Chapter 5

RESULTS AND DISCUSSION

5.0 Introduction

This chapter outlines the results of the data analysis and discussion from the questionnaire survey. The detailed results are described in the following sections which cover the preliminary analysis of data, the reliability and non-response bias, the background information of respondents and their companies, the frequency distribution and descriptive statistics of the data. This is followed by a discussion of the results of the hypotheses testing, as well as the presentation of the results of additional tests.

5.1 Analysis of Response Rate

A total of 1000 questionnaires were mailed to the Chief Financial Officers, Financial Controllers, Finance Managers and accounting supervisors of randomly selected companies listed in the Chinese Chamber of Commerce and Industry 2008 directory. The analysis of the response rate of this survey is shown in Table 5.1. A total of 123 questionnaires were returned representing a response rate of 12.3%. However, 13 respondents answered "No" for question 11 also selected 2 and below against all the statements in Question 19. Therefore, the 13 respondents were neither considered adopting ABC nor implementing any aspects of ABC, thus they were excluded from the analysis. Furthermore, 4 questionnaires were incomplete, and were therefore, not used leaving a total of 106 completed questionnaires for data analysis. For the purpose of this study, the selected respondents were made up of ABC full implementers and partial implementers.

Table 5.1: Analysis of Response Rate

	Total	Percentage
Total questionnaire distributed	1000	100%
Non response	877	88.1%
Number of returned questionnaires	123	12.3%
Less: ABC non-adopters	(13)	(1.3%)
Less: Incomplete questionnaires	(4)	(0.4%)
Total Useable	106	10.6%

5.2 Results of the Questionnaire Survey

The purpose of the questionnaire survey is to collect data to test the impact of the behavioral and organizational variables, the organizational structure, corporate culture on ABC success implementation, and the effect of ABC success implementation on the performance of firms, such as manufacturing performance and business performance.

5.2.1 Preliminary analysis of data

Before conducting the statistical analysis, the raw data was screened to ensure the accuracy of the data, and to test the normality distribution of data. Multicollinearity was conducted to examine whether independent variables were highly correlated with each other.

5.2.1.1 Data Cleaning and Screening

The purpose of data cleaning is to check the consistency of data and to treat missing data. The completed questionnaires were checked for completeness and accuracy. All the items in the questionnaire including demographic, independent and dependent, as well as mediating variables were coded in a blank sheet (Excel Format) and served as a

codebook. Sekaran (2003) stated that all the negatively worded questions should be reversed, so that researchers can ascertain that these questions are in the same direction with the positively worded questions. In the current research, in order to make sure that all answers to the question were in the same direction, item (a) to item (h) of part 3b were reversed coded.

This research adopted the Statistical Package for Social Science (SPSS) version 16 to analyze the data. The frequency distribution or descriptive statistics of the data, which included mean, standard deviation, minimum and maximum values of each variable were used for data screening to detect any mistakes in the data entry and missing data.

Missing data is defined by Hair *et al.* (2006, p. 40) as "information not available for a subject (or case) about whom other information is available. Missing data often occurs when a respondent fails to answer one or more questions in a survey". They suggested several ways of dealing with missing data. Firstly, complete case approach, also known as LISTWISE option in SPSS. In this approach, only completed data could be used. This approach is suitable when the sample size is large enough, so that the deletion of cases with missing data can be allowed. A complete approach results in great reduction in usable questionnaires. The second method is to abandon the questionnaires with a large number of missing data, while the third approach is the imputation method. The imputation method is the "process of estimating the missing value based on valid values of other variables and/or cases in the sample (Hair *et al.* 2006, p. 58). This method could maximize the use of valid data.

In this study, only 106 completed questionnaires could be used for data analysis, so the complete case approach is not an appropriate method. This research combined two methods to deal with missing data. If questionnaires contain more than one key variable unanswered, those questionnaires were omitted. For instance, a total of 13 respondents did not answer questions in section 3 to section 5, they were excluded from usable questionnaires, and one respondent did not answer questions in section 5, which were related to the firms' performance, so this questionnaire was abandoned. Some questions in section 4 relating to ABC success implementation was not answered by one respondent, thus this questionnaire was also omitted from the total usable questionnaires. However, two questionnaires with low levels of missing data related to demographic variables, such as educational level, number of employees and sale turnover were included as valid questionnaires as this information did not affect the overall objectives of this study.

5.2.1.2 Normality Tests

Before univariate and multivariate tests were conducted, normality test was carried out to test the distribution of the data. Hair *et al*. (2006) regarded normality as the most fundamental assumption in multivariate analysis. Normality refers to "the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution" (Hair *et al.* 2006, p. 79). Hair *et al.* (2006) proposed two measures to examine the data distribution, namely kurtosis (the "peakedness" or "flatness" of the distribution compared with the normal distribution) and skewness (used to describe the balance of the distribution). They also suggested that the specified critical value for the skewness and kurtosis according to the desired significant value, normally should fall into the range of -2.58 to +2.58 (at the significance level of 0.01), or range from -1.96 to +1.96 (at 0.05 significance level). If they exceed the specified critical value, the

distributions of data are considered as non-normal distribution. The result of the normality test for this study is shown in the Table 5.2.

