model to examine change agent's behavioral intention in the implementation of ABCM. Five hundred and ninety nine questionnaires were mailed to CFOs of the manufacturing firms in Taiwan. One hundred and six responses were obtained, in which 99 were useable. The results indicate that change agent's perceived benefits of ABCM implementation, but not perceived costs, are significantly correlated with their attitudes toward promoting ABCM implementation. Path analysis suggests that change agent's attitudes and perceived benefits have significant impacts on their intentions to promote ABCM, with attitudes having a greater impact than perceived benefits. In addition, the results suggest that change agent's behavior differs across stages of ABCM implementation. In particular, the role of perceived cost and that of perceived benefit change when firms differ in the stage of ABCM implementation. Discussions and implications for future studies are offered.

Keywords：Activity-based Cost Management, Technology Acceptance Model, Change Agent

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Introduction

The role of change agent in activity-based cost management (ABCM) implementation has been suggested in Shields and Young (1989). Subsequent research either identified or documented change agent as an important factor in the process of ABCM implementation. (Argyris and Kaplan 1992, Cooper et al., 1992, Foster and Swenson 1997, Shields 1995). However, the determinants of change agent's intention to promote ABCM in the ABCM implementation process have not been extensively explored. Lack of understanding on the change agent's behavioral intention may be detrimental to the proceeding of ABCM implementation.

The present study attempts to investigate how change agent's attitudes toward promoting ABCM implementation are formed and how his/her intention to promote ABCM is determined. Such an inquiry not only fills the gap in extant literature, but also provides practitioners with directions in inspiring change agents.

Prior research also suggests that the determinants of ABCM success vary with stages of ABCM implementation (Anderson 1995, Anderson and Young 1999, Gosselin 1997, Krumwieds 1998). Since change agent is a critical factor in the implementation process, it is also desirable to further explore whether change agent's behavior (i.e., beliefs, attitudes and intention) is stable across stages of ABCM implementation.

The current study adopts technology acceptance model developed by Davis (1989) to examine change agent's intention to promote ABCM implementation. Technology acceptance model (hereafter TAM) has been widely applied and empirically tested in various computer softwares and management information systems settings, and yet its application to the ABCM context remains unexplored.

In this study, we identified manufacturing firms from Taiwan Top 1000

(Commonwealth 1999), and mailed 599 questionnaires to the CFOs of these firms. Ninety-nine (99) usable responses were obtained for statistical analyses. The results indicate that change agent's perceived benefits, but not perceived costs, of ABCM implementation significantly correlate with their attitudes toward and intention of promoting ABCM implementation. Change agent's attitude toward promoting ABCM implementation also has an impact on his/her intention. In addition, the pattern of behavior varies with stages of ABCM implementation.

The remainder of this paper is organized as follows. In the next section, we provide a brief review of prior literatures on ABCM implementation and TAM research. It is followed by a description about variables of interest and instruments for measuring these variables, sample and respondents, and the data collection procedure. The fourth section presents the results and discussion. The final section provides conclusions and limitations.

Prior Literature

ABCM Implementation Research

Subsequent to a series of conceptual and anecdotal ABCM studies, researchers have started to investigate organizational behavior issues relevant to ABCM implementation since the late 1980s. Shields and Young (1989) indicated that one could not ignore the organizational behavior issues in the process of implementing a new cost system. They proposed a Seven C's model in which culture, champion, change process commitment, controls, compensation and continuous education are involved. They also indicated the importance of the interrelationships and integration of these elements. Thus, missing any element in

the model would lead a new cost system implementation to failure. Of particular interest to the current study is the role of change agent. Shields and Young (1989) suggested that a change agent must usually be at a fairly high position in an organization and often obtains support from top management. Other characteristics of change agents include the ability to motivate others, the political savvy and the knowledge of how to acquire the resources required for the implementation.

Cooper et al. (1992) documented the experiences of ABCM implementation in eight case sites. They were concerned not only with technical and process factors but also with organizational change issues. They deliberately identified specific roles that must be played in the analysis and action phases. In both phases, advocates, sponsors, change agents and targets are key individuals to lead the change process. Argyris and Kaplan (1994) viewed the implementation of ABCM from organizational learning perspectives. They suggested that introducing effectively a new technical approach such as ABCM requires at least three different stages: education, sponsorship and alignment of incentives. The education stage involves learning and accepting the logic and validity of the new technical approach. The sponsorship stage includes the persuaded key individuals to lead and motivate the change process. Argyris and Schon (1996) had similar observations and suggestions.

In addition to the field observations, other studies used survey methods to examine the factors related to ABCM implementation and its success. Gosselin (1997) investigated the effects of corporate strategy and organizational structure on the adoption and implementation of ABC. Shields (1995), using survey data, identified top management support, link to competitive strategies, link to performance evaluation and compensation, training, ownership by non-accountants, and adequate resources as determinants of ABCM success. Foster and Swenson

(1997) examined various measures of ABCM success and its determinants corresponding to these success measures. They found that the success determinants vary with the ABCM success measures adopted.

