THE EFFECTS OF
ORGANIZATIONAL CULTURE
AND STRUCTURE ON THE
SUCCESS OF ACTIVITY-BASED
COSTING IMPLEMENTATION

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ABSTRACT

Purpose — We examine the interactive effects of organizational culture and structure on the success of implementing activity-based costing (ABC) in Chinese manufacturing firms.

Methodology/approach — We applied contingency theory of management accounting and used a questionnaire survey of 106 respondents.

Findings — The results indicate that a formalized organizational structure significantly affects the success of implementing ABC. The organizational culture factors, outcome orientation and attention to detail, were significantly associated with the success of implementing ABC. Further, interactions between centralization and outcome orientation and formalization and innovation were associated with success in implementing ABC.
Research implications/limitations — While this study is constrained to Chinese manufacturing firms, its findings have ramifications for organizations in both developed and less-developed economies as the study demonstrated that organizational structure and culture interact with each other to affect the implementation success of a management accounting system.

Originality/value — This paper presents the first attempt to demonstrate the interactive effect of organizational culture and structure on the success of implementing ABC in organizations.

Keywords: Activity-Based Costing; organizational structure; organizational culture; China

INTRODUCTION

This paper examines the interactive effects of organizational culture and structure on the success of implementing activity-based costing (ABC) in the context of Chinese manufacturing firms. Prior studies indicate that organizational factors, such as top management’s support, adequate resources, and employee training, significantly influence the success of ABC in organizations. For example, in a study of Canadian business units, Gosselin (1997) found that organizational structure tended to affect every stage of the ABC implementation process. In an Australian study, Baird, Harrison, and Reeve (2007) found that organizational culture played an important role in implementing ABC successfully. However, the question still needed examining of whether organizational culture and structure in tandem have any influence on the successful implementation of ABC in organizations. We attempt to address this apparent gap.

Chinese firms have been experiencing profound changes in the last two decades. Shifts in the economic environment have led to significant changes in the level of competition and cost structure of Chinese firms — where for example overhead cost has become the dominant cost in the cost structure. In order to survive in today’s global competitive environment and foreign investment, Chinese firms need to obtain accurate cost information from their cost accounting systems. However, the traditional volume-based costing system is subject to many criticisms, such as failures to supply non-financial information, including the quality of products (Gunasekaran,
The Effects of Organizational Culture and Structure on ABC

1999; Maelahet et al., 2006), efficiency of internal processes (Gunasekaran, 1999; Turney, 1996), and an inaccurate costing system (Cooper & Kaplan, 1988; Turney, 1996). The Activity-Based Costing (ABC) system was introduced by Cooper and Kaplan (1988) as a way to address the shortcomings of traditional cost systems. The benefits of ABC were instrumental in a number of previous studies investigating the dominant factors influencing its successful implementation (Gosselin, 1997; Shields, 1995). However, studies conducted in the Chinese context are relatively scarce. Chinese companies now face more international competition because of the operation of many offshore factories and offices of foreign companies in China.

Further, examination of the interactive effect on the success of ABC implementation of organizational structure and culture is lacking in the current management accounting literature. Testing organizational culture and structure separately might not capture whether an organizational culture and structure together facilitate or hinder an organization’s ability to implement the ABC system successfully. The contribution of one independent variable to the success of ABC implementation might be influenced by another variable. This study contributes to the management accounting literature by developing and testing a more comprehensive model of the effect of both organizational culture and structure on the success of ABC implementation. Evidence from this study will also help create awareness among managers of the importance of appropriate organizational culture and structure in the success of implementing ABC in their organizations.

The remainder of this paper is organized as follows. The next section outlines the theoretical research framework used to explore the research hypotheses. The section “Method” presents the sample description and measures. The section “Results” presents the descriptive statistics and the results of the data analysis. Finally, the section “Discussion and Conclusion” discusses the results and the study’s limitations, and suggests ideas for future research.

HYPOTHESES DEVELOPMENT

Drawing on contingency theory of management accounting it has been suggested that contextual factors surrounding organizations, such as organizational culture and structure, play an important role in the design and implementation of a management control system (Chenhall et al., 2003; Flamholtz, 1983). Thus it is argued that successful implementation of ABC
is contingent upon certain contextual and organizational factors. In this study, the two components of organizational structure are: centralization and formalization, and the four components of organizational culture are: outcome orientations, innovation, team orientation, and attention to detail. Below we develop our hypotheses. Fig. 1 presents the research framework.

Centralized Organizational Structure

Centralization refers to an authority structure where the decision-making rights of business units or divisional managers are controlled by the top level in the hierarchy (Burns & Stalkers, 1961). Emmanuel, Otley, and Merchant (1990, p. 43) explains that “[i]n a highly centralized organization most decisions of any importance are taken centrally with middle managers being constrained by various rules, procedure and policies that govern what they are able to do.”