Table 5.2: Normality Tests of the Main Variables

Variables	Normality Test	
	Skewness	**Kurtosis**
Behavioral & organizational:		
Top management support	-0.490	-0.423
Adequate resources	-0.434	-0.275
Training	0.053	-0.368
Link to performance evaluation	-0.568	-0.031
Non-accounting ownership	-0.326	-0.071
Link to competitive strategy	-0.402	-0.020
Clarity of ABC objectives	-0.285	-0.052
Technical factors:	0.294	0.034
Organizational structure		
Formalization	-0.315	0.387
Centralization	0.193	-0.818
Corporate Culture		
Outcome orientation	-0.932	0.719
Innovation	-0.232	-0.234
Team orientation	-0.786	0.650
Attention to details	-0.641	0.160
ABC success		
Users' attitude	-0.016	-0.247
Technical Characteristics	-0.405	0.485
Perceived usefulness	-0.399	0.738
Impact on process	0.058	-0.841
Performance		
Manufacturing performance		
Quality	-0.388	-0.277
Manufacturing cycle time	-0.419	-0.190
Customer lead time	-0.265	-0.524
Manufacturing cost	-0.440	0.313
Business performance		
Attainment of targeted productivity	0.120	0.351
Attainment of targeted cost	-0.377	0.206
Attainment of targeted quality	-0.072	0.196
Attainment of targeted service	-0.469	0.180
Attainment of targeted profit	-0.414	0.709
Attainment of sales volume	0.027	0.307
Attainment of market share	-0.056	-0.776

The results showed that all the values of skewness and kurtosis fall within the recommended critical value. Therefore, a conclusion can be drawn to show that all the data are normally distributed.

Besides the skewness and kurtosis tests, Kolmogorov-Smirnov test and normal probability test were also employed to assess the normality. Hair *et al.* (2006), suggested researchers to use both graphical plots and statistical tests to evaluate the actual degree of departure from normality. Table 5.2 shows the results of these tests. The Kolmogorov-Smirnov statistic results indicated that the non-significant result for behavioral and organizational variable, technical variables, as well as the firms' performance suggesting that the normality could be assumed for these variables. However, for variables of corporate culture, Kolmogorov-Smirnov statistic suggests a non-normal distribution. However these results are considered by Pallant (2001) as the common situation in larger size. Furthermore, the normal probability plot is used to compare the actual distribution of data with the normal distribution, which is represented by a straight line angled at 45 degrees (Hair *et al.* 2006). If all the observed variables fall more or less in a straight line, they can be assumed to be normally distributed. Appendix C shows that the observations for all the variables fall more or less in a straight line, A conclusion can be drawn that no serious violation of the normality assumption was found and that the distribution of the data was reasonably normal. Table 5.3 summarizes the results of Kolmogorov-Smirnov test.

Table 5.3: Kolmogorov-Smirnov Test

Variable	Statistics	Significance
Behavioral & Organizational	0.069	0.200
Technical	0.069	0.200
Structure	0.082	0.076
Culture	0.103	0.007
ABC success	0.081	0.080
Performance	0.073	0.200

5.2.1.3 Factor Analysis

Hair *et al.* (2006) pointed out that in order to conduct the factor analysis effectively, the sample size should be 100 or larger, and generally should have at least five times as many observations as the number of variables to be analyzed. This study possessed 20 observations for behavioral and organizational variables, there were 17 observations for organizational culture factor, 17 questions for structure, 19 observations for ABC success and 11 questions to measure the firms' performance, and the sample size is 106. Thus, factor analysis is an appropriate method for this study.

Factor loading refers to "simple correlations between the variables and the factors" (Malhotra, 2004, p. 561). According to Hair *et al.* (2006), factor loading greater than 0.3 are considered to meet the minimal level; loading of 0.4 are considered more important, and if the factor loadings are 0.5 or greater, they are considered as practically significant. Hair et al. (2006) further highlighted that the larger the size of factor loading, the more important the loading in explaining the factor matrix. Therefore, in this study the items with factor loading less than 0.5 were removed. A factor analysis was conducted for behavioral and organizational variables,

organizational structure and organizational culture. Varimax rotation was employed due to its ability to minimize the number of variables that have a high loading on each factor (Pallant, 2001). Before conducting the principle components analysis (PCA), two tests were applied to evaluate the appropriateness of research data for factor analysis, namely, Bartlett's test of sphericity and Measure of sampling adequacy (MSA). If the Bartlett's test of sphericity is significant at the level of 0.05, it could be concluded that there is sufficient correlations among the variables (Malhotra, 2004; Hair *et al*., 2006). Also a high value of MSA (between 0.5 and 1.0) indicates that factor analysis is suitable, while low values (below 0.5) suggests factor analysis may not be proper (Malhotra, 2004).

