

# Activity-Based Costing Success (ABC) Implementation in China: The Effect of Organizational Culture and Structure

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## Abstract

**Purposes** -This study aims to investigate the effect of corporate culture and organizational structure on Activity-Based Costing (ABC) success in China.

**Design/methodology/approach** - Data were collected by survey questionnaire from a random sample of Chinese manufacturing businesses.

**Findings** - The results indicate that Chinese manufacturing firms achieved a moderate level of ABC success. One organizational structure factor, formalization was found to affect the ABC success implementation significantly. The culture factors of outcome orientation and attention to details were significantly associated with ABC success. The results also show that organizational culture factors were more strongly associated with ABC success implementation than organizational structure factors.

**Research Implication** – The paper contributes to the current literature on the effects of contextual variables on ABC success particularly corporate culture and organizational structure. This paper also aims to create awareness among managers on the importance of having appropriate corporate culture and structure to enhance ABC implementation success in their organizations.

**Originality/value** – This paper makes the first attempt to examine the effect of organizational culture and structure on ABC success among Chinese manufacturing sector.

**Key Words** Activity-Based Costing, Organizational Structure, Organizational Culture

**Paper Type:** Empirical Research paper

## 1. Introduction

More accurate costing information is needed for effective decision making in today's advanced manufacturing environment. However, the traditional volume-based costing system is argued to result in distorted costing information (Cooper & Kaplan, 1988). Under the conventional costing system, the allocation basis for overhead cost is direct labor or machine hours which often fail to reflect the cost-effect relationship between individual products and indirect costs (Majid *et al.* 2008). Activity-Based Costing (ABC) was introduced by Cooper and Kaplan (1988) to address the shortcomings of the traditional volume-based costing system. Under ABC system, multiple cost drivers and allocation basis are adopted to trace overhead cost to final products and services (Cooper & Kaplan, 1992). Numerous research findings reported that ABC could result in more accurate costing information. Among others are Cooper and Kaplan (1992), Shields (1995), Innes *et al.* (1995, 2000), Bjornenak (1997), Lana and Fei (2007), and Banker *et al.* (2008), just to name a few. Due to its abilities to provide more accurate costing information for strategic decision making, both practitioners and researchers are motivated to investigate factors influencing ABC success. Prior research findings indicate that in western countries, the main factors influencing ABC success are organizational factors, such as top management support, adequate resources, training and so on. China has experienced a very rapid economic growth within the last decade which has transformed its competitive business environment into an advanced and dynamic environment. Escalations in the competitive business environment have motivated Chinese firms to adopt ABC system to trace overhead cost. However, little research has been done in the Chinese context and it is necessary to examine whether ABC could be implemented successfully in China.

Besides organizational factors, prior studies also showed other significant factors in determining ABC success implementation. Based on a study among Canadian business unit, Gosselin (1997) concluded that organizational structure affecting very stage of ABC implementation. In addition, Baird *et al.* (2007) found that organizational culture played an important role in implementing ABC successfully among firms among Australian business unit. However, previous studies on the effect of organizational structure and culture on ABC success are very few. Zhang and Isa (2009) reviewed previous research on factors affecting ABC success and they found that only one empirical study by Baird *et al.* (2007) examined the relationship between ABC success implementation and organizational culture. In additional, only one research by Gosselin (1997) investigated the association between ABC implementation and organizational Structure. Zhang and Isa (2009) also called for more studies on examining the impact of organizational culture and structure on ABC implementation, especially in developing countries context. In order to fill in these research gaps, the general objectives of this paper are to 1) examine the relationship between ABC success and organizational culture, and to 2) examine the relationship between ABC success and organizational structure. Specifically, the objectives of this research are to determine the effects of the sub systems of corporate culture and organizational structure namely, outcome orientation, innovation, team orientation, attention to details, formalization and centralization, on ABC success implementation.

The remainder of this paper is organized as follows. In Section 2, the development of the theoretical research framework that depicts the research hypotheses is provided. Section 3 presents the

sample description and measures. The descriptive statistics and results of the data analysis follow in Section 4. Discussion and conclusions are shown in section 5. Finally, section 6 outlines the limitations and suggestions for future research.

## **2. Hypothesis and Research Framework**

### *2.1 Underlying Theory and Hypothesis development*

This framework of this study is developed based on the contingency theory which asserts that contextual factors surrounding organizations, such as corporate culture and organizational structure play an important role in designing and implementing a management control system (Flamhotz, 1983; Chenhall *et al.*, 2003).

Using a sample of Chinese manufacturing firms, this paper aims to provide further insights on the impacts of two contextual factors, organizational structure and corporate culture, on ABC success. In this study, the components of organizational structure are formalization and centralization while outcome orientations, innovation, team orientation, attention to details make up the four components of organizational culture. The followings are the details of hypothesis development.

#### *2.1.1 Organizational Structure*

The ability to adopt and implement an innovation can be affected by organizational structure (Damanpour, 1991), and organizational structure is also an important determinant in the diffusion of innovation process (Gosselin, 1997). Organizational structure can be classified into mechanistic structure and organic structure (Burns & Stalker, 1961). Mechanistic has higher level of centralization than that of organic structure, and mechanistic organizations always formalize its rules, polices and producers, whereas organic organizations favor informal control systems (Gosselin, 1997).