Anderson (1995) examined the ABCM implementation experience at General Motors and suggested that success factors differ and vary in importance across the different stages of implementation. Krumwiede's (1998) survey data were consistent with this finding. He also found that the importance of contextual and organizational factors differ across stages of implementation. Anderson and Young (1999) proposed a structural model to examine the impact of contextual and process variables on the evaluation of ABC. Their results supported the model. However, as indicated in Foster and Swenson (1997), the significance of specific factors is sensitive to the evaluation criteria. The structural model is stable across firms and respondents, but is sensitive to the maturity of ABC.

Technology Acceptance Model (TAM)

According to TAM, an individual's behavior of using a technology is defined by his/her beliefs (i.e., perceived ease of use and perceived usefulness), attitude, and intentions. The belief of perceived ease of use is suggested to influence the belief of perceived usefulness. Both beliefs have impacts on attitude formation; the latter in turn affects behavioral intentions. In addition, perceived usefulness has an indirect effect on intention, through the mediating effect of attitudes.

TAM has been widely used to predict the acceptance of a new technology, such as the acceptance of new software packages or other management information systems. It postulates that the two constructs, perceived usefulness, and perceived ease of use have relevance to technology acceptance behavior (Davis 1989). Research subsequent to Davis (1989) has suggested that TAM yields

highly consistent results on the acceptance behavior of the users of new systems in the office environment (Abdul-Gader 1996, Adams et al. 1992, Chin and Gopal 1995, Gefen and Staub 1997, Igbaria et al. 1995, Lu and Yeh 1998, Mathieson 1991, Szajna 1994, 1996). However, its application to the ABCM implementation remains unexplored.

Summary

The literatures in the ABCM and TAM areas reviewed above can be synthesized and summarized as follows.

First, the intention of change agent to promote ABCM is an important factor that one cannot neglect in implementing a new technology or information system such as ABCM. Secondly, the importance of change agent may vary with the implementation stage. Finally, the intention of the change agent to promote ABCM implementation may be determined by (1) his/her perceptions on the ease of and the usefulness of implementing ABCM, and (2) his/her attitudes towards promoting ABCM implementation.

Methods

In this section, we present research methods, including variables and instrument for measuring these variables, sample and data collection procedures.

Variables and Instruments

According to TAM, perceived ease of use, perceived usefulness, attitudes and intention are important variables for investigating change agent's behavior in

ABCM implementation. To measure these constructs, we developed the scales as described below.

Perceived Ease of Use and Perceived Usefulness

In the TAM literature, perceived ease of use referred to the degree to which a person believes that using a particular system would be free of effort, whereas perceived usefulness the person's belief that using this system would enhance his/her job performance (Davis 1989, Davis, Bagozzi and Warsha 1989). Davis (1989), in developing TAM, indicates that one of the theoretical foundations underlying perceived ease of use and perceived usefulness constructs is the cost-benefit paradigm. The cost-benefit paradigm has long been suggested in management accounting texts (e.g., Hilton 2002; Horngren, Foster and Datar 1997) as guidance in designing and implementing management accounting information systems.

Cooper (1988) further elaborated the cost-benefit paradigm by introducing the notion of optimal cost systems. According to Cooper, the total cost of implementing a cost information system includes cost of measurement as well as cost of error. A cost system is "optimal" when its total cost is lowest among all systems. It should be noted that the cost of measurement corresponds to the construct of perceived ease of use. That is, the higher the perceived cost of measurement, the lower the perceived ease. Also, the cost of error corresponds to the construct of perceived usefulness. The lower the cost of error, the higher the benefit accrued from the information system. Thus, in the current study, we operationalized the construct of perceived ease of use as the perceived cost of implementing ABCM, and the construct of perceived usefulness as the perceived benefit of implementing ABCM.

To develop the scales for measuring these two constructs, we referred to the ABCM literature. Cooper (1988) suggested that the cost of measurement consists of (1) the cost of routing the information to the cost system and (2) the cost of the calculations required to compute product costs. These costs reflect the resources and efforts required for the ABCM implementation. Thus, in measuring perceived costs, which operationalized the construct of perceived ease, we included in the scale five items such as effort, time, financial resources, and routine interrupted due to the introduction of ABCM at the outset. The reliability as indicated by Cronbach α (0.90) is moderately high. In addition, factor analysis resulted in only one factor with eigen value greater than unity.

In the benefit side, many researchers have suggested that ABCM can help firms enhance accuracy of cost information, mitigate cost distortion, facilitate cost reduction, improve operational efficiency and operating performance, and increase decision quality (e.g., Brimson 1991, Cooper 1988, Cooper and Kaplan 1988, Cooper et al. 1992, McGowan 1998, Turney 1991). Accordingly, in measuring perceived benefits, which operationalized the construct of perceived usefulness, we included these items (seven in total) in the scale. The reliability of the scale as shown by Cronbach α (0.92) is high. Moreover, factor analysis suggested that there was only one factor with eigen value greater than unity.