Previous research outlined seven dimensions, two dimensions, four dimensions, two dimensions and four dimensions for behavioral and organizational variables, organizational structure, firms' performance and ABC success respectively. Thus, in order to be consistent with prior research, this study also extracted seven factors, two factors, four factors, two factors and four factors for behavioral and organizational variables, organizational structure, firms' performance and ABC success respectively. The items with factor loadings less than 0.50 were removed. After several runs of factor analysis, a total of 19 items were deleted. They were item (b) of question 20, items (a) and (b) of question 21 among the measures for behavioral and organizational variables, item (a) of question 27, item (a) and (c) of question 28, item (c) of question 29, item (a) of question 30 among the questions for organizational culture. Questions 32, 35, 39, 40 and 41 relating to organizational structure together with item (d) of question 51 relating to manufacturing performance were also deleted. The deleted questions are summarized in Table 5.3, and the details of factors analysis are outlined in Appendix C.

Table 5.4: Items Deleted After Factor Analysis

Variables	**Deleted items**
Behavioral & Organizational	20b 21a & 21b
Organizational Structure	Questions 32, 35, 39, 40 and 41
Organizational Culture	27a, 28a, 28c, 30a
ABC success	Item of 4b, item a, b of 4d, item a, b of 4d
Firms' performance	51d

The results of factor analysis for behavioral and organizational variables are summarized in the Table 5.5.

Table 5.5: Factor Analysis for Behavioral and Organizational Variables

	Component						
	1	2	3	4	5	6	7
Topmanagement1	.807						
Topmanagement3	.809						
Topmanagmen4	.784						
Topmanagement5	.715						
Resource3							.765
Training1		.848					
Training2		.757					
Training3		.705					
Training4		.588					
Linktoperformance1				.719			
Linktoperformance2				.868			
Nonaccounting1					.893		
Nonaccounting2					.742		
Linkagecost1			.841				
Linkagecost2			.754				
Linkagecost3			.775				
Consensus1						.733	

KMO = 0.86,

Bartlett's Test of Sphericity sig = 0.000

Total Variance explain = 85.63%

Table 5.5 shows that the Bartlett test of Sphericity was significant at the significance level of 0.05 and the KMO measure of sampling adequacy was 0.86, thus, it was suitable to conduct a factor analysis. Seven components that accounted for 85.63% of the total variance were extracted. According to the measure adopted from previous research, component 1 can be considered as top management support, component 2 is considered as training, components 3 is linkage to competitive strategies, component 4 links ABC to performance measure and evaluation, component 5 is non accounting ownership, component 6 is clarity of ABC objectives and component 7 is resource. The results are consistent with Shields's (1995) who identified seven components for behavioral and organizational variables.

Table 5.6 shows the results of factors analysis for organizational structure. The results indicate that the Bartlett test of sphericity is significant at the significance level of 0.05 and KMO measure of sampling adequacy is greater than 0.6. The factorability of the data could be considered as appropriate

Table 5.6: Factor Analysis for Structure

	Component	
	1	2
Formalization2		.579
Formalization3		.698
Formalization5		.672
Formalization6		.719
Formalization7		.718
Centralization4	.844	
Centralization5	.817	
Centralization6	.704	
Centralization7	.784	
Centralization8	.881	
Centralization9	.763	
Centralization10	.757	

KMO = 0.86
Bartlett's Test of Sphericity sig = 0.000
Total variances explained = 57.92%

The two components that account for 57.92% of the total variance were extracted. According to Robins (1983), component 1 and component 2 measure centralization and formalization respectively. The extracted data were subsequently used to do the multivariate analysis.

The results for organizational culture are shown in the Table 5.7. The factorability of the data was considered as suitable due to the significant value of Bartlett's test of Sphericity and the value of KMO is 0.733.

Table 5.7: Factor Analysis for Culture

	Component			
	1	2	3	4
Outcome2	.766			
Outcome3	.848			
Outcome4	.917			
Outcome5	.850			
Innovation2		.822		
Innovation4		.756		
Innovation5		.879		
Innovation6		.812		
Team1				.892
Team2				.699
Detail2			.880	
Detail3			.818	

KMO = 0.86
Bartlett's Test of Sphericity sig = 0.000
Total variance explained = 57.92%

Four components could explain total 57.92% of total variance. According to Baird *et al.* (2007), Components 1, 2, 3 and 4 are four dimensions of organizational culture respectively, namely, outcome orientation, innovation, and attention to details. Table

5.8 shows the results of factor analysis for ABC success. The Bartlett's test of Sphericity is significant and the KMO measure is adequate (KMO=0.885).

Table 5.8: Factor Analysis for ABC success

	Component			
	1	2	3	4
Overall attitude toward ABC implementation				.879
Technical Characteristics 1	.747			
Technical Characteristics 2	.817			
Technical Characteristics 4	.808			
Technical Characteristics 5	.778			
Perceive usefulness3		.874		
Perceive usefulness4		.795		
Perceive usefulness5		.828		
Perceive usefulness6		.571		
Impact on process3			.794	
Impact on process4			.867	
Impact on process5			.776	
Impact on process6			.716	

KMO = 0.86,

Bartlett's Test of Sphericity sig = 0.000,

Total variance explained= 57.92%

According to Byrne *et al.* (2009), components 1, 2, 3 and 4 represented the technical characteristics, perceive usefulness, impact on process and overall attitude toward ABC respectively. The extracted data were then used in subsequent multivariate data analysis.