According to Gosselin (1997), Activity Management (AM) consists of three levels, namely Activity Analysis (AA), Activity Cost Analysis (ACA) and Activity Based Costing (ABC). Gosselin (1997) pointed out that, AM has both characteristics of technical and administrative innovations. The early stage of AM are AA and ACA are considered as technical innovation due to greater emphasis on processes and activities and the method of producing products or how services are being provided. On the other hand, ABC is classified as administrative innovation. because new administrative processes, rules, regulations as well as new organizational structure maybe created during ABC implementation. Dual-core model proposes that the adoption and implementation of an administrative innovation could be facilitated in the mechanistic structure. Inspired by the dual-core model, Gosselin (1997) proposes that ABC is easier to adopt in organizations with mechanistic characteristics, because in mechanistic organizations, once top management makes decisions to devote them to a new system, they would invest and use all the resources on that new system to make sure successful implementation of the new system and supervise the process of implementation (Gosselin, 1997).

Implementation of any innovation in an organization can be divided into two separate processes. The first stage is initiation stage, and the next level is implementation. Damanpour (1991, p. 562) defines initiation stage as “consisting of all activities pertaining to problem perception, information gathering, attitude formation and evaluation, and resource attainment leading to the decision to adopt. The implementation stage consists of all events and actions pertaining to modifications in an innovation and an organization, initial utilization, and continued use of the innovation when it becomes a routine feature of the organization”. The dichotomous model suggests that with organic characteristics, organization can adopt innovation very easily, and the implementation stage of an innovation can be facilitated in mechanistic organization (Gosselin, 1997). Gosselin (1997) also concluded that mechanistic organizations are more likely to implement ABC successfully. The proposed hypothesis in this research is as follows:

H1: There is a positive relationship between mechanistic structure and ABC success implementation in Chinese manufacturing firms.

Centralization and formalization are selected in this study to operationalize organic and mechanistic structure based on the following arguments. First, they could exemplify major dimensions of organizational structure and used, as well as cited by numerous of innovation studies (Aiken, Bacharach, & French, 1980; Damanpour, 1987, 1991; Gosselin, 1995, 1997; Hage & Aiken, 1967). Second, Gosselin (1997) concluded from a survey among Canadian business units that centralization and formalization are positively related to ABC successfully implementation. Hence two sub-hypothesis are discussed as follows:

#### *2.1.1.1 Centralization*

Centralization means the decision making rights are controlled by the top level in the hierarchy (Gosselin, 1997). Gosselin (1997) suggests that ABC implementation in centralized organizations has higher rate of success than that of decentralized organizations, because in centralized organizations, operational decisions are made by managers from the higher hierarchy of the organization. Once top management makes resolution to implement ABC system, they will allocate all resources, such as time, employees to ABC projects to ensure the ABC can be successfully implemented, and division managers have no authorities to hinder ABC implementation and they have to obey the orders or instructions from top management. On the other hand, in a decentralized organization, division managers may have authorities to make certain decisions. If they perceive that ABC system fails to satisfy their needs, they would require additional works and difficult to make changes in their existing accounting system, they may resist the ABC implementation in their departments.

Gosselin (1997) conducted a survey among Canadian manufacturing firms to investigate whether organizational structure has direct relationship with ABC success implementation. The results indicated that among manufacturing firms which adopt ABC, centralized organizations are likely to be more successful in the implementation of ABC. Hence a sub-hypothesis is presented in this study as follow:

H1a: There is a positive relationship between centralization and ABC success implementation in Chinese manufacturing firms.

#### *2.1.1.2 Formalization*

Formalization represents the degree to which rules, procedures and policies within an organization are standardized (Gosselin, 1997). Zmud (1982) carried out a study about the effect of centralization and formalization on the adoption and implementation of modern software practices. The finding showed that during the initiation stage of modern software practices, less formalized structure could facilitate the initiation stage. However, once an organization decides to fully implement modern software practices and make it become a part of the information system the formalized structure is needed to ensure the success implementation of the modern software practices. Similar arguments could be applied to ABC' implementation process.

Gosselin (1997) stated that Activity Analysis (AA) and Activity Cost Analysis (ACA) are the initiation stage of ABC implementation. In this stage, less formalized organization may adopt AA and ACA, but once organizations go to higher stage, ABC implementation stage, organization should formalize rules, policies and procedures to ensure ABC could be success. In his study on Canadian manufacturing firms, he found that the higher the level of formalization, the more success ABC will be. The present research examines this relative relationship as stated by the following hypothesis.

H1b: There is a positive relationship between formalization and ABC success implementation in manufacturing firms in China.

### 2.1.2 Organizational Culture

There are many definitions for organizational culture. This study will use Higginson and Warder (1993) organizational culture's definition as "a set of shared values, norms and beliefs that get everybody heading in the same directions" (p.11). Baird, Harrison and Reeve (2007) used similar definition in their study to examine the relationship between ABC success implementation and organizational culture.

Prior research show that whether business practices could be successfully implemented or not is generally influenced by culture factors. For example, Schneider *et al.* (1996) stated that if a firm plans to implement a business practice successfully, it should make the practices be compatible with its organizational culture; otherwise, the business practice may less likely to succeed.