Damanpour (1991) and Gosselin (1997) suggest that the implementation of a management accounting and control system in a centralized organization may have higher success rates than that in decentralized organizations. Because in centralized organizations operational decisions are made by top management, ensuring that required resources are provided for successful implementation of ABC (assuming top managers are committed to championing the changes stemming from ABC adoption). In this context, divisional managers have no authority to obstruct the implementation of ABC, being obliged to follow the instructions from the top. On the other hand, in a decentralized organization, divisional managers may have authority to
make certain decisions. If they perceive that the ABC system fails to satisfy their divisional decision-making needs, they might require additional work or complex changes in their existing accounting system, and they might resist the implementation of ABC in their departments. A top-down style of management could make the introduction of new management accounting practices, such as the ABC system, more successful (Damanpour, 1991; Gosselin, 1997). Thus the implementation of the ABC system might be facilitated in centralized structure (Brewer, 1998). In his study, Brewer (1998) found that Malaysian firms reported a higher level of perceived success of ABC compared to their US counterparts, due to the more centralized structure of Malaysian firms. Similarly, Gosselin (1997) found that among the manufacturing firms that adopted ABC, centralized firms appeared more successful than decentralized ones in their implementation of ABC. Lana and Fei (2007) showed that a top-down management style contributed significantly to the successful implementation of the ABC system in a Chinese state-owned enterprise. Thus, this study predicts that a centralized structure will realize greater success in the implementation of ABC success in business units of an organization. Hence, we develop our first hypothesis:

**H1.** A centralized organizational structure is positively associated with success in the implementation of ABC within business units.²

Formalized Organizational Structure

Formalization refers to the degree to which rules, procedures, and policies within an organization are standardized (Burns & Stalkers, 1961; Gosselin, 1997). Zmud (1982) investigated the effects of formalization on the adoption and implementation of modern software practices. He reported that a less-formalized structure could facilitate the initiation stage. In addition to this he found that ABC allocates overhead costs to activities rather than to departments, thus, at the initial stage of ABC implementation, less-formalized organizations are expected to be less prone to biases from departmental silos, and more open to ABC methodology. However, once an organization decided to fully implement modern software practices and make them part of the information system, a formalized organizational structure was needed to ensure that the implementation was successful. Similar arguments could be applied to the ABC implementation process.
Gosselin (1997) explains that activity analysis (AA) and activity cost analysis (ACA) form the initiation stage of ABC implementation. In that stage, a less-formalized organization may facilitate AA and ACA, but once a full implementation takes place, the organization should formalize rules, policies, and procedures to ensure the success of ABC. Gosselin’s study showed that the higher the degree of formalization, the more successful ABC implementation would be. Thus it could be argued that the ABC system is likely to be more successful in the formalized structure of manufacturing firms. The above arguments lead to our next hypothesis.

**H2.** A formalized organizational structure is positively associated with successful implementation of ABC within business units.

**Organizational Culture**

This study used Higginson and Waxler’s (1993, p. 11) definition of organizational culture: “a set of shared values, norms and beliefs that get everybody heading in the same directions.” Research has shown that the successful implementation of business practices is generally influenced by cultural factors. For example, Schneider, Brief, and Guzzo (1996) state that, if a firm wishes to introduce a new business practice, the practice should be compatible with its organizational culture; otherwise, the practice is less likely to succeed.

Malmi (1997) conducted a longitudinal case study exploring the reasons for ABC failure in a firm. He found that user-resistance led to failure to implement ABC successfully, and organizational culture could explain why users within an organization might resist ABC. Similarly, Skinner (1998) asserts that one reason for the lack of success in implementing ABC in some firms is the incompatibility between culture and ABC. Furthermore, Baird, Harrison, and Reeve (2004, 2007) state that culture can explain the variation in ABC success.

Baird et al. (2007) used a survey questionnaire sent to randomly selected managers in Australian business units to examine the relationship between ABC success and organizational culture. Their results indicate that organizational culture was associated with the success of ABC implementation. The present research expects that the success of ABC implementation in China is also likely to be influenced by organizational culture. Using constructs similar to those of O’Reilly (1991) and Baird et al. (2007), this research measures organizational culture in terms of
four perspectives: outcome orientation, team orientation, attention to detail, and innovation.

**Outcome Orientation**

O'Reilly IIi, Chatman, and Caldwell (1991, p. 505) define outcome orientation as “the extent to which business units emphasise actions and results, have high expectations for performance, and are competitive.” Baird et al. (2004) assert that a company with a higher degree of outcome orientation will focus more on formal practices. Eventually, processes can be improved, which will lead to enhanced performance and improved competitiveness. Baird et al. (2007) showed that outcome orientation has an impact on the success of all levels of activity management (AA, ACA, and ABC). They concluded that if an organization stresses the importance of this dimension of organizational culture, it would actively adopt new cost/management accounting practices to enhance overall organizational performance and would put more effort into new practices to ensure they are successfully adopted and implemented. Drawing upon this argument of prior research, we hypothesize that:

H3. There is a positive relationship between outcome orientation culture and the success of ABC implementation within business units.

**Attention to Detail**

Baird et al. (2007) found that attention to detail was strongly associated with the highest level of activity management. They argued that a significant relationship could exist between attention to detail and successful implementation of ABC. ABC implementation usually involves a great amount of work in collecting data and selecting suitable cost drivers, requiring much attention to detail. Thus a firm with the cultural characteristic of attention to detail will have greater likelihood of successful implementation of ABC. The hypothesis is therefore:

H4. There is a positive relationship between a culture of attention to detail and successful implementation of ABC within business units.