The results of the firms' performance are outlined in the Table 5.9. The results imply that Bartlett's test of Sphericity is significant and KMO measure is adequate. Therefore the appropriateness of factor analysis could be confirmed..

The two components together could explain 60.72% of total variance. Component 1 contains items for manufacturing performance, and component 2 represents business performance. The retained items were used for succeeding multivariate data analysis.

However, in this study, factor analysis was not conducted for the variable of technical problem. This study did not aim to look at the dimensions of the variable of technical problems but instead to look at the technical problems as a whole where the average of all items was calculated as a measure of the overall technical problems.

Table 5.9: Factor Analysis for Performance

	Component	
	1	2
Quality		.901
Cycle time		.862
Lead time		.857
Attainment of target related to productivity		
Attainment of target related to costs	.554	
Attainment of target related to quality	.745	
Attainment of target related to service	.839	
Attainment of target related to profit	.603	
Attainment of target related to sales volume	.822	
Attainment of target related to market share	.509	

KMO = 0.779
Bartlett's Test of Sphericity sig = 0.000
Total variance explained = 60.72%

5.2.1.4 Multicollinearity Test

According to Pallant (2001, p. 142), multicollinearity refers to "the relationship among the independent variables. Multicollinearity exists when the independent variables are highly correlated (r=0.9 and above)". Pallant (2001) also suggested that a good regression model should not have any multicollinearity. 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, namely, behavioral and organizational variables, technical variables,

organizational culture and organizational structure. The results are showed in the Table 5.10.

Table 5.10: Multicollinearity Text

Variables	Behavioral & organizational	Technical	Structure	Culture
Behavioral & Organizational	1			
Technical	-0.318	1		
Structure	0.257	-0.339	1	
Culture	0.553	-0.420	0.202	1

Correlation coefficient (r) among each main variables are smaller than 0.9. Hence it can be concluded that the independent variables are not highly correlated and no multicollinearity and singularity occurs in the collected data. In additional, multicollinearity test also showed that correlation coefficient (r) among the dimensions of each independent variable is also less than 0.9. The detailed of multicollinearity test results can be found in Appendix D. Hence, multiple regression tests can be performed.

5.2.1.5 Reliability and Validity of Instrument

In this study, the criterion for the measure reliability is Cronbach alpha. Sekaran (2003) stated that Cronbach alpha reflects how well items in a set are positively correlated to each other. The range of Cronbach alpha is from 0 to 1, the closer the value to 1, the higher the internal consistency reliability is. The current study accepted Numally's (1978) criteria for reliability. He proposed that the value of reliability should be greater than 0.6. If the value of Cronbach alpha was less than 0.6, reliability was considered

poor, and some items should be deleted so that the overall reliability can be improved to an acceptable level. The result of the reliability test is depicted in Table 5.11. In Table 5.11, Cronbach alphas for all the main research variables, as well as for some interval scale, such as benefits obtained through ABC application and some management accounting practices in each firms were within the range of 0.7 or above, which indicated that an acceptable levels of inter-item reliability. However, after the factor analysis, only one question was left for the dimensions of "Adequate resource", "Consensus about the objectives of ABC", and "Users' attitude". Thus, the reliability test was not applicable to them.

Table 5.11: Reliability Analysis

Variables	**Cronbach Alpha**
Behavioral & Organizational factors	
Top management support	0.905
Adequate resources	N/A*
Training	0.906
Link to performance evaluation and compensation	0.773
Non-accounting ownership	0.763
Linkage of the cost management system	0.886
Consensus about the objectives of ABC	N/A
Technical Variable	0.901
Organizational Culture	
Outcome orientation	0.908
Innovation	0.848
Team orientation	0.818
Attention to details	0.808
Organizational Structure	
Formalization	0.713
Centralization	0.902
ABC Success	
User attitude	N/A*
Technical Characteristics	0.923
Usefulness in improving job performance	0.911
Impact on organizational process	0.901
Performance	
Manufacturing performance	0.889
Business performance	0.820
Benefits obtained from ABC	0.828
Management accounting practices	0.855

*Reliability test was not applicable to the variables that only have one item

5.2.1.5 Response Rate and Non-Response Bias

Non-response bias is a common problem experienced by many researchers. Thus, an analysis of response and non-response bias is deemed to be necessary. Williams and Seaman (2001) recommended two ways to check the response bias. First, the final sample is divided into four groups based on its annual sales turnover. If cross-correlation for all variables was not significantly different, it can be concluded that the response bias does not appear to be problematic. Secondly, the final sample is divided into two groups according to the time the questionnaires were received, namely, early reply and late reply. Similar with the first approach, if no significant difference in terms of correlation coefficients between two groups were found among variables, it can be concluded that research samples are free from response bias. This research adopted the second approach. The total of 106 usable questionnaires were divided into two groups according to the time of reply, the first batch of 33 completed questionnaires were collected within one month after the questionnaires were distributed, so they were considered as early reply, while the rest of 73 questionnaires were considered as late reply. T-Test was employed to examine whether there was any significant difference in terms of mean scores between early and late reply for the research variables, namely behavioral and organizational variables, technical variables, organizational structure, corporate culture, ABC success, as well as firms' performance. The results of non-response bias are depicted in Table 5.12.