Malmi (1997) conducted a longitudinal case study to explore the reason for ABC failure in a firm. He found that users' resistance led to failure to implement ABC successfully, and organizational culture can explain why users within organization may resist ABC. Similarly, Skinner (1998) point out one reason ABC may not be successfully implemented in some firms is the incompatibility between culture and ABC.

One of the latest studies about the relationship between ABC success and organizational culture carried out by Baird, Harrison and Reeve (2007). In their study, survey questionnaires were sent to randomly selected managers among Australian business units. The result indicates that organizational culture is associated with the ABC success implementation. The present research examines the relative relationship relative to the following hypothesis:

H2: There is significant relationship between ABC success and organizational culture.

In order to investigate the relationship between ABC success implementation and organizational culture, in this research, organizational culture factor is divided into four perspectives: outcome orientation, team orientation, attention to details, and innovation. They are initiated by O'Reilly (1991), and applied by the latest research Baird *et al.* (2007) to examine the impact of organizational culture on Activity management success. Four sub hypotheses are proposed as follows:

#### 2.1.2.1 Outcome orientation

O'Reilly *et al.* (1991, p. 505) defined outcome orientation as "the extent to which business units emphasize actions and results, have high expectations for performance, and competitive". Baird *et al.* (2004) assert that in a company, if the degree of outcome orientation is higher, it will focus more on practices. Eventually, processes could be improved which will lead enhanced performance and improved competitiveness.

Baird *et al.*'s (2007) research among Australian business units showed that outcome orientation has greater impact on the success of all level of activity management (AA, ACA and ABC). They concluded that if a company stresses the importance of this dimension of organizational culture, it would actively adopt new management accounting and costing practices to enhance overall performance and put more efforts to those new practices to ensure they can be successfully adopted and implemented. The sub hypothesis is presented as follow:

H2a: There is positive relationship between outcome orientation and ABC success implementation in Chinese manufacturing firms.

#### 2.1.2.2 Attention to details

Baird *et al.* (2007) found that attention to details is strongly associated with highest level of Activity management, which is Activity Based Costing. They argue that significant relationship should exist between attention to details and ABC. ABC implementation usually involves great amount of work of collecting data and selecting suitable cost drivers which require a lot of attention to details. So if a firm

has the cultural characteristics, it will have higher possibilities of success rate. The sub hypothesis is presented as follow:

H2b: There is positive relationship between attention to details and ABC success implementation in Chinese manufacturing firms.

#### 2.1.2.3 Innovation

Baird *et al.* (2004) conducted a research to examine the extent of activity management practices application among Australian business units. They also investigated the relationship between the extents of adoption and the organizational culture dimension of innovation, outcome orientation, as well as tight verse loose control. They used Gosselin's (1997) three level of Activity management as the basis. The results indicate that all culture dimensions were associated with the three level of activity management (AA, ACA and ABC). However, no significant relationship was found between innovation and ABC adoption, and significant association was only found for AA and ACA stage. On the other hand, outcome orientation and tight verse loose had significant relationship between ABC adoption.

Baird *et al.* (2007) examined whether significant association could be found between activity management implementation and organizational culture. They found that innovation dimension had a negative association with ABC implementation. This finding confirms Baird *et al.* (2004) results. Baird *et al.* (2007) argued that failure to find strong association between ABC success implementation and innovation is reasonable. They further argue that innovation is important at the adoption stage of activity management; however, once firm has already adopted activity management, innovation may hinder the success implementation of any activity management. So the current study examines the following hypothesis:

H2c: There is a negative relationship between innovation and ABC success in Chinese manufacturing firms.

#### 2.1.2.4 Team orientation

Landry (1997) stated successful ABC implementation requires team work both externally and internally, as partnership formation could improve operational process continuously, enhance productivity, as well as improve efficiencies. Brewer (1998) conducted a field study of Harris Semiconductor (HS), which has adopted ABC system at plants operating in both US and Malaysia. Brewer's study employed Hofstede (1983)'s national culture classification. In Hofstede's work, Malaysia was considered as collectivist society; on the other hand, USA was categorized as individualist society. He found that cross functional team-based approach produced higher level of ABC success in Malaysia than that of US.

Gering (1999) highlighted that in order to ensure ABC success implementation, a multi-functional team is needed at each stage of ABC implementation. Multi-functional team requires people from different perspectives or departments to collaborate with each other to overcome practical problems during ABC implementation. If multi-functional team can function well, the ABC success implementation could be guaranteed.

Drake *et al.* (2001) conducted a research to find out how some features of organizational factors can determine the information generated by ABC system. They found that appropriate incentive policies are able to motivate users to use ABC information to reduce costs and enhance processes. They also stated an effective approach to create incentive is team work, the more communication arises between team members, and the more team based creativity ideas would be produced. Eventually, desired cost and operational control can be achieved by applying ABC system.

Baird *et al.* (2007) reviewed Landry (1997), Gering (1999) and Drake *et al.*'s (2001) and concluded that team work is considered as an important factor for successful implementation of activity management. So the present study proposes the following hypothesis:

H2d: There is positive relationship between team work and ABC success implementation in Chinese manufacturing firms.

## 2.2 Research Framework

Based on the discussion in previous sections on the relationship between various variables, organizational structure, organizational culture, and ABC success implementation, the main research framework is proposed. In this study, the dependent variable (DV) is ABC success implementation; the independent variables (IDV) are organizational structure and organizational culture. The following is the regression equation related to the above model.