**Innovation**

O’Reilly Iii et al. (1991, p. 505) defined innovation as “the receptivity and adaptability to change, and its willingness to experiment.” Baird et al. (2007) pointed out that an organization with more innovative culture might act positively toward a new accounting technique, thus, the possibilities of success would be enhanced.
Baird et al. (2004) investigated the relationship between the extent of adoption of ABC and the organizational culture dimensions of innovation, outcome orientation, as well as tight versus loose control. Using Gosselin’s (1997) three levels of Activity Management (AM), their results indicated that all culture dimensions were associated with the three levels of AM (AA, ACA, and ABC). Gosselin (1997) considered ABC as the highest stage of AM. Gosselin also stated that ACA and AA were the preparation stage of ABC. Since, this study aimed to test the relationship between ABC implementation success, we only concentrate on the ABC stage, rather than on AA and ACA stages.

Baird et al. (2004) found no significant relationship between innovation and ABC adoption, and significant associations were only found for the AA and ACA stages. On the other hand, outcome orientation and tight versus loose control had significant relationships with ABC adoption.

Baird et al. (2007) found that during the ABC adoption stage, innovation is welcomed, because it can eradicate the feeling of fear. However, once an organization begins implementing an ABC system, a less innovative culture is necessary (Baird et al., 2007). Hence, the current study proposes the hypothesis that:

H5. There is a negative relationship between an innovation culture and success in the implementation of ABC within business units.

Team Orientation
According to Landry (1997), successful ABC implementation requires teamwork both externally and internally, as the formation of partnerships can continuously improve operational processes, enhance productivity, and improve efficiencies. Brewer (1998) conducted a field study of Harris Semiconductor, which adopted the ABC system at its plants operating in the United States and Malaysia. He found that the cross-functional team-based approach produced a higher degree of ABC success in Malaysia than in the United States. The study by Majid et al. (2008), based on two companies in Malaysia, similarly found that success in implementation of ABC system needs the full support of all employees.

Gering (1999) highlights that, to ensure successful implementation of ABC, a multi-functional team is needed at each stage. Multi-functional teams require people from different positions or departments to collaborate to overcome practical problems encountered during ABC implementation. If a multi-functional team can work well, successful implementation of ABC might be guaranteed.

Drake, Haka, and Ravenscroft (2001) investigated how some organizational features influence the information generated by the ABC system.
They found that implementing appropriate incentive policies can motivate employees to use ABC information to reduce costs and enhance processes. They also stated that teamwork is an effective approach to create incentives: more communication among team members encourages greater creativity and team-based generation of ideas. Baird et al. (2007) reviewed the work of Landry (1997), Gering (1999), and Drake et al. (2001) and concluded that teamwork is an important factor for successful implementation of AM. Thus this study proposes the hypothesis:

**H6.** There is a positive relationship between teamwork culture and success of ABC implementation within business units.

**Interactive Effect of Organizational Culture and Structure**

Until now, no studies had been conducted to test the interactive effect of organizational culture and structure. In a high power distance society like China (Hofstede, 1983), top-down style of management could facilitate the implementation of new management practices including organizational culture. It is expected that by adopting mechanistic structures, such as formalized and centralized structures, the organizational culture – outcome orientation, team orientation, attention to details, and innovation – could be better implemented, and ultimately result in higher levels of perceived ABC implementation success compared to those firms that have organic structures.

Based on the above discussion, we expect that the interaction effect of organizational culture and structure is likely to produce positive and significant impact on ABC implementation success. This expectation leads to the hypothesis:

**H7.** An interaction of organizational structural aspects (namely formalization and centralization) and cultural aspects (outcome orientation, innovation, team orientation, and attention to detail) will have a positive effect on the success of ABC implementation.

**METHOD**

*Research Design and Data Collection*

Data was collected using a questionnaire survey mailed to manufacturing firms in China. Only manufacturing firms were selected for this study to
control for variance in responses that could be attributable to structural differences between manufacturers and non-manufacturers. As Rotch (1990) states, compared to manufacturing firms, non-manufacturing firms are different from each other in terms of characteristics, and the 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. Such differences make it difficult to investigate the application of ABC in different types of industry. Therefore, this study concentrated on the manufacturing sector only.

The original questionnaire was designed in English and later translated into Mandarin, the official language of China. The questionnaire was translated into Mandarin using the double-back translation procedure. The translation was carried out by the first author of this paper, and then reviewed by a Chinese citizen with a PhD in management accounting from Singapore to ensure that no significant differences existed between the English and Mandarin versions. The translated and original questionnaires were also examined by a Chief Financial Officer (CFO) working in a US-based manufacturing firm in China. Modifications were made according to the comments and suggestions of these experts. The final version of the Mandarin questionnaire was translated back to English to ensure that the meaning of both versions was the same.

Sample

A total of 1000 questionnaires were randomly mailed to manufacturing firms listed in the Chinese Chamber of Commerce and Industry 2008 Directory. Questionnaires were addressed to the CFO or Financial Controller of each firm as they were considered the most suitable respondents, because they were most likely to have a clear understanding of management accounting practices and to be responsible for designing and implementing ABC in their companies. However, for those companies without CFOs or Financial Controllers, finance managers were assumed to be the suitable respondents. When no reply had been received from addressees two weeks after the first mail-out, a follow-up telephone call was made and a follow-up questionnaire was emailed with a remind to fill in the questionnaire.

Out of the 1000 questionnaires, 123 were returned. However, 13 questionnaires were excluded from the statistical analysis, because respondents
stated that they either had not adopted ABC fully or had not implemented any aspects of ABC. Furthermore, four questionnaires were incomplete, and were also excluded before data analysis. Finally, 106 completed questionnaires were used for data analysis, representing a response rate of 10.6%.