As can be seen from Table 5.12, apart from the manufacturing performance and centralization, generally, there were no significant differences (at the significant level of 0.05) between the first group and second group for behavioral and organizational variables, technical factors, organizational structure, corporate culture, ABC success and

firms' performance. Hence, it can be concluded that the sample in this research is free from non-response bias.

Table 5.12: Test of Non-Response Bias

Variables	Reply	N	Mean	Std. Deviation	Sig
Manufacturing performance	early	33	3.3182	.66519	0.045
	late	73	3.1096	.88779	
Business unit Performance	early	33	3.0346	.70626	0.356
	late	73	3.0705	.60102	
Top management Support	early	33	3.1333	.97809	0.630
	late	73	3.8301	.94144	
Resources	early	33	2.7172	.72226	0.239
	late	73	3.6529	.82299	
Training	early	33	2.7045	.91099	0.500
	late	73	3.5342	.95043	
link performance	early	33	2.9697	1.20506	0.321
	late	73	3.5548	.98799	
Non-accounting Ownership	early	33	2.8182	.98281	0.728
	late	73	3.5548	.92256	
linkage cost	early	33	3.0000	1.08337	0.754
	late	73	3.3927	.94339	
Formalization	early	33	3.7186	.62422	0.961
	late	73	4.0783	.64946	
Centralization	early	33	3.2939	.55674	0.008
	late	73	3.7301	.75731	
Technical characteristics	early	33	3.4303	.87624	0.865
	late	73	3.7945	.80137	
Usefulness	early	33	3.0959	.72882	0.366
	late	73	3.6416	.70965	

Process	early	33	3.4142	.85808	0.711
	late	73	3.8105	.76135	
Technical	early	33	2.6477	.99238	0.790
	Late	73	2.4623	.90131	

5.2.2 Background Information

In this section, the background information of the 106 respondents and their respective firms are outlined.

5.2.2.1 Profile of Respondents

The profile of respondents is shown in Table 5.13. 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 the respondents are in the other categories, which may include accounting supervisors and business analysts.

Table 5.13: Profile of Survey Respondents

Background Variable	Categories	Frequency	Percentage
Job Title	Finance Manager	29	27.4%
	Financial Controller	27	25.5%
	CFO	35	33%
	Others	15	14.2%
	Total	**106**	**100%**
Age Group	20-30 years old	16	15.1%
	31-40 years old	56	69.8%
	41-50 years old	25	12.3%
	More than 50 years old	9	1.9%
	Total	**106**	**100**
Educational Level	Diploma	16	15.1%
	Undergraduate	74	69.8%
	Master	13	12.3%
	PhD	2	1.9%
	Missing	1	0.9%
	Total	**106**	**100%**
Gender	Male	56	52.8%
	Female	50	47.2%
	Total	**106**	**100%**
Years of working in accounting area	Less than 5 years	20	18.9%
	5-10 years	43	40.6%
	11-20 years	34	32.1%
	More than 20 years	9	8.5%
	Total	**106**	100%
Years of working in current firms	Less than 5 years	44	41.5%
	5-10 years	40	37.7%
	11-20 years	18	17.0%
	More than 20 years	4	3.8%
	Total	**106**	**100%**

According to Table 5.13, 56 (52.8%) of individual respondents were male and 50 (47.2%) of them were female. More than half (69.8%) and 23.6 percent individual respondents were in the age of 31-40 years old and 41-50 years old respectively, 16 (15.1%) individual respondents were of 20-30 years old and only 9 (8.5%) of the total individual respondents aged more than 50 years old.

As for the educational level of individual respondents, bachelor degree holders accounted for 69.8% (74) of total individual respondents, 16 individual respondents

held diploma, which made up 15.1 percent of the total individual respondents, while Master degree and PhD degree holders accounted for 12.3% (13) and 1.9% (2) respectively, only one individual did not state his educational level.

The majority of the respondents had been working in accounting or finance area for 5-10 years (40.6% or 43), followed by 11-20 years (34 or 32.1%) and less than 5 years (20 or 18.9%). Only 9 (8.5%) individual respondent had more than 20 years working experience in the accounting or finance area.

It is notable that a majority (58.5%) of the respondents had more than 5 years of working experiences, while 41.5 % had been working for the current firms less than 5 years.