Respondents were asked to rate their degree to which they agree with each of the statements on a 1-7 scale, where “1” represented completely disagree and “7” completely agree. A sample statement in the perceived cost scale reads: Implementing ABCM in my company requires many efforts. Another sample statement regarding the perceived benefit reads: Implementing ABCM in my company will enhance the accuracy of cost information.

Attitudes

Attitudes referred to the feeling or evaluation of favorableness towards performing a behavior (Fishbein and Ajzen 1975). In the current study, respondents were asked to express their feeling or evaluations toward promoting ABCM in their companies. Respondents expressed on a 1-7 scale their degree of agreement with two statements. One statement reads: I am favorable toward promoting ABCM in my company. Another statement is "It is worthwhile for me to promote ABCM in my company." Cronbach α (0.89) indicates that the reliability is high. Factor analysis yields only one factor with eigen value greater unity.

Intentions

We developed a scale, consisting of two items, to measure respondents' behavioral intention to promote ABCM implementation in their companies. These two statements are "I will make my best effort to promote ABCM in my company" and "I have intention to promote ABCM in my company". Respondents were asked to express their degree of agreement with each of the two statements on a 1-7 scale. The reliability of this scale is high (Cronbach $\alpha = 0.90$). Factor analysis results in only one factor with eigen value greater than unity.

Sample

Five hundred and ninety-nine (599) manufacturing firms were drawn from a sample frame, which met the following criteria. First, the firm must be among the

Taiwan Top 1000 (Commonwealth 1999).[1] Second, the firm must be a publicly held company. Since ABCM in Taiwan is not as popular as in USA, we expected that small and even medium scale firms might not be interested in implementing it. Thus, we selected only large manufacturing and "better performing" firms in our sample. Further, to assure that we can obtain the relevant financial information, which is often regarded as confidential, we confined our sample only to the publicly held companies.

The CFOs of the selected firms were each mailed a questionnaire to obtain the information about the variables of interest (i.e. perceived ease of use, perceived usefulness, attitudes and intentions). In addition, these CFOs were asked to identify the stage at which his/her company is implementing ABCM. We followed Krumwiede and Jordan's (1998-1999, see also Innes and Mitchell 1995) denotation and specified nine stages of ABCM implementation for respondents' identification. Other information concerning sales, return on assets and industry of these firms were obtained from other public sources. Using publicly available data can avoid the problem of no response to the request for financial information.

The choice of CFOs as the respondents is based on the following reasons. Cooper et al.'s (1992) field investigation indicates that either financial executives or controllers served as project leaders of ABCM implementation for most of the companies that they studied. Since CFOs are higher than controllers in the organizational hierarchy, we selected CFOs as the respondents. In addition, Foster and Swenson (1997) also mailed their questionnaires to financial managers of their sample firms (see also Shields, 1995). Further, the "stage" of ABCM in the surveyed firms may range from "not considered ABCM" to "used ABCM

[1] Data for this study were collected in late 1999.

information extensively". For firms in the early stages of ABCM implementation, technical features of ABCM may often be raised in these organizations. Financial managers or CFOs are in the best position to answer these questions. Accordingly, it is reasonable to assume that CFOs are potential change agents in ABCM implementation. In fact, a majority of firms in our sample were in the analysis stage. Thus, this assumption holds descriptive validity.

Procedures

The instruments for measuring change agents' beliefs about the cost and benefit of ABCM implementation, attitudes toward promoting ABCM and intentions to promote ABCM were pre-tested with two ABCM experts as subjects before the formal study. The feedback from this pre-test was taken into account in revising the instruments for the formal study. Five hundred and ninety-nine (599) questionnaires were mailed to CFOs of the selected companies. One hundred and six (106) responses were obtained, among which 99 were usable. Table 1 presents the information of these respondent firms.

Table 1
Profile of the Sample*

N=99	Mean	S.D.	min	max
Sales (US Million)	343.48	1,242.03	16.00	11,779.00
Total Assets (US Million)	557.59	1,780.10	18.00	15,572.00
Profitability (%)	4.18	11.96	-47.16	31.30
Return of Asset (%)	2.80	11.26	-88.34	16.51

*including electronics, communications, textiles, steel, machinery, chemical, construction, and other industries.

Results and Discussions

Descriptive Statistics

Table 2 presents descriptive statistics concerning change agents' perceived cost of implementing ABCM, perceived benefit of implementing ABCM, attitudes towards promoting ABCM and their behavioral intentions to promote ABCM. It can be found that the mean for each of these variables is greater than 5 but less than 6. Though these statistics indicate that CFOs somewhat agree with the costs and benefits arising from implementing ABCM, CFOs perceive that the benefits (mean = 5.70) are greater than the costs (mean = 4.90).