This study adopted Williams and Seaman’s (2001) approach to check for response bias. Therefore, respondents were divided into two groups: early and late repliers depending on when questionnaires were received. The first batch of 33 completed questionnaires was collected within one month after the questionnaires were distributed, constituting the early reply group. The remaining 73 questionnaires constituted the late reply group. The result of the Independent Sample T-Test is presented in Table 1. The results show no significant difference between the two groups. Therefore, it was concluded that the sample in this study was free from non-response bias.

### Measures

**Organizational Structure**

Two dimensions of organizational structure – centralization and formalization – were used to test the impact of organizational structure on the success of ABC implementation. The instrument in this study employed Robbins’ (1983) measure, which was subsequently adopted by Gosselin (1997) to investigate the impact of organizational structure on AM. 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 their opinion about 10 standard decisions (see appendix). For this study, we added all the scores selected by respondents, and then calculated the means. Finally, the mean score for structure was used in data analysis. The purpose of these questions was to determine the authority of decision-making at the top hierarchical level.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Reply</th>
<th>N</th>
<th>Mean</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
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<td>Early</td>
<td>33</td>
<td>3.0346</td>
<td>0.356</td>
</tr>
<tr>
<td></td>
<td>Late</td>
<td>73</td>
<td>3.0705</td>
<td></td>
</tr>
<tr>
<td>ABC implementation success</td>
<td>Early</td>
<td>33</td>
<td>3.4303</td>
<td>0.865</td>
</tr>
<tr>
<td></td>
<td>Late</td>
<td>73</td>
<td>3.7945</td>
<td></td>
</tr>
</tbody>
</table>
**Organizational Culture**

The measure for organizational culture was adopted from Baird et al. (2007). In their research, they divided organizational culture into four dimensions: outcome orientation, team orientation, innovation, and attention to detail (see appendix). In this study, respondents rated the extent to which each item was valued in their business unit, using five-point Likert scales with a range of 1 (not valued at all) to 5 (valued to a great extent). A simple arithmetic average of responses to the measured number of items within each cultural orientation is interpreted as an index of the relevant culture.

**ABC Implementation Success**

Previous research used different ways to measure ABC implementation success, including management evaluation (Anderson, 1995; Gosselin, 1997; Krumwiede, 1998; Shields, 1995), employees’ satisfaction (MoGowan & Klammer, 1997), and users’ attitude toward ABC (Supitcha & Frederick, 2001). However, these measures for ABC implementation success are considered problematic. Anderson and Young (1999, p. 526) highlight that “[a] danger of asking managers to rate ABC implementation success without specifying the definition of success is failure to detect cases in which individuals hold different views on the definition of success but share views on attainment of a particular dimension of success.” Frederick and Lyne (2001) also claimed that the use of self-reported measure is a limitation.

Other instruments used by prior studies were: dollar improvement (Foster & Swenson, 1997), decision action (Brewer, 1998; Foster & Swenson, 1997), increase in firm’s value (Kennedy & Affleck-Graves, 2001), financial benefits (Kennedy & Affleck-Graves, 2001), as well as overall accuracy (Anderson & Young, 1999). However, these instruments are subject to many criticisms. Byrne and Stower (2009) argued that dollar improvements or an increase in firm value are affected by many factors, such as increases in revenue and an increase in market share. It is therefore very hard to specify how much of the improvement in performance is linked to ABC success implementation. Kennedy and Affleck-Graves (2001, p. 20) admitted that “it is not possible to prove definitely that there is a causal link between ABC implementation and subsequent increases in shareholder value.” Furthermore, Banker, Bardhan, and Chen (2008) highlighted the fact that the definition of ABC success, according to elements such as financial benefits, satisfaction with ABC, use of ABC for decisions, has often been vaguely defined in terms of subjective beliefs attached to
these ABC implementation success measures. Banker et al. (2008) suggested the instrument to measure ABC success should be more rigorous.

McGowan (1998, p. 30) argued that if users’ “attitudes toward a system are unfavorable, it is likely that they will not accept it.” McGowan (1998) further cited that “measures that describe the users’ reactions to the innovation, such as attitudes and satisfaction, are appropriate surrogates for assessing the success of an information system.” This view of success has provided the most robust basis for ABC success measurement in research to date (Byrne, Stower, & Torry, 2009), and therefore it was the one adopted in this study.

McGowan’s (1998) measure of success of ABC implementation was also used by Byrne et al. (2009) to measure ABC success among Australian business units. In their research, success of ABC implementation was broken down into four perspectives: users’ attitude, rating of technical characteristics, perceived usefulness in improving user job performance, and impact on organizational process. Respondents registered their overall attitude toward the four perspectives of ABC implementation success on a five-point Likert scale ranging from 1 (strongly unfavorable) to 5 (strongly favorable) (see appendix).

In this study, technical characteristics included five aspects: accuracy, accessibility, timeliness, reliability, and understandability. Respondents compared information derived from ABC and information produced by the previous traditional costing system on each of 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’ perceptions of the usefulness of ABC in improving job performance. These statements included various measures of improvement in job performance, such as quality of job, effectiveness of job, overall job performance. Respondents rated their views as to the improvement in their job performance brought about by the application of ABC information using a five-point Likert scale ranging from 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 rated their perception of the impact of ABC implementation on the five dimensions of organizational process by choosing a response ranging from 1 (strongly disagree) to 5 (strongly agree).