5.2.2.2 Profile of Firm

The characteristics of firms which participated in this study are summarized in Table 5.14. The sample in this study comprised firms from various industries. They were from electrical and electronics (27 or 25.5%), Iron, steel, and metal products (16 or 15.1%), food and beverage products (4 or 3.8%), rubber and plastic products (4 or 3.8%), paper, printing, packaging, and labeling products (1 or 0.90%), chemicals and chemical products (6 or 5.7%), pharmaceutical, medical equipment, cosmetics, toiletries, and household products(6 or 5.7%), furniture and wood related products (6 or 5.7%), textile, clothing, footwear, and leather products (5 or 4.7%), machinery and equipment products (15 or 14.2%), and others (16 or 15.1%).

Local firms accounted for 69.8% (74) of total firms, 22.6% (24) firms were multinational firms, and 8 (7.5%) of total firms were joint ventures firms. In terms of number of employees, 50% (53) of firms had 150-500 employees, 32 (30.2%) with employees above 500 but less than 2500, 11 (10.4%) firms with employees above 2501 but less than 5000, and only 9 firms (8.5%) indicated that they had more than 7000 employees, while one firms did not disclose number of full time employees working in the company.

As for the annual sales turnover, 39 (36.8%) firms had annual sales turnover between RMB20 million and RMB50 million, 12 (11.3%) firms produced annual sales between RMB50 million and RMB100 million, 28 (26.4%) firms had sales turnover between RMB100 million and RMB500 million, and 26 (24.5%) firms reported that their annual sales turnover more than RMB500 million, and one firm did not report the annual sales in the company.

Table 5.14: Profile of Sample Firms

Companies' Characteristics	Categories	Frequency	Percentage %
Type of Industry	Electrical and electronics	27	25.5%
	Iron, steel, and metal	16	15.1%
	Food and beverage	4	3.8%
	Rubber and plastic	4	3.8%
	Paper, printing, packaging	1	0.9%
	Chemicals and chemical products	6	5.7%
	Pharmaceutical, medical equipments, cosmetics, household	6	5.7%
	Furniture and wood related	6	5.7%
	Textile, clothing, footwear and leather products	5	4.7%
	Machinery and equipment	15	14.2%
	Others	16	15.1%
	Total	**106**	**100%**
Number of Employees	150-500	53	50.0%
	501-2500	32	30.2%
	2501-7000	11	10.4%
	Above 7000	9	8.5%
	Missing	1	0.9%
	Total	**106**	**100%**
Annual sales turnover (RMB)	Between 25 million and 50 million	39	36.8%
	Between 51 million and 100 million	12	11.3%
	Between 100 million and 500 million	28	26.4%
	Above 500 million	26	24.5%
	Missing	1	0.90%
	Total	**106**	**100%**
Ownership Structure	Locally owned firms	74	69.8%
	Multinational firms	24	22.6%
	Joint Venture firms	8	7.5%
	Others	0	0%
	Total	**106**	**100%**

5.2.2.3 Implementation of ABC system

This section outlines the information about ABC implementation status in participating firms as shown in Table 5.15.

Table 5.15: ABC Implementation Status

Items	Categories	Frequency	Percentage
ABC applications	Fully adopt ABC	61	57.5%
	Apply certain aspects	45	42.5%
	Total	106	
Status of ABC Implementation	Occasionally used	17	16.0%
	Commonly used	15	14.2%
	Extensively used	29	27.4%
	Total	61	
How long have you been using ABC?	Less than 2 years	5	4.70%
	2-3 years	16	15.1%
	3-4 years	7	6.6%
	4-5 years	4	3.8%
	More than 5 years	29	27.4%
	Total	61	
Who initiated the ABC idea	Top management	44	41.5%
	Finance managers	15	14.2%
	Others	2	1.9%
	Total	61	
How did you first learn about ABC?	University	35	33.0%
	In-house training	7	6.6%
	Seminar	3	2.80%
	By reading	15	14.2%
	Others	1	0.9%
	Total	61	
Scope of ABC implementation	The whole organization	38	35.8%
	In selected division	23	21.7%
	Total	61	
Purposes of ABC adoption	Stock valuation	32	30.2%
	Pricing	33	31.1%
	Product output decision	10	9.40%
	Cost reduction	48	45.3%
	Budgeting	33	31.1%
	New product design	11	10.4%
	Customer profitability	11	10.4%
	Performance measure &	25	23.6%
	Improvement	21	19.8%
	Cost modeling	17	16.0%

Among the sample firms, 61 (57.5%) firms answered “yes” for question 12 indicating that they adopted ABC fully to trace the overhead costs, and they should be considered as ABC fully adopters, while 45 (42.5%) firms answered “no” for question 12 but selected “3” and above against at least one statement of question 19. This indicates that among 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. Thus, the 45 firms should be considered as ABC partial adopters. However, research objectives are hard to achieve by taking only 61 ABC fully adopters into analysis, thus, full and partial adopters of ABC system were considered as appropriate respondents for this study. Therefore, a total of 106 firms were used for the data analysis.

The firms that fully adopted ABC system were asked to state the status of ABC in their firms, years of implementing ABC, and the person who initiated the ABC adoption, how did they first know the concept of ABC, as well as whether ABC was used in the whole company or in only in certain selected departments.