Table 2
Change Agent's Beliefs, Attitudes and Behavioral Intention in ABCM Implementation

N=99	Mean	S.D.	Theoretical Range
perceived benefit	5.70	0.87	1-7
perceived cost	4.90	1.25	1-7
Attitude	5.58	1.05	1-7
intention	5.03	1.28	1-7

Determinants of Change Agent's Behavioral Intention

Correlation

Table 3 presents the first-order correlation coefficients among the variables.

The bi-variate relationships indicate that perceived benefit is significantly correlated with attitudes and intention ($p < 0.01$), and that attitudes are also significantly related to intention ($p < 0.01$).

Table 3
Correlation Matrix

	Benefit	Cost	attitude	intention
benefit	1.00	-0.008	0.765***	0.690***
cost	-0.008	1.00	0.028	-0.030
attitude	0.765***	0.028	1.00	0.775***
intention	0.690***	-0.030	0.775***	1.00

*** $p < 0.001$

Change Agent's Behavioral Intention

We applied TAM to understand how change agent's attitudes toward promoting ABCM are formed and how his/her intention of promoting ABCM is determined. The collected data were further analyzed using path analysis (Kenny 1979, Land 1969, Li 1975). Path analysis is a multivariate analytical methodology for empirically examining sets of relationships in the form of linear causal models (Duncan 1986, Li 1975). Specifying a path diagram is the first step in path analysis. The hypothetical causal relationships are represented by unidirectional arrows linking two variables together. Following TAM, Figure 1 depicts the proposed linkages among the variables of interest. In this path diagram, perceived cost has impacts on perceived benefit of implementing ABCM,

both in turn have influences on attitudes toward promoting ABCM. Perceived benefit has indirect effects on intention to promote ABCM through the impact of attitudes. Perceived benefit also has a direct impact on intention.

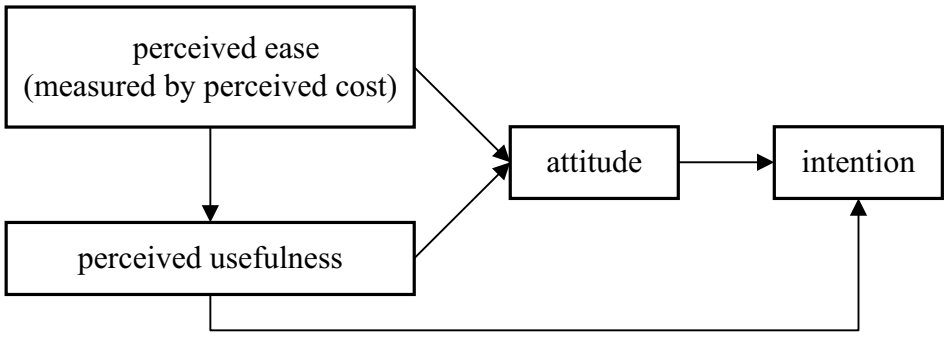
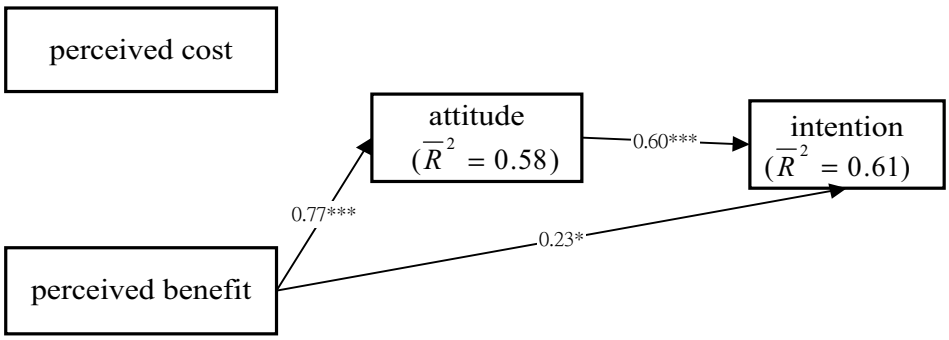


Figure 1 Proposed Linkages Among Variables: TAM

Figure 2 presents the final model with the non-significant path removed. It indicates that perceived benefits, but not the perceived costs, arising from ABCM implementation have significant and positive impacts on attitudes toward promoting ABCM implementation ($p < 0.001$). Both perceived benefits and attitude are significantly correlated with intention. The adjusted R^2 (0.61) also indicates that the model explains most of the variance in intentions. However, the standardized regression coefficient for attitudes (0.60) is higher than for perceived benefits (0.23). This suggests that to enhance a change agent's intention to promote ABCM, changing his/her attitude may have greater impacts than changing his/her belief about the benefits of ABCM. The insignificance of perceived cost suggests that to promote a new technology or information system like ABCM, a change agent's own perceived cost may not be a sufficient factor in influencing his/her attitudes and intention. Other factors such as top management support and adequate resources may need to be considered in changing change agent's attitudes

and intention.