Apart from the dimension of “overall attitude toward ABC implementation,” the other indicators for ABC implementation in this study were
computed as follows. Firstly, the values selected by each respondent were added up. Secondly, the mean scores for each indicator were calculated. Finally, the mean values for each indicator were applied in various data analysis, such as description, correlation analysis, as well as multiple regression analysis.

RESULTS

Profile of Responding Firms and Participants

Participants in this study represented firms from the following industries and proportions: electrical and electronics industries (27; 25.5%); iron, steel, and metal products (16; 15.1%); machinery and equipment products (15; 14.2%); chemicals and chemical products (6; 5.7%); pharmaceutical, medical equipment, cosmetics, toiletries, and household products (6; 5.7%); furniture and wood related products (6; 5.7%); textile, clothing, footwear, and leather products (5; 4.7%); food and beverage products (4; 3.8%); rubber and plastic products (4; 3.8%); paper, printing, packaging, and labeling products (1; 0.90%); and others (16; 15.1%).

CFOs accounted for the largest number of respondents (35; 33%), followed by finance managers (27.4%), and financial controllers (25.5%). Only 15 (14.2%) of the respondents were in other categories, which included accounting supervisors and business analysts.

Frequency Distribution

A total of 61 responding firms (57.5%) at the time of the study used ABC to trace overhead costs; those firms were considered full ABC adopters. Another 17 (16%) of the respondents stated that ABC was used occasionally and was still considered by top management as a model. Furthermore, 15 (14.2%) of the respondents reported that ABC was commonly applied and was considered a normal part of the information system, and 29 (27.4%) respondents stated that in their firm ABC had been successfully integrated with the financial system and was used extensively by upper management. Krumwiede and Roth (1997) considered that if the ABC system is commonly used in an organization, and is integrated with its own
financial system, then the firm could be considered as a mature ABC adopter. Therefore, in this study, the two latter groups were categorized as at the mature stage of ABC implementation. This meant that of the 61 firms that were full adopters, 44 (41.5%) were considered mature ABC adopters. However, the rest of 62 firms, namely partial adopters and occasional users, were regarded as initial adopters.

Descriptive Statistics

Table 2 presents the descriptive statistics for the dependent and independent variables. The correlations of those variables are shown in Table 3. This study also conducted multicollinearity test before the commencement of data analysis. Correlation test was employed to examine whether a high correlation exists among main independent variables. The correlation coefficient \( r \) among each main variables was smaller than 0.9. Hence it was concluded that the independent variables were not highly correlated and no multicollinearity and singularity occurred in the collected data. In addition, multicollinearity tests also showed that the correlation coefficients \( r \) among the dimensions of each independent variable were also less than 0.9. Hence, multiple regressions could be applied.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>S.D.</th>
<th>Min.</th>
<th>Max.</th>
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<td>Organizational culture</td>
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<td></td>
</tr>
<tr>
<td>1. Outcome orientation</td>
<td>3.97</td>
<td>0.92</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>2. Innovation</td>
<td>3.20</td>
<td>0.88</td>
<td>1.00</td>
<td>5.00</td>
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<td>3. Team orientation</td>
<td>4.04</td>
<td>0.85</td>
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<td>5.00</td>
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<td>4. Attention to detail</td>
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<td>2.00</td>
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</tr>
<tr>
<td>2. Centralization</td>
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<td>Success of ABC implementation</td>
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<td>1. User attitudes</td>
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<td>2. Technical characteristics</td>
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<td>3. Perceived usefulness in improving user job performance</td>
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<td>4. Impact on organizational process</td>
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<td>3.61</td>
<td>0.69</td>
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### Table 3. Correlations (p values) and Reliability Measures.

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<th>3</th>
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<th>6</th>
<th>7</th>
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<td>1. ABC success (overall)</td>
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<td>3. Centralization</td>
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<td>(0.106)</td>
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<td>4. Outcome orientation</td>
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<td>0.197</td>
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<td>(0.000)</td>
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<td>5. Innovation</td>
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<td>−0.275</td>
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<tr>
<td>6. Team orientation</td>
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<td>0.103</td>
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<td>(0.077)</td>
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<tr>
<td>7. Attention to detail</td>
<td>0.444</td>
<td>0.302</td>
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<td>0.218</td>
<td>0.591</td>
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<td>(0.000)</td>
<td>(0.002)</td>
<td>(0.438)</td>
<td>(0.000)</td>
<td>(0.025)</td>
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<td><strong>For ABC initial users (N = 62)</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>1. ABC success (overall)</td>
<td>1.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
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<tr>
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<td>3. Centralization</td>
<td>−0.057</td>
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<td>4. Outcome orientation</td>
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<td>0.175</td>
<td>0.145</td>
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<td>5. Innovation</td>
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<td>−0.047</td>
<td>−0.195</td>
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<td>6. Team orientation</td>
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<td>(0.056)</td>
<td>(0.130)</td>
<td>(0.000)</td>
<td>(0.113)</td>
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<td>7. Attention to detail</td>
<td>0.568</td>
<td>0.345</td>
<td>−0.055</td>
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<td>0.298</td>
<td>0.624</td>
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<tr>
<td>1. ABC success (overall)</td>
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<td>4. Outcome orientation</td>
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<td>(0.947)</td>
<td>(0.016)</td>
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<tr>
<td>5. Innovation</td>
<td>−0.002</td>
<td>−0.285</td>
<td>−0.358</td>
<td>0.288</td>
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<td></td>
<td>(0.989)</td>
<td>(0.061)</td>
<td>(0.017)</td>
<td>(0.058)</td>
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</tr>
<tr>
<td>6. Team orientation</td>
<td>0.596</td>
<td>0.588</td>
<td>0.264</td>
<td>0.246</td>
<td>−0.062</td>
<td>1.000</td>
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<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.083)</td>
<td>(0.107)</td>
<td>(0.690113)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7. Attention to detail</td>
<td>0.147</td>
<td>0.059</td>
<td>0.257</td>
<td>0.222</td>
<td>0.120</td>
<td>0.364</td>
<td>1.000</td>
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<td></td>
<td>(0.341)</td>
<td>(0.705)</td>
<td>(0.092)</td>
<td>(0.148)</td>
<td>(0.438)</td>
<td>(0.015)</td>
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</tr>
</tbody>
</table>