In terms of the status of ABC implementation, 17 (16%) firms stated that ABC is used occasionally and still considered by top management as a model, 14.2% (15) of total respondents (15) reported that ABC is commonly applied and has been considered as normal part of information system, 29 (27.4%) firms claimed that ABC has been successfully integrated with the financial system, and ABC is used by upper management extensively. According to past research, these three statuses are categorized as the ABC implementation stage (Krumwiede & Roth, 1997). Hence, 61 firms are considered as ABC fully adopter, which accounted for 57.27% of total firms.

Regarding the years of experience in implementing ABC, 5 (4.7%) firms had less than 2 years experiences in implementing ABC, 16 (15.1%) firms had been using ABC for

more than 2 years but less than 3 years, 7 (6.6%) firms had 3-4 years of experiences in using ABC, 4 (3.8%) firms had more than 4 years but less than 5 years in adopting ABC, and 29 (27.4%) firms had been using ABC for more than 5 years. It can be seen that most of the ABC fully adopters had more than 5 years experiences in applying ABC in their organizations.

Among the sample firms, the idea of ABC adoption were mostly initiated by top management (44 or 41.5%), followed by accountant or finance managers (15 or 14.2%), while, 2 firms (1.9%) reported that the ABC concepts were initiated by others, such as shareholders and external consultants.

The findings also showed that 35 (33.0%) respondents first learned about ABC in the university, 15 (14.2%) firms learned ABC by reading, such as journals, books and so on, 3 (2.8%) firms learned the concepts of ABC through seminars or conferences, 7 (6.6%) firms learned ABC by in-house training, and only 1 respondent learned ABC through external auditors. Table 5.15 also presented that 38 (35.8%) of total respondents applied ABC in the whole company, while 23 respondents (21.7%) implemented ABC in selected divisions.

Respondents were also required to report the purposes of ABC adoption. The results are also summarized in Table 5.15. Six major purposes of applying ABC were cost reduction and management (48 or 45.3%), budgeting (33 or 31.1%), pricing (33 or 31.1%), stock evaluation (32 or 30.2%), performance measure (25 or 23.6%) and performance improvement (21 or 19.8%). Seventeen (17) of the total respondents

reported that they applied ABC for cost modeling, and only 10 respondents claimed that ABC was used for the purpose of products or services output decisions.

5.2.3 Frequency Distribution and Descriptive Statistics

In this section, descriptive statistics were used to describe the benefits that firms obtained through the implementation of ABC, management accounting practices, independent variables, as well as dependent variables. Descriptive statistics includes minimum, maximum, mean, and standard deviation.

5.2.3.1 Benefits Obtained From ABC Implementation

Table 5.16 shows the scores for mean, standard deviation and the theoretical and actual the range of benefits obtained from the application of ABC implementation.

Table 5.16: Benefits from ABC Fully Adopters (N=61)

Variable	Mean	S.D	Actual Range		Theoretical Range	
			Min	Max	Min	Max
Linkage cost to output & performance	4.02	0.99	1.00	5.00	1.00	5.00
More realistic budgets	3.93	0.93	1.00	5.00	1.00	5.00
Budget slack identification	3.93	0.79	1.00	5.00	1.00	5.00
Variance information feedback	3.89	1.14	1.00	5.00	1.00	5.00
Better identification of resources	3.82	1.22	1.00	5.00	1.00	5.00
Link cost to responsibilities	3.81	0.96	1.00	5.00	1.00	5.00
Participation in budget setting	3.59	1.13	1.00	5.00	1.00	5.00
Acceptance of budget	3.52	1.15	1.00	5.00	1.00	5.00

Scale: “1=strongly disagree” to “5=strongly agree”

The mean score for each benefit was all greater than 3.50 suggesting that the respondents perceived that they obtained numerous benefits through the use of ABC. The highest mean score for benefits obtained from ABC implementation was the linkage cost to output and performance (mean score=4.02) implying that firms linked ABC closely to managing cost and staffs' performance measure, then followed by more realistic budgets (mean score=3.93), budget slack identification (mean value=3.93), and variance information feedback (mean score=3.89). This indicates that by applying ABC, firms could set a more realistic budget, identify budget slack more effectively and improve the accuracy of variance information feedback. While the lowest value was for greater acceptance of budgets by staff (mean value=3.52).

5.2.3.2 Cost Allocation Practices

Table 5.17 depicts the mean score for major cost allocation practices among respondents. The mean values for each cost allocation practice were all above the 3.5. This suggests that even though some participants did not use the complete ABC system to trace overhead costs, they did, however, implement certain aspects of ABC, such as using multiple cost drivers and allocating the period expenses. The mean score for each cost allocation practice, namely, use multiple cost drivers, increase number of cost drivers, allocation of period expenses to products, and increases the proportion of period expenses traced to products were 3.82, 3.93, 4.07 and 3.82 respectively. The highest value was for the allocation of period expenses suggesting that the respondents allocate period expenses, such as general administrative expenses, and R & D to products significantly. While the lowest mean score was for the use of multiple cost drivers and for increasing the proportion expenses assigned to products.