* $p < 0.05$

*** $p < 0.001$

note: numbers on arrows are standardized regression coefficients

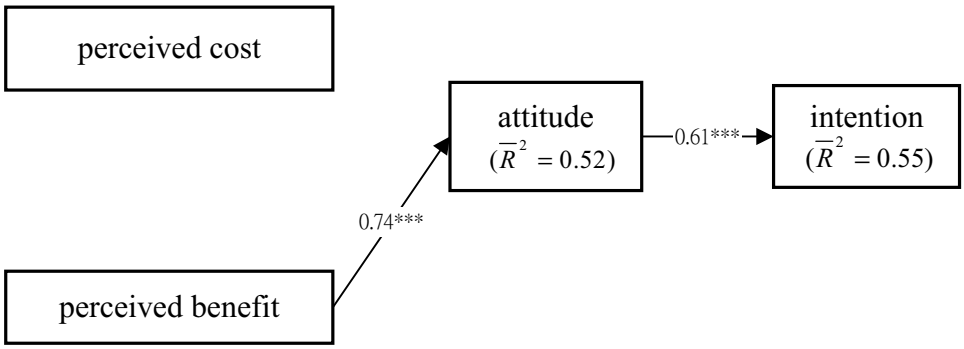
Figure 2 Change Agent's Behavioral Intention (all sample firms, n=99)

Change Agent's Behavioral Intention at Different Stages of ABCM Implementation

The second research question raised in the present study is whether the linkages of variables proposed by TAM vary with the stage of ABCM implementation. In our sample, there are 48 (48%) firms that have not considered implementing ABCM, while the remainders are in the stages ranging from "currently considering ABCM " to "has used ABCM information extensively". The limited sample refrained us from finer classification. As a consequence, we divided the sample into three sub-samples. The first sub-sample contains 48 firms that have not considered implementing ABCM, the second comprises of

firms ”currently under consideration” and those “have considered but rejected” (27 firms in total), and the third sub-sample consists of firms ranging from “approved implementation of AMCM” to “used ABCM information extensively” (24 firms in total). The latter two sub-samples represent firms that are at different stages of ABCM implementation. Hereafter, we referred to the stages of these two sub-samples as stage 1 and stage 2, respectively. While the first sub-sample has not considered implementing ABCM, understanding the behavior of change agents of these firms may also be important in helping these firms to move forward to the next step of implementation. Thus, we also analyze change agents' behavioral intention of this sub-sample, and refer the stage of these firms as stage 0.

We conducted path analysis for each of the three stages. Figure 3 presents the results for stage 0. It can be found that perceived benefits have positive and significant impacts on attitudes (adjusted $R^2 = 0.52$, $p < 0.001$), and that attitudes alone exert significant and positive impacts on intention (adjusted $R^2 = 0.55$, $p < 0.001$). Perceived costs do not have any impacts on the other variables. This pattern of findings is similar but not identical to that using all firms for analysis. In stage 0, attitude alone exerts significant impact on intention, while for all firms in our sample, perceived benefits have indirect impacts on intention through the effect of attitudes. Perceived benefit also has a direct impact on intention.



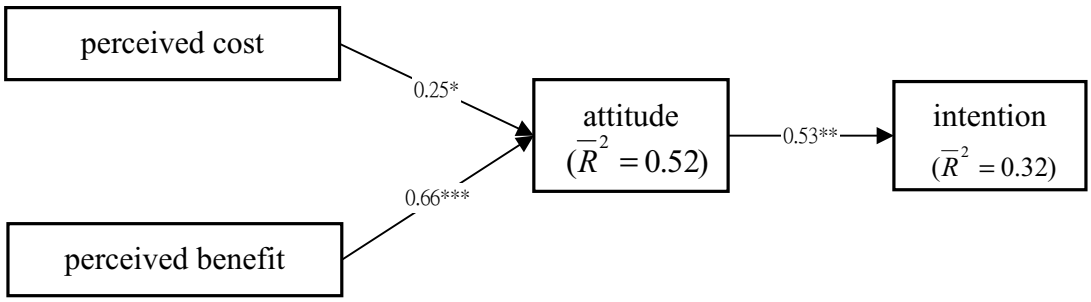
*** p < 0.05

note: numbers on arrows are standardized regression coefficients

Figure 3 Change Agent's Behavioral Intention in Stage 0[1]

[1] including firms that have not considered implementing ABCM (n=48)

Figure 4 depicts the results of path analysis for stage 1 (including firms that are currently considering implementing ABCM and firms that once considered implementing ABCM but rejected). The results indicate that perceived costs and benefits significantly influence change agent's attitude formation (adjusted R^2 = 0.52), with perceived benefits having greater impact than perceived costs. Again, attitudes alone exert significant effect on intention ($p < 0.05$).