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e$$

Where Y = the ABC success implementation, X1= formalization; X2=centralization, X3=outcome orientation, X4=innovation, X5=team orientation, X6=attention to details.

## 3. Method

### 3.1 Research Design and Data Collection

This study adopted mail questionnaire survey to collect data from only manufacturing firms in China. As Rotch (1990) stated that compared to manufacturing firms, non-manufacturing firms are very different from each other in terms of characteristics, and outputs of non-manufacturers are often hard to determine. Clark *et al.* (2001) also highlighted that significant differences exist in terms of cost structure between non-manufacturers and manufacturers. The differences lead to difficulties in researching ABC application in different type of industries. Therefore, this study concentrates on manufacturing sector only.

The questionnaire was originally designed in English. However, Mandarin is the official language in China, thus, it is necessary to translate the questionnaire to Chinese. This study adopts double-back translation procedure. Firstly, the translation was carried out by the author of this study, and then reviewed by a Chinese citizen, who obtained his PhD in management accounting in Singapore, thus, no significant difference between English and Chinese version could be ensured. The translated questionnaire and the original ones were also examined by a CFO working in a US-Based manufacturing firm in China. Modifications were made according to the comments and suggestions of experts. Finally, the finalized Chinese version questionnaire was translated back to English to ensure the meanings are similar.

### 3.2 Sample

A total of 1000 questionnaires were randomly mailed to the manufacturing firms listed on Chinese Chamber of Commerce and Industry 2008 directory. In this research, Chief Financial Officer (CFO) or Financial Controller of each firm was chosen as respondents. They are considered as the most suitable respondents as they are mostly likely to have a clear understanding of management accounting practices and responsible for designing and implementing ABC in their companies. However, some companies may not have the position of CFO or Financial Controller. Under these circumstances, finance managers are assumed to be the suitable respondents for this study. If a reply from respondents did not receive two weeks after the first mailed-out, then a follow-up telephone was made and a follow up questionnaire was also emailed to respondents to remind them to fill in the questionnaires.

Finally, 123 questionnaires were returned. However, 13 questionnaires were stated that they neither do not adopt ABC nor implement any aspects of ABC, so they were excluded from the analysis. Furthermore, 4 questionnaires were incomplete, and were also abandoned before the data analysis started, and finally a total of 106 completed questionnaires were used for data analysis representing a final response rate of 10.6%.

Chief financial officers accounted for the largest number of respondents, or 33% (35) of total respondents, followed by finance managers (27.4%), and financial controllers (25.5%) and only 15 (14.2%) of respondents chose others, which may include accounting supervisors, business analysts and others.

Non-response bias is a common problem experienced by many researchers. This study adopted the approach suggested by Williams and Seaman (2001) to check non-response bias. In this study, total respondents were divided into two groups: early and late reply. T-Test was applied to examine whether there was any significant difference in the mean score of organizational structure and culture between early and late reply. The results show that there were no significant differences between early and late reply. Therefore, it can be concluded that the sample in this study is free from response bias.

### *3.2 Measures*

#### *3.2.1 ABC Implementation*

Only ABC adopters were the respondents for this study. According to Krumwiede (1998), ABC implementation process has six stages, namely, initiation, adoption, adaption, acceptance, routinization and infusion or integration. The last three stages are considered ABC users. Acceptance stands for ABC is occasionally applied by top management for decision making but is still considered as a project model, and ABC system is updated infrequently. However, at routinization stage, ABC system is frequently applied by non-accounting upper management to make decision, and ABC is considered as the normal part of information system. The final stage of ABC implementation is infusion or integration. In this stage ABC is comprehensively applied and fully combined with primary financial system, where the benefit of ABC can be clearly identified. Routinization and infusion are considered by Krumwiede (1998) as the mature stage and acceptance as the early stage of ABC implementation. In this research, respondents were requested to specify the stage of ABC implementation.

Moreover, instead of asking firms “Does your firms implement ABC system to allocate overhead cost” directly, this study attempted to identify other types of ABC adopters. Instrument for firms that do not implement the full concept of ABC, but only implement some aspects of ABC was taken from Yanren *et al.* (2009). ABC implementation was broken down into four perspectives, such as using multiple cost drivers or bases to allocate overhead costs, increasing the cost drivers or allocation basis substantially in number, allocating period costs, such as R & D cost, general administrative costs to finished products, as well as increasing proportion of period costs traced to finished costs (Yanren *et al.*, 2008). Respondents needed to rate the current management accounting practices on a five – point Likert scale from 1 (strongly disagree) to 5 (strongly agree) against the four statements mentioned above.

#### *3.2.2 Organizational Structure*

Two dimensions of organizational structure, centralization and formalization were used to test the impact of organizational structure on ABC success implementation. The instrument in this study employed Robbins’s (1983) measure, which was subsequently adopted by Gosselin (1997) to investigate the impact of organizational on activity management. The purpose of this instrument was to examine the extent to which rules, policies and procedures are standardized. The degree of centralization was measured by asking respondents’ opinion on ten standard decisions. The purpose of these questions was to determine the authority of decision-making at a top level in the hierarchy.