For mature users (N = 44)
Correlation tests for the overall sample shows that ABC implementation success significantly correlates with formalization, outcome orientation, innovation, team orientation, and attention to details. Therefore, the preliminary supports were provided to confirm the validity of the study’s hypotheses H1, H3, H4, H5, and H6.

Table 3 also depicts Cronbach’s alpha coefficients for all the research variables. According to Nunnally (1978, p. 245), Cronbach’s alpha coefficients that meet or exceed the 0.70 threshold are generally considered acceptable for internal scale reliability. In this study, all Cronbach’s alpha coefficients were between 0.775 and 0.903, indicating an acceptable level of reliability.

Regression Results

Table 4 presents the regression test results. It shows that all the predictors explain 53.9% of the total variation in success of ABC implementation. The results also show that a significant and positive relationship exists between the success of ABC implementation and formalization ($p = 0.004$), as well as between success of ABC implementation and outcome orientation ($p = 0.000$). Hence, H2 and H3 are supported. However, the relationship between success of ABC implementation and centralization ($\beta = -0.131, p = 0.134$), attention to detail and teamwork are found to be insignificant. Therefore, H1, H4, and H6 are not supported. The results further show a marginally significant relationship between innovation culture and success of ABC implementation ($p > 0.05$). Hence, H5 is marginally supported.

### Table 4. Regression Results.

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Beta</th>
<th>$T$ statistics</th>
<th>$P$-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formalization</td>
<td>0.194*</td>
<td>2.497</td>
<td>0.014</td>
</tr>
<tr>
<td>Centralization</td>
<td>−0.148</td>
<td>−1.911</td>
<td>0.059</td>
</tr>
<tr>
<td>Outcome orientation</td>
<td>0.509*</td>
<td>5.876</td>
<td>0.000</td>
</tr>
<tr>
<td>Innovation</td>
<td>−0.009</td>
<td>−0.115</td>
<td>0.909</td>
</tr>
<tr>
<td>Team orientation</td>
<td>0.179</td>
<td>1.901</td>
<td>0.060</td>
</tr>
<tr>
<td>Attention to details</td>
<td>0.110</td>
<td>1.246</td>
<td>0.216</td>
</tr>
<tr>
<td>$R$-square</td>
<td>0.526</td>
<td></td>
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</tr>
<tr>
<td>$F$-value</td>
<td>18.290</td>
<td></td>
<td>0.000</td>
</tr>
</tbody>
</table>

*Significant at 0.05.
Table 5 shows the interactive effect of independent variables on the success of ABC implementation. This research applied an interaction term by multiplying each of the four components of organizational culture by the two dimensions of organizational structure. This study used a hierarchical model to conduct regression tests. In the first step, only six independent variables were entered into the regression model before the interaction terms were added. The results show that the introduction of the interaction term led to a salient increase (at $p < 0.05$) in $R^2$, thus suggesting an improvement in the predictive power of the model. Hence, preliminary support for H7 was provided.

Table 5 shows that the centralization variable interacts with outcome orientation producing a significant and positive effect on the success of ABC implementation (beta = 1.770; $p = 0.004$). It also shows that formalization interacts with innovation to significantly affect the success of ABC implementation; but this interaction is negative (beta = $-1.708$, $p = 0.000$). The rest of the interactive terms had no positive effects on the success of ABC implementation. Therefore, H7, which proposed an interactive effect on the success of ABC implementation between organizational structure and culture, was only marginally supported.

### DISCUSSION AND CONCLUSION

The first specific objective of this research was to examine the effects of organizational structure on the success of implementation of ABC. The
study found a positive and significant relationship between formalization structure and success of ABC implementation. This finding is consistent with previous research by Gosselin (1997) that found that formalization structure was related to ABC implementation stage. However, centralization was not significantly associated with success of ABC implementation, which is not consistent with Gosselin’s (1997) findings. In his research, Gosselin concluded that centralization structure influences the ABC implementation stage. Similarly, Malmi (1997) concluded that a centralized structure leads to the success in implementation of ABC. The present study’s failure to find a significant relationship between success of ABC implementation and centralization might be due to the stage of ABC implementation of the participating firms.

The second specific objective of this research was to examine the direct relationship between organizational culture and success of ABC implementation, as stated in hypotheses H3, H4, H5, and H6. The results indicate a significant relationship between organizational culture and success of ABC implementation. The results suggest that if the ABC system is compatible with a firm’s organizational culture, ABC can be successfully implemented. These findings support previous research conducted by Malmi (1997). Additional tests were carried out to examine the effect of sub-components of organizational culture on ABC success, and two significant findings emerged: (1) there is a significant relationship between outcome orientation and success of ABC implementation; and (2) there is an insignificant relationship between team orientation and ABC implementation success. These findings indicate that firms that emphasize results and action, and have high expectations for performance can achieve a higher level of success in implementing ABC. Overall, these results are consistent with the findings of Baird et al. (2007) that outcome orientation is associated with AM.