* p < 0.08

** p < 0.05

*** p < 0.01

note: numbers on arrows are standardized regression coefficients

Figure 4 Change Agent's Behavioral Intention in Stage 1[1]

[1] including firms that are currently considering implementing ABCM and firms that have considered but resulted in no implementation (n=27)

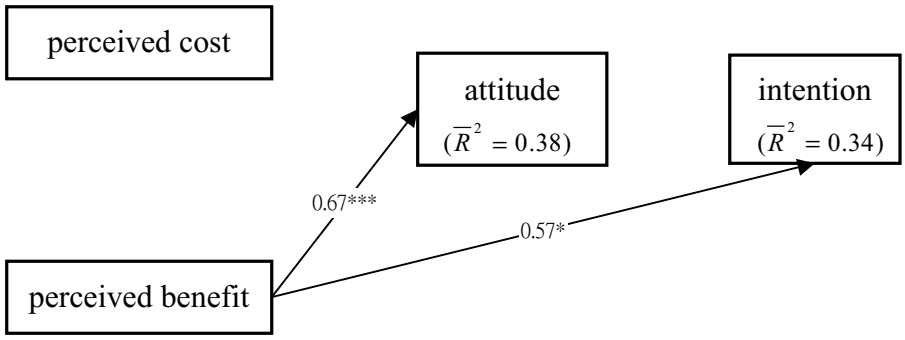
This pattern of findings is dissimilar to the behavior in stage 0. In stage 1, change agent's perceived costs have an impact on their attitudes, while in stage 0, perceived costs have no significant impact on attitude. It is conceivable that change agents will not consider the costs associated with implementing ABCM when they have not considered such implementation, but they take into account the associated costs when they consider. It is also interesting to note that the average perceived cost in stage 1 is 5.33 whereas the average perceived cost is 4.98 in stage 0, the difference is marginally significant ($t = 1.45$, $p < 0.10$). Table 4 shows that change agent's perceived benefits, attitudes and intention in stage 1 are all significantly greater than those in stage 0 ($p < 0.01$, two tailed). This implies that though change agents in stage 1 seriously consider trade-off between benefits and costs, the resulting net benefit has made them yield more favorable attitude toward ABCM and stronger intention to implement it.

Table 4
Change Agent's Beliefs, Attitudes, and Behavioral Intention in 3 Stages

	Stage 0 (n=48)	Stage 1 (n=27)	Stage 2 (n=24)
perceived benefit	5.32 (0.95)*	6.05 (0.48)	6.08 (0.71)
perceived cost	4.98 (1.05)	5.33 (0.98)	4.26 (1.64)
attitude	5.08 (1.21)	6.06 (0.59)	6.04 (0.57)
intention	4.30 (1.35)	5.61 (0.61)	5.85 (0.80)

* numbers in parenthesis are standard deviation

Figure 5 exhibits the results for stage 2. Path diagram indicates that perceived benefit alone exerts significant effect on attitudes (adjusted $R^2 = 0.38$, $p < 0.001$) and that perceived benefit, but not attitude, alone has significant impacts on intention (adjusted $R^2 = 0.34$, $p < 0.05$). Perceived costs have no relationship with other variables. It is understandable that the role of costs becomes less important when firms have started implementing ABCM than when they start considering whether or not to implement it. Table 4 shows that perceived costs are lower in stage 2 (mean = 4.26) than in stage 1 (mean = 5.33), and even lower than in stage 0 (mean = 4.98), the differences are all significant ($t = 2.78$, $p < 0.01$ and $t = 1.96$, $p < 0.05$, respectively, two-tailed).



* $p < 0.05$

*** $p < 0.001$

note: numbers on arrows are standardized regression coefficients

Figure 5 Change Agent's Behavioral Intention in Stage 2[1]

[1] including firms ranging from "start implementing ABCM" to "used ABCM information extensively"

Table 4 also suggests that both perceived benefits and attitude do not differ between stage 1 and stage 2, and that change agents' intention is greater in stage 2 (mean = 5.85) than in stage 1 (mean = 5.61), but the difference is not significant ($p > 0.10$). The decreasing importance of perceived cost may have, to some extent, contributed to the decreasing role of attitude in determining change agents' intention since attitude is potentially formed by the beliefs of benefits as well as costs. The fact that change agents' attitude in stage 2 is not more favorable than in stage 1 may further decrease attitude's impact on determining change agent's intention. Thus, in stage 2, change agents' intention to promote ABCM is determined by their perceived benefits only.

The fact that the determinants of change agent's intention to promote ABCM vary with the stage of implementation adds evidence to the previous research,

which suggests the importance of implementation stages in exploring determinants of ABCM success. When a firm has not considered implementing ABCM, the perceived costs associated with this implementation have less impact on change agent's attitude formation and intention intensity than when a firm starts contemplating ABCM implementation. But, once a firm starts ABCM implementation, perceived costs become less important in the formation of a change agent's attitude toward promoting ABCM. This is conceivable given that ABCM adoption and implementation requires efforts and resources. In addition, as the ABCM project proceeds, perceived benefit has greater influences on a change agent's intention to promote ABCM. His/her perceived benefit becomes the sole influence on intentions.