#### *3.2.3 Organizational Culture*

In this study, the measure for organizational culture was taken from Baird *et al.* (2007). In their research, they divided organizational culture into four dimensions, namely outcome orientation, team orientation, innovation, and attention to details. In this research, respondents were asked to rate the extent to which each item was valued in their business unit by using five Likert scales with a range of “1=not valued at all” and 5=“value to a great extent”.

#### *3.2.4 ABC success*

This study adopts McGowan's (1998) measure for ABC success. In this research, ABC success was broken down into four perspectives, namely, users' attitude, technical characteristics rating, perceived usefulness in improving user job performance and impact on organizational process. Respondents were asked to state their overall attitude toward the four perspectives of ABC implementation on a five-point likert scale ranging from "1=strongly unfavorable" to 5= "strongly favorable". Even though McGowan used this instrument to measure ABC success in the year of 1998, but it was still adopted by the latest research that conducted by Byrne *et al.* (2009) to measure ABC success among Australian business units. Therefore, this study also employs McGowan's (1998) instrument to measure the extent of ABC success among Chinese firms.

In this study, technical characteristics composed of five aspects: accuracy, accessibility timeliness, reliability and understandability. Respondents needed to make a comparison between ABC information and information produced by the previous traditional accounting systems on all these five technical characteristics using a scale of "1=strongly disagree" to 5="strongly agree".

Six statements were used in this study to measure respondents' perception about usefulness in improving job performance. These statements included various measures for the improvement in job performance, such as quality of job, effectiveness of job, overall job performance. Respondents needed to rate their view on the improvement in their job performances by the application of ABC information by using a five-likert scale anchored 1="strongly disagree" to 5="strongly agree".

Quality decisions, efficiency and waste reduction, innovation, relationships across functions, communications across functions, and the overall focus on the goal of the entity were employed to measure impact on process. Respondents were required to rate their perception about the impact that ABC implementation has had on the five dimension of organizational process by choosing a survey item ranging from 1="strongly disagree" to 5="strongly agree".

## **4. Results**

### *4.1 Frequency*

Among the sampled firms, 61 firms (57.5%) stated that they were currently adopting ABC to trace overhead costs and those firms were considered as ABC fully adopters. 17 (16%) out of total respondents stated that ABC was used occasionally and still considered by top management as a model. 14.2% of total respondents (15) reported that ABC was commonly applied and has been considered as normal part of information system, and 29 (27.4%) firms claimed that in their firms ABC has been successfully integrated with their financial system and ABC is used by upper management extensively. According to past researches, the two final statuses are categorized as the mature stage of ABC implementation, so 44 of total firms which were considered as ABC mature adopters and they accounted for 41.5% of total firms.

Apart from ABC adopters, 45 out of total firms (42.5%) stated that in their firms, ABC was not applied to allocate overhead cost. It indicate in these firms only certain aspects of ABC were implemented, such as allocation of period costs to product costs for the purpose of internal management decision-making, and the application of multiple cost drivers or bases in tracing overhead expenses to different products.

Since the aims of this research is to examine the effect of the organizational culture and structure on ABC success implementation, full and partial adopters of ABC were considered as appropriate respondents for this study. Therefore, a total of 106 firms were used for data analysis.

### *4.2 Descriptive Statistics*

Table 1 summarizes the descriptive statistics for the dependent and independent variables, and the correlations of these variables are shown in Table 2.

**Table 1: Descriptive Statistics of Variable (n=106)**

| <b>Variables</b>   | <b>Mean</b> | <b>SD</b> | <b>Min</b> | <b>Max</b> |
|--|-------------|-----------|------------|------------|
| <b>Organizational Culture</b>                                    |             |           |            |            |
| <b>1. Outcome Orientation</b>                                    | 3.97        | 0.92      | 1.00       | 5.00       |
| <b>2. Innovation</b>   | 3.20        | 0.88      | 1.00       | 5.00       |
| <b>3. Team Orientation</b>                                       | 4.04        | 0.85      | 2.00       | 5.00       |
| <b>4. Attention to details</b>                                   | 4.01        | 0.83      | 2.00       | 5.00       |
| <b>Overall Culture</b>   | 3.81        | 0.63      | 2.02       | 5.00       |
| <b>Organizational Structure</b>                                  |             |           |            |            |
| <b>1. Formalization</b>  | 3.97        | 0.66      | 2.00       | 5.00       |
| <b>2. Centralization</b>   | 3.59        | 0.73      | 2.10       | 5.00       |
| <b>Overall Structure</b>   | 3.78        | 0.58      | 2.76       | 5.00       |
| <b>ABC success</b>   |             |           |            |            |
| <b>1. User Attitude</b>  | 3.60        | 0.87      | 1.00       | 5.00       |
| <b>2. Technical Characteristics</b>                              | 3.68        | 0.84      | 1.00       | 5.00       |
| <b>3. Perceived usefulness in improving user job performance</b> | 3.47        | 0.76      | 1.00       | 5.00       |
| <b>4. Impact on Organizational Process</b>                       | 3.67        | 0.81      | 1.67       | 5.00       |
| <b>Overall ABC success</b>                                       | 3.61        | 0.69      | 1.53       | 5.00       |

It can be seen that the mean score for overall ABC success is 3.61 (SD=0.69). It suggests that ABC was moderately successful in Chinese manufacturing business. Similar moderate levels of success were recorded for all the sub components of ABC success as the mean score for users 'attitude, technical characteristics, perceived usefulness in improving users' job performance, impact on organizational process were 3.60 (SD=0.87), 3.68 (SD=0.84), 3.47(SD=0.76), 3.67(SD=0.81) respectively. This suggests that respondents perceived ABC implementation were generally favorable, improved their firms' performance moderately, and had moderate impact on operating process.