The non-significant relationship between attention to detail and successful implementation of ABC was unexpected. These findings are not consistent with Baird et al. (2007, p. 63), who stressed that “ABC is distinguished from AA and ACA, because it involves greater attention to detail in the tracking of cost pools and activity drivers to product costing and decisions.”

Innovation was also found not to be associated significantly with successful implementation of ABC. This finding is consistent with the view of Baird et al. (2004) that innovation affects ABC adoption in the initial stage only, and that it is less critical during the ABC implementation stage. Our finding is thus explicable. In their research, Baird et al. also found no significant relationship between innovation and ABC implementation success.
Innovation was only found to have a positive and significant relationship with ABC success after controlling for interaction effects (equation 2 in Table 4). The positive coefficient for innovation in equation 2 contradicts the expected relationships as predicted by H5.

In examining interactive effects, this study found a positive and significant interaction between centralization and outcome orientation affecting the success of ABC implementation. According to Gosselin (1997), a higher level of success in ABC implementation could be achieved by adopting a mechanistic structure. Such a structure is associated with high levels of centralization and formalization, and it is expected that outcome orientation could be facilitated by a mechanistic structure. Therefore, the ABC system could be implemented successfully by combining an outcome orientation with centralization. While this study is constrained to Chinese manufacturing organizations, its findings have ramifications for organizations in both developed and less-developed economies as the study demonstrated that organizational structure and culture interact with each other to affect the implementation success of a management accounting system.

This study also found the interactive effect of formalization and innovation on ABC implementation success to be significant and negative. The reason might be that by adopting a formalized structure, innovation would not be facilitated, and would finally result in lower levels of perceived ABC implementation success.

An unexpected finding in this study was the interactive effect of formalization and outcome orientation. This might be because excessive formalization can produce negative effect on any implementation of innovation. Thus, it is expected that formalization interacts with outcome orientation to increase employees’ resistance to ABC implementation, and lead to low levels of perceived ABC implementation success.

This study also provides some practical implications. As the overall sample of this study showed that formalization and outcome orientation significantly affected the success of ABC implementation, firms should formalize their rules, procedures, policies, and operating outcomes. Moreover, numerous previous studies as cited earlier have shown that top management plays a crucial role in ensuring the success of any management accounting innovation, including the ABC system. Lack of ABC knowledge among top management may result in failure to implement ABC successfully. It is therefore important for CFOs or finance managers to share with top management their knowledge of the nature of the ABC system and its benefits. Once top management is equipped with a working knowledge of ABC, the possibility of successful implementation can be enhanced.
LIMITATION OF THIS STUDY

This study is subject to a number of limitations. Firstly, the results of this study cannot be generalized to other industries, because this study included respondents from manufacturing firms only. To be generalized, future studies would have to investigate other sectors, such as the service industry. Secondly, the response rate of this study is very low; only 106 out of 1000 questionnaires were included in the data analysis. To increase the response rate, future studies may also consider other data collection methods, such as field studies or case studies, which might provide more comprehensive and in-depth understanding of the ABC system and factors influencing its success. In addition, due to the low response rate, this study did not separate responses in terms of years of implementing ABC system, who initiated the ABC implementation, number of division participating in the ABC implementation, etc. All these factors might result in different level of perceived ABC implementation success. Therefore, future studies need to test the effect of all these variables. Finally, also due to the small number of respondents, this study did not separate the scope of ABC implementation, such as whether ABC was implemented in the whole organization, or in selected divisions. Thus, future studies would need to examine the different scopes of ABC implementation.

NOTES

1. In this paper, our focus is not on investigating the idea that different cultural perceptions of ABC in China would cause differences in the outcomes of ABC implementation. We emphasize that those cultural differences are not the same as organizational characteristics.

2. In this study the level of analysis is the business unit of an organization.

REFERENCES


The Effects of Organizational Culture and Structure on ABC


APPENDIX: SURVEY INSTRUMENTS

Organizational Structure
(Source: Gosselin, 1997; Robbins, 1983)

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.

Formalization
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 descriptions exist, 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 is given written instructions or procedures for their jobs?

(a) 0–20%; (b) 21–40%; (c) 41–60%; (d) 61–80%; (e) 81–100%

When non-managerial employees are given written instructions or procedures, to what extent are they followed?

(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 exist 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 will be used 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) a little; (e) none;

How much latitude do you have in …?:

- Establishing your unit’s budget
- Determining how your unit’s performance will be evaluated
- Hiring and firing personnel
- Personnel rewards
- Purchasing of equipment and supplies
- Establishing a new project or program
- Deciding how work exceptions are handled
Organizational Culture  
(Source: Baird et al., 2007, p. 67; O’Reilly Iii et al., 1991)

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 valued at all” to “5 = valued a great deal.”