Conclusions and Limitations

This paper examines change agent's behavioral intention in the implementation of ABCM by integrating the literatures in management accounting and management information systems. Five hundred and ninety nine (599) questionnaires were mailed to financial managers of manufacturing firms in Taiwan. One hundred and six (106) responses were obtained, in which 99 were useable. The results indicate that change agents' perceived benefits of ABCM implementation, but not perceived costs, are significantly correlated with their attitudes toward promoting ABCM implementation. Path analysis suggests that change agents' attitudes and perceived benefits have significant impacts on their intentions to promote ABCM, with attitudes having a greater impact than perceived benefits.

The results also suggest that change agent's behavioral intention differs across stages of ABCM implementation. In stage 0 where firms have not considered the

adoption of ABCM, change agents' perceived benefits of ABCM implementation significantly correlate with their attitudes towards promoting ABCM. Change agents' attitudes alone have a positive impact on their intention to promote ABCM. Change agents' perceived cost of ABCM implementation does not have any impact on their perceived benefits, attitudes and intentions. However, in stage 1 which includes firms that are currently considering the adoption of ABCM and those that have considered but resulted in no implementation, change agents' perceived costs and perceived benefit of ABCM implementation are significantly correlated with their attitudes. Change agents' attitudes alone have significant impacts on their intention to promote ABCM implementation. Change agents for firms in stage 2 ranging from "approved implementation of ABCM" to "used ABCM information extensively" do not take into account the costs in forming their attitude toward promoting ABCM. Perceived benefit alone has significant influence on the formation of attitudes. In addition, perceived benefit alone, but not attitudes, has significant impact on the intention to promote ABCM implementation.

The finding that change agents' behavior differs across stages of ABCM implementation is consistent with prior ABCM research (Anderson 1995, Anderson and Young 1999, Krumwiede 1998). These previous studies suggest that the determinants of ABCM success vary with stages of ABCM implementation. The present study adds evidence to the importance of the maturity of ABCM implementation. The finding implies that the costs associated with implementing ABCM are taken into account seriously when firms are contemplating the adoption of ABCM, but the role of costs becomes less important once firms have started implementing ABCM. In fact, the respondents in our sample indicate that the perceived cost of ABCM implementation increases from stage 0 to stage 1, but decreases sharply from stage 1 to stage 2. Moreover, the role of perceived benefit dominates attitudes in determining change agents'

intention once firms have started implementing ABCM. The increasing trend of perceived benefit across stages may suggest the desirability of implementing ABCM.

The current study has the following limitations. First, a majority of firms in our sample stay at the analysis phase. The change agents' behavior in the action phase is therefore less extensively explored. Second, the limited sample size refrains us from classifying the firms in a more detailed and clear-cut manner. Finally, the sample in the current study was deliberately selected from public and "better performing" manufacturing companies in Taiwan. This may bias our results in that the ABCM adoption rate may have been inflated.

Future studies may consider surveying firms with a full range of firms in industry, size and ABCM maturity to examine the effects of industry, size and ABCM maturity on change agents' behavior. Comparing the behavior of CFOs' behavior with that of other key persons in an organization is also important. The role of other factors such as resources adequacy may also be considered. For practitioners, this study points out the importance of benefit in the proceeding of ABCM. Thus, change agents should emphasize the benefit of ABCM to promote ABCM. Change agents should also use the experiences of firms entering the latter stages of ABCM as models for effective promotion.

References

Abdul-Gader, A. The impact of user satisfaction on computer-mediated communication acceptance: A causal path model. *Information Resources Management Journal*. Winter 1996: 17-26.

Adams, D. A., R.R. Nelson, and P.A. Todd. Perceived usefulness, ease of use and usage of information technology: A replication. *MIS Quarterly*. 16(2), 1992: 227-247.

Anderson, C. R., D. Helriegel, and J.W. Slocum. Management response to environmentally induced stress. *Academy of Management Journal*. 20(2), 1977: 260-272.

Anderson, S. A framework for assessing cost management system changes: the case of activity based costing implementation at General Motors, 1986-1993. *Journal of Management Accounting Research*. 1995: 7-51.

Anderson, S. W., and S.M. Young. The impact of contextual and process factors on the evaluation of activity-based costing systems. *Accounting, Organizations and Society*. 24, 1999: 525-559.

Argyris, C., and D.A. Schon. *Organizational Learning II*. Reading, MA: Addison-Wesley. 1996.

Argyris, C., and R.S. Kaplan. Implementing new knowledge: The case of activity based costing. *Accounting Horizons*. 8, 1994: 83-105.

Brimson, J. A. *Activity Accounting*. New York, NY: John Wiley and Sons. 1991.

Chin, W. and A. Gopal. Adoption intention in GSS: Relative importance of beliefs. *DATABASE*, 26 (2&3), May/August, 1995: 42-63.