The mean value for the overall corporate culture was 3.8, and its sub dimension of outcome orientation, innovation, team orientation and attention to details were 3.97, 3.20, 4.04 and 4.01 respectively. It can be seen in Table 1 the mean values for team orientation was ranked as the highest among the dimension of corporate culture (mean value=4.04), indicating that respondent firms emphasized highly the importance of team work and encouraged employees to collaborate with each other. The lowest value rank was for innovation (mean score=3.20) suggesting that respondents were moderately innovative.

It can be seen from Table 1 that, the mean value for formalization was 3.97. This indicates that rules, policies, procedures and jobs are highly standardized. The mean value for centralization was 3.59. It indicates that operating decisions are made by a high position in an organization, such as top management. It also may suggest that top management is highly involves in gathering the input information, participate

in interpreting the input information, and control the execution of the decision at a very great deal, while first-line supervisors have very limited authority to make operational decision for their own divisions. The Pearson correlation between ABC success and its predictors are presented in the Table 2. The Pearson correlation between ABC success and Structure was positive and significant ( $r=0.413$ ,  $p=0.000$ ), and between ABC success and corporate culture ( $r=0.624$ ,  $p=0.000$ ). They are all in the same direction to hypothesize which suggests that the mechanistic organizations have higher level of ABC success compare to that of organic organizations. Thus, the preliminary supports for hypothesis 1 and hypothesis 2 are provided.

**Table 2: Correlations (p values) between independent and Dependent Variables**

| <b>Variables</b>         | <b>ABC Success</b> | <b>Cronbach alpha</b> |
|--------------------------|--------------------|-----------------------|
| Formalization            | 0.474, P=0.000     | 0.775                 |
| Centralization           | 0.228, P=0.000     | 0.831                 |
| <b>Overall Structure</b> | 0.413, P=0.000     | N/A                   |
| Outcome orientation      | 0.655, P=0.000     | 0.903                 |
| Innovation               | 0.199, P=0.041     | 0.871                 |
| Team                     | 0.520, P=0.000     | 0.893                 |
| Attentions to details    | 0.429, P=0.000     | 0.846                 |
| <b>Overall Culture</b>   | 0.624, P=0.000     | N/A                   |

Table 2 also shows the Pearson correlation between ABC and the sub components of corporate culture and organizational structure. The correlation between ABC success and formalization was 0.474 ( $p=0.000$ ) suggesting the higher the level of formalization, the higher level of ABC success. In addition, centralization shows a positive and significant correlation with ABC success ( $r=0.228$ ,  $p=0.000$ ). Thus, correlation results provide preliminary supports to hypothesis 1a and hypothesis 1b.

Among the sub components of organizational culture, outcome orientation, innovation, team orientation and attention correlated with ABC success positively and significantly. The Pearson correlation were 0.655 ( $p=0.000$ ), 0.199 ( $p=0.041$ ), 0.520 ( $p=0.000$ ) and 0.429 ( $p=0.000$ ) respectively. This suggests that outcome orientation, innovation, team and attention to details were significantly and positively correlated with ABC success. The results also provide initial supports for the hypothesized relationship between each predictor and ABC success.

Cronbach alpha for all the research variables are also depicted in the Table 2. Nunnally (1978, p.245) stated that “Cronbach alpha coefficients met or exceeded the 0.70 threshold generally considered acceptable for internal scale reliability”. All the Cronbach alpha coefficients range from 0.775 to 0.903 indicating an acceptable level of reliability.

#### 4.2 Regression Results

Regression test was applied to examine the relationship between ABC success and main independent variables. In this study, the main independent variables were organizational structure and corporate culture. The regression results were summarized in the Table 3.

The regression test results show that organizational culture and structure together explained 43.4 percent of the total variations in ABC success. In addition, organizational structure ( $p=0.005$ ) and culture ( $p=0.000$ ) were significant predictors of ABC success implementation. Thus hypothesis H1 and H2 are supported. Regression results also suggests that Organizational culture (Beta=0.547,  $p=0.000$ ) is a stronger predictor for ABC success implementation compare to organizational structure (Beta=0.270,  $p=0.005$ ).

**Table 3: Regression Results**

| Independent Variables                                | Dependent Variable: ABC success |         |
|--|---------------------------------|---------|
|  | Std Beta,                       | P Value |
| <b>Organizational culture</b>                        | 0.547,                          | P=0.000 |
| <b>Organizational structure</b>                      | 0.270,                          | P=0.005 |
| <b>R-Square=0.434, Adj. R Square=0.424, P=0.000</b>  |                                 |         |
| <b>Sub Variables</b>                                 |                                 |         |
| <b>Formalization</b>                                 | 0.242,                          | P=0.004 |
| <b>Centralization</b>                                | 0.131,                          | P=0.134 |
| <b>Outcome orientation</b>                           | 0.540,                          | P=0.000 |
| <b>Innovation</b>                                    | 0.054,                          | P=0.532 |
| <b>Team orientation</b>                              | 0.175,                          | P=0.083 |
| <b>Attentions to details</b>                         | 0.047,                          | P=0.617 |
| <b>R-Square=0.539, Adjust R-Square=0.512 P=0.000</b> |                                 |         |