<table>
<thead>
<tr>
<th>Outcome orientation</th>
<th>Team orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being competitive</td>
<td>Being people-oriented</td>
</tr>
<tr>
<td>Being achievement-oriented</td>
<td>Being team-oriented</td>
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<tr>
<td>Having high expectation for performance</td>
<td>Working in collaboration with others</td>
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<tr>
<td>Being results-oriented</td>
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<tr>
<td>Being action-oriented</td>
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</table>

Innovation

<table>
<thead>
<tr>
<th>Innovation</th>
<th>Attention to detail</th>
</tr>
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<tbody>
<tr>
<td>Willingness to experiment</td>
<td>Paying attention to detail</td>
</tr>
<tr>
<td>Not being constrained by many rules</td>
<td>Being precise</td>
</tr>
<tr>
<td>Being quick to take advantage of opportunities</td>
<td>Being careful</td>
</tr>
<tr>
<td>Being innovative</td>
<td></td>
</tr>
<tr>
<td>Risk-taking</td>
<td></td>
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<tr>
<td>Being aggressive</td>
<td></td>
</tr>
</tbody>
</table>

ABC Implementation Success
(Source: Byrne et al., 2009; McGowan, 1998)

The listed questions relate to the level of successful implementation ABC in your firm. Please select the item which best describes your perception of ABC implementation.

Users’ attitudes

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.

Perceived 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 improvement in the quality of my job
- ABC leads to great control over my job
- ABC enables tasks to be accomplished more quickly
- ABC enhances effectiveness on the job
- ABC makes it easier to do my job
- ABC is useful in my job.

Impact on organizational process

Please rate your perception of the impact of ABC implementation on the following processes, ranging from “1 = strongly disagree” to “5 = strongly agree.”

- Quality of decisions
- Efficiency and waste reduction
- Innovation
- Relationships across functions
- Communication across functions
- Overall focus on the goal of my firm.

ABC Implementation Stage

Respondents were asked to select “Yes” or “No” against: Does your firm currently adopt ABC system to allocate overhead costs?

If the respondents selected “Yes,” he/she would be asked to answer the following question:

Please indicate the status of ABC implementation in your firm:

- Occasionally used by upper management for decision-making
- Commonly used by upper management and but still considered as a model
- Used intensively and fully integrated with primary financial system.
Note: these responding firms were considered as full adopter.

If the respondents selected “No,” he/she would be requested to rate on the following:

- Use different basis to allocate overhead cost
- Allocate R&D costs, interest expenses and general expenses to final products or services
- Manufacturing cost driver increases substantially
- Increase the proportion of period expenses allocate to product costs to better serve internal management decision.

Note: these respondents were considered as partial ABC adopters.

ABC system is implemented in:

- The whole organization
- The selected division.

UNCITED REFERENCES

Baron and Kenny (1986); Clarke and Mullins (2001); Cohen and Cohen (1983); Erez and Nouri (2010); Friedman and Lyne (1999); Chenhall (2003); Hoffman (1993); Jong and Hartog (2007); Landry, Wood, and Lindquist (1997); Majid and Sulaiman (2008); Morakul and Wu (2001); Scott and Bruce (1994); Snell and Dean (1992); Walton and Susman (1987)
Dear Author,

During the preparation of your manuscript for typesetting, some questions may have arisen. These are listed below. Please check your typeset proof carefully and mark any corrections in the margin of the proof or compile them as a separate list.

**Disk use**

Sometimes we are unable to process the electronic file of your article and/or artwork. If this is the case, we have proceeded by:

- [ ] Scanning (parts of) your article
- [ ] Rekeying (parts of) your article
- [ ] Scanning the artwork

**Bibliography**

If discrepancies were noted between the literature list and the text references, the following may apply:

- [ ] The references listed below were noted in the text but appear to be missing from your literature list. Please complete the list or remove the references from the text.

- □ **UNCITED REFERENCES:** This section comprises references that occur in the reference list but not in the body of the text. Please position each reference in the text or delete it. Any reference not dealt with will be retained in this section.

**Queries and/or remarks**

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<th>Query / remark</th>
<th>Response</th>
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<tr>
<td>AU:1</td>
<td>As per style, the right running head should be of 65 characters or lesser. Please check the suggested right running head for correctness.</td>
<td><img src="image" alt="Response" /></td>
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<tr>
<td>AU:2</td>
<td>The following references are cited but not present in the reference list: Gunasekaran, 1999; Maelahet el al., 2006; Turney, 1996; Cooper &amp; Kaplan, 1988; Chenhall et al., 2003;</td>
<td><img src="image" alt="Response" /></td>
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</tbody>
</table>
O'Reilly (1991); Landry (1997); Majid et al. (2008); Clark et al. (2001); Williams and Seaman’s (2001); Krumwiede, 1998; MoGowan & Klammer, 1997; Supitcha & Frederick, 2001; Frederick and Lyne (2001); Byrne and Stower (2009). Please provide complete reference details.

AU:3 Please note that year has been inserted in the citation of reference “Foster and Swenson, 1997”. Kindly confirm.

AU:4 Please note that “Tables 3, 3a, 3b” are set as single table. Kindly check the table caption “Correlations (p values) and Reliability Measures” and the panel heads of Table 3 for correctness.

AU:5 Please provide publisher location for reference “Friedman, & Lyne, 1999”.

AU:6 References “Baron and Kenny (1986); Clarke and Mullins (2001); Cohen and Cohen (1983); Erez and Nouri (2010); Friedman and Lyne (1999); Chenhall (2003); Hoffman (1993); Jong and Hartog (2007); Landry, Wood, and Lindquist (1997); Majid and Sulaiman (2008); Morakul and Wu (2001); Scott and Bruce (1994); Snell and Dean (1992); Walton and Susman (1987)” are not cited in the text. Please clarify as to where they should be cited.