Common Wealth. Taiwan Top 1000, *Common Wealth*. May 1999.

Cooper, R. The rise of activity based costing — part two: when do I need an activity-based cost system? *Journal of Cost Management*. 2, 1988: 41-48.

Cooper, R. Implementing an activity-based cost system. *Journal of Cost Management*. 4, 1990: 33-42.

Cooper, R., and R.S. Kaplan. Measure costs right: Make the right decisions. *Harvard Business Review*. September-October, 1988: 96-103.

Cooper, R., R.S. Kaplan, L.S. Maisel, E. Morrissey, and R.M. Oehm. *Implementing*

activity based cost management: moving from action to analysis. Institute of Management Accountants: Montvale, NJ. 1992.

Davis, F. D. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*. 13(3), September, 1989: 319-337.

Davis, F. D., R.P. Bagozzi and P.R. Warsha. User Acceptance of computer technology: A comparison of two theoretical models. *Management Science*. 35(8), August, 1989: 982-1003.

Duncan, O. D. Path analysis: sociological example. *The American Journal of Sociology*. 72(1), 1986: 1-16.

Fishbein, M. and I. Ajzen. *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley. 1975.

Foster, G., and D.W. Swenson. Measuring the success of activity-based cost management and its determinants. *Journal of Management Accounting Research*. 9, 1997: 109-142.

Gefen, D. and D.W. Straub. Gender differences in the perception and use of e-mail: An extension to the technology acceptance model. *MIS Quarterly*. December, 1997: 389-400.

Gosselin, M. The effect of strategy and organizational structure on the adoption and implementation of activity-based cost. *Accounting, Organizations and Society*. 22, 1997: 105-122.

Hilton, R.W. *Managerial Accounting*. Fifth Edition, New York, NY: McGraw-Hill. 2002.

Horngren, C.T., G. Foster, and S. Datar. *Cost Accounting: A Managerial Emphasis*. Englewood Cliffs, NJ: Prentice-Hall. 1997.

Igbaria, M., T. Guimaraes, and G.B. Davis. Testing the determinants of microcomputer usage via a structural equation model. *Journal of Management Information Systems*. 11(4), Spring, 1995: 87-114.

Innes, J., and F. Mitchell. A survey of activity-based costing in the UK's largest companies. *Management Accounting Research*. 6, 1995: 137-153.

Kenny, D. A. *Correlation and Causality*. John Wiley, New York. 1979.

Krumwiede, K. R. The implementation stages of activity based costing and the impact of contextual and organizational factors. *Journal of Management Accounting Research*. 10, 1998: 239-277.

Krumwiede, K. R., and W.G. Jordan. Results of 1998 survey on cost management practices. *Cost Management Update*. No. 93. Cost Management Group of Institute of Management Accountants. 1998-1999.

Land, K. C. Principles of Path Analysis. In *Sociological Methodology*, edited by Borgatta, E. F. and G.H. Bohrnstedt, G. H, The Jossey-Bass Behavioral Science Series, San Francisco, CA: Jossy-Bass. 1969.

Li, C. C. *Path Analysis: A Primer*. Pacific Grove, CA: The Boxwood Press. 1975.

Lu, H. P. and D.C. Yeh. Enterprise's perceptions on business process re-engineering: A path analytic model. *OMEGA, International Journal of Management Science*. 26(1), 1998: 17-27.

Mathieson, K. Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*. 2(3), 1991: 173-191.

McGowan, A. S. Perceived benefits of ABCM implementation. *Accounting Horizons.* 12, 1998: 31-50

Shields, M. D. An empirical analysis of firms' implementation experiences with activity-based costing. *Journal of Management Accounting Research*. 7, 1995: 1-28.

Shields, M. D., and S.M. Young. A behavioral model for implementing cost management systems. *Journal of Cost Management.* 3, 1989: 17-27.

Szajna, B. Empirical evaluation of the revised technology acceptance model. *Management Science*. 42(1), 1996: 85- 92

Szajna, B. Software evaluation and choice: predictive validation of the technology acceptance instrument. *MIS Quarterly*. 17(3), 1994: 319-324.

Turney, P.B.B. *Common Cents: The ABC Performance Breakthrough*. Hillsboro, OR: Cost Technology.1991.

改革代理人推動作業基礎成本管理制度之行為意圖：技術接受模型之實證研究*

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摘 要

本文應用技術接受模型探討改革代理人於推動作業成本管理制度（ABCM）過程中之行為意圖。研究結果發現改革代理人對推行 ABCM 的態度受到改革代理人的知覺效益（但非知覺成本）影響。路徑分析顯示對推行 ABCM 之態度及知覺效益均對推動 ABCM 之意圖有顯著影響，但態度的影響大於知覺效益。此外，本研究發現推動 ABCM 之知覺成本、知覺效益、態度與意圖之間的關係隨者推行 ABCM 之階段而異。

關鍵詞：作業基礎成本管理制度、技術接受模型、改革代理人

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