Besides examining the relationship between ABC success implementation and organizational structure, corporate culture, this study also examined the relationship between sub systems of organizational structure and corporate culture and ABC success. The results are also presented in the Table 3. The results show that significant relationship exist between ABC success implementation and formalization ( $p=0.004$ ), as well as ABC success implementation and outcome orientation ( $p=0.000$ ). Hence, the hypothesis H1b and H2a are supported. However, the relationship between ABC success implementation and centralization ( $\beta=0.131$ ,  $p=0.134$ ), innovation ( $\beta=0.054$ ,  $p=0.532$ ) were found to be insignificant. Therefore, hypotheses H1a, H2b, H2c were not supported. However, a marginally significant relationship was found between team orientation and ABC success implementation. Hence, hypothesis 2d was marginally supported.

## 5. Discussion and Conclusion

The objective of this study is to investigate the effect of organizational structure and organizational culture on ABC success implementation among Chinese manufacturing firms.

The first main objective of this research was to examine the effect of organizational structure on ABC success implementation as stated in the Hypothesis 1. The results of Pearson correlation ( $r=0.413$ ,  $p=0.000$ ) and regression ( $\beta=0.270$ ,  $p=0.005$ ) showed a positive and significant relationship between overall structure and ABC success. It indicates that the higher level of ABC success implementation could be achieved by adopting higher level of mechanistic structure. The results are also consistent with findings of Gosselin (1997), who also found a significant relationship between the ABC success implementation and structure. And this finding is also consistent with Friedman and Lyne (1999). Friedman and Lyne (1999) stated that in order to make ABC success, ABC system should be embedded into the organizational structure (cited by Lana & Fei, 2007).

Also a positive ( $r=0.474$ ,  $p=0.000$ ) and significant ( $p=0.000$ ) relationship between formalization structure and ABC success implementation was found when the test was performed for the effect of sub-components on ABC success. The finding is consistent with previous research, Gosselin (1997) which found that formalization structure is related to ABC implementation stage. Centralization is not significant with ABC success implementation ( $p=0.134$ ), and this result is not consistent with previous research (Gosselin, 1997). In his research, he concluded that centralization structure influences the ABC implementation stage. And similarly, Malmi (1997) concluded that centralized structure leads to the ABC success. Failure to find a significant relationship between ABC success implementation and centralization might be due to the stage of ABC implementation. Gosselin (1997) concluded that centralization influences the ABC implementation significantly, while, decentralized structure facilitates the ABC adoption. In this study, ABC implementation was still at early stage in most of respondents. Thus, centralization may not be significant factor in predicting ABC success implementation.

The Second objective of this research was to examine the direct relationship between organizational culture and ABC success implementation as stated in Hypothesis 2. The results of correlation and regression analysis indicate a significant direct relationship between organizational structure and ABC success implementation ( $r=0.624$ ,  $p=0.000$ ). The results indicate that if ABC system can be compatible with its culture ABC can be successfully implemented. The findings support the previous research conducted by Malmi (1997), Baird *et al.* (2004) and Baird *et al.* (2007). In their research, they stated that culture could explain the variation in ABC success.

Tests were carried out to examine the effect of sub-components of corporate culture on ABC success, and two significant findings emerging from current study, namely significant relationships between ABC success implementation and outcome orientation, and marginally significant relationship between team orientation and ABC success. This indicates that firms which emphasize the results and actions and have high expectations for performance, and emphasize the team work, then higher level of ABC success implementation can be achieved. The findings in present study are consistent with Baird *et al.* (2007), which claimed that outcome orientation is associated with activity management, and Drake *et al.* (2001), who found that team orientation is an important factor in implementing ABC.

Insignificant relationship was found between attentions to details and ABC success implementation is unreasonable. The finding is not consistent with Baird *et al.* (2007)'s work. Baird *et al.* (2007, p. 63) stressed that "ABC is distinguished from Activity Analysis (AA) and Activity Cost Analysis (ACA), because it involves greater attention to detail in the tracking of cost pools and activity drivers to product costing and decisions". And they found a significant association between ABC success implementation and attentions to details among Australian business units. Insignificant for attention to details may be created by results of lesser significance in practice relative to theory, or of shortcomings in measurement of attention to details adopted in this research.

However, innovation was also found not associated significantly with ABC success. This finding is consistent with Baird *et al.* (2004)'s view that innovation only affects ABC adoption in the initial stage, however during the ABC implementation stage, innovation is not as critical, so this finding is explicable. And this finding confirms Baird *et al.*'s (2007) finding. In their research, they also failed to find a significant relationship between innovation and ABC success implementation.

## **6. Limitations and Suggestions for Future Research**

This study still possesses four major limitations typically related to cross sectional studies. Firstly, the response rate of this study was only 10.6%; the finding of research would be meaningful and useful if a larger sample size is obtained. Secondly, 14.2% of total questionnaires were completed by accounting supervisors and business analysts whose perceptions about ABC may be different from the targeted respondents, Chief Financial Officer (CFO) or Financial Controllers. Thirdly, measure for organizational structure was employed from Robbins (1983). Thus, the new measure for organizational structure should be developed. Fourthly, the results of this study cannot be generalized to other industries, because this study only comprised manufacturing firms as respondents. Finally, the effects of Chinese national culture

on the implementation of ABC did not discuss, thus, it is interesting to investigate the relationship between ABC success implementation and national culture.

Due to limitations discussed above, suggestions for future research are as follows: Firstly, future research should increase the response rate by including other sectors, such as service industry, and also future research may consider conducting alternative method to collect data, such as field study or case study, which may provide a more comprehensive and in-depth understanding of the ABC system and factors influencing its success. Secondly, future research should ensure the questionnaires are answered by CFO or financial controllers, in order to achieve this objective, interview survey may be more suitable than mail survey. Thirdly, future research should consider developing new instruments to measure the organizational structure, especially, centralization and formalization. Since the findings of this research could not be generalized to other industries, therefore future research may focus on selecting respondents from other industries, such as retailing or service industry. Fourthly, due to the weakness of measure for organizational culture and structure, alternative approach, such as case study could be considered to examine the relationship between organizational culture, structure and ABC success, such as case study or interview. Finally, national culture maybe considered to explain the success implementation of ABC in Chinese context. It is believed that the different finding from study in China with studies in Western countries could be explained by national culture.

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## **Appendix: Survey instruments**

### **Organizational structure** (Robbins, 1983; Gosselin, 1997)

Below is a list of descriptions for the structure of your organization. Please select the one that best describes your organization by circling the appropriate item.

#### *Formation*

Written job descriptions are available for

- a. Operating employees only
- b. Operating employees and first-line supervisors only
- c. Operating employees, first-line supervisors and middle management personnel
- d. Operating employees, first-line supervisors, middle and upper-middle management personnel
- e. All employees, including senior management

Where written job description exists, how closely are employees supervised to ensure compliance with standards set in the job description?

- a. very loose; b. loose; c. moderately close; d. close; e. very close

How much latitude are employees allowed from the standard?

- a. A great deal; b. a large amount; c. a moderate amount; d. very little; e. none

What percentage of non-managerial employees given written instructions or procedures for their jobs?

- a. 0-20%; b. 21-40%; c. 41-60%; d. 61-80%; e. 81-100%

Of those non-managerial employees given written instructions or procedures, to what extent they follow?

- a. None; b. little; c. some; d. a great deal; e. a very great deal

To what extent are supervisors and middle managers free from rules, procedures, and policy when they make mistakes?

- a. A very great deal; b. a great deal; c. some; d. little; e. none

What percentage of all the rules and procedures that exists within the organization are in writing?

- a. 1-20%; b. 21-40%; c. 41-60%; d. 61-80%; e. 81-100%

### *Centralization*

How much direct involvement does top management have in gathering information input that they will use in decision making?

- a. None; b. little; c. some; d. a great deal; e. a very great deal

To what degree does top management participate in the interpretation of the information input?

- a. 0-20%; b. 21-40%; c. 41-60%; d. 61-80%; e. 81-60%

To what degree does top management directly control the execution of decision?

- a. 0-20%; b. 21-40%; c. 41-60%; d. 61-80%; e. 81-60%

For the following questions, use the following responses

- a. Very great; b. great; c. some; d. little; e. none;

Establishing his or her unit's budget

Determining how his or her unit's performance will be evaluated

Hiring and firing personnel

Personnel rewards

Purchasing of equipment and supplies

Establishing a new project or program

How work exceptions are to be handled

**Organizational culture** (O' Reilly et al., 1991; Baird *et al.*, 2007, p. 67)

Below is a list of values that may be used to describe the nature of the work environment in business units. For each item please indicate the extent to which it is valued in your business unit ranging from "1=not value at all" to "5=value at a great deal"

*Outcome orientation*

Being competitive

Being achievement orientated

Having high expectation for performance

Being results orientated

Being action orientated

*Team orientation*

Being people orientated

Being team orientated

Working in collaboration with others

*Innovation*

A willingness to experiment

Not being constrained by many rules

Being quick to take advantages of opportunities

Being innovative

Risk taking

Being aggressive

*Attention to detail*

Paying attention to detail

Being precise

Being careful

**ABC success implementation:** (McGowan, 1998; Byrne *et al.*, 2009)

The listed questions related to the level of ABC success implementation in your firms. Please select the item which can best describe your perception about ABC implementation.

*User attitude*

Please indicate your overall attitude toward the implementation of ABC ranging from "1=strongly unfavorable" to "5=strongly favorable".

### *Technical Characteristics*

Please indicate your opinions of the information provided by ABC for each of the following characteristics of information ranging from “1=strongly disagree” to “5=strongly agree”: accuracy, accessibility, reliability, timeliness and understandability

### *Perceive usefulness of ABC*

Please indicate your views of the usefulness of the information provided by ABC in improving job performance (ranging from “1=strongly disagree” to “5=strongly agree”).

ABC leads to improvements in the quality of my job

ABC leads to great control over my job

ABC enables to accomplish tasks more quickly

ABC enhances the effectiveness on the job

ABC makes it easier to do job

ABC is useful in job

### *Impact on organizational process*

Please rate the perceived the impact that ABC implementation has had on ranging from “1=strongly disagree” to “5=strongly agree”.

Quality of decision

Efficiency and waste reduction

Innovation

Relationships across functions

Communication across functions

Overall focus on the goal of entity