Table 5.17: Cost Allocation Practices by ABC Partial Adopters (N=41)

Item	Mean	S.D	Actual Range		Theoretical Range	
			Min	Max	Min	Max
Allocation of period expenses	4.07	1.01	1.00	5.00	1.00	5.00
Number of cost drivers increases greatly	3.93	0.99	1.00	5.00	1.00	5.00
Uses multiple cost drivers	3.82	1.09	1.00	5.00	1.00	5.00
Increase the proportion expenses assigned to products	3.82	1.03	1.00	5.00	1.00	5.00

Scale: "1=strongly disagree" to "5=strongly agree"

5.2.3.3 Behavioral and Organizational Variables

The mean values for behavioral and organizational variables (3.37) are shown in Table 5.18. The mean score for each subcomponent: top management support, training, adequate resources, linkage to performance evaluation and compensation, non-accounting ownership, linkage of cost management system to competitive strategy, and consensus about and clarity of the objectives of the cost management system were 3.56, 3.28, 3.48, 3.37, 3.33, 3.27, and 3.27 respectively. The highest mean value was top management support (mean value=3.56) suggesting that respondents perceive that top management provide observable support for ABC initiative, and adequate fund to ABC implementation and commit themselves to use ABC information as the basis for making operating decision. The lowest value was 3.27 for linking ABC system to competitive strategy and clarity of the objective of the ABC (mean value=3.27). This indicates that respondents perceived when ABC project begins, and when the overall objectives and benefits are understood moderately by designers and users. The users also perceived that ABC system was moderately associated with the competitive strategy of their firms and quality initiative.

5.2.3.4 Technical Problems

Table 5.18 also shows the overall technical problems that firms may encounter during ABC implementation stage. The overall mean value for the overall technical problems was 2.52, and the mean scores for each item were all below 3.00, which indicate that respondents generally did not experience much practical problems during the ABC implementation stage. The highest mean score was for difficulties in designing and implementing ABC systems (2.68). On the other hand, the lowest value was rated for involves great deal of work (mean score=2.29) indicating that the respondents perceived that with the adoption of advance technology and equipments, ABC can be implemented much easier than previously.

Table 5.18: Descriptive Statistics for Independent Variables (N=106)

Variables	Mean	S.D	Actual Range		Theoretical Range	
			Min	Max	Min	Max
Behavioral and Organizational						
1. Top management support	3.56	1.09	1.00	5.00	1.00	5.00
2. Adequate Resources	3.48	1.03	1.00	5.00	1.00	5.00
3. Training	3.28	1.01	1.00	5.00	1.00	5.00
4. Link to performance Evaluation & Compensation	3.37	1.09	1.00	5.00	1.00	5.00
5. Non-accounting ownership	3.33	1.00	1.00	5.00	1.00	5.00
6. Linkage of the cost management	3.27	1.00	1.00	5.00	1.00	5.00
7. Clarity of the objectives of ABC	3.27	1.00	1.00	5.00	1.00	5.00
Overall (Behavioral & Organizational)	**3.37**	**0.77**	**1.07**	**5.00**	**1.00**	**5.00**
Technical Problems						
1. Lack of software packages	2.55	1.20	1.00	5.00	1.00	5.00
2. Difficulties in gathering data	2.54	1.18	1.00	5.00	1.00	5.00
3. Difficulties in identifying activities	2.60	1.18	1.00	5.00	1.00	5.00
4. Difficulties in designing systems	2.68	1.25	1.00	5.00	1.00	5.00
5. Great deal of work	2.29	1.15	1.00	5.00	1.00	5.00
6. High cost of consulting	2.55	1.26	1.00	5.00	1.00	5.00
7. Lack of knowledge	2.53	1.24	1.00	5.00	1.00	5.00
8. Lack of consultant	2.42	1.19	1.00	5.00	1.00	5.00
Overall Technical	**2.52**	**0.93**	**1.00**	**5.00**	**1.00**	**5.00**
Organizational Culture						
1. Outcome Orientation	3.96	0.98	1.00	5.00	1.00	5.00
2. Innovation	3.12	0.94	1.00	5.00	1.00	5.00
3. Team Orientation	4.03	0.91	2.00	5.00	1.00	5.00
4. Attention to details	4.08	0.85	1.00	5.00	1.00	5.00
Overall Culture	**3.80**	**0.65**	**1.75**	**5.00**	1.00	5.00
Organizational Structure						
1. Formalization	**3.88**	**0.69**	**1.40**	**5.00**	1.00	5.00
2. Centralization	**3.50**	**0.91**	**1.29**	**5.00**	1.00	5.00
Overall Structure	**3.69**	**0.61**	**2.57**	**5.00**	**1.00**	**5.00**

Scale: "1=strongly disagree" to "5=strongly agree"

5.2.3.5 Organizational Culture

Table 5.18 shows that the mean values for the overall corporate culture was 3.80 and its dimension of outcome orientation, innovation, team orientation and attention to details were 3.96, 3.12, 4.03 and 4.08 respectively. The mean values for attention to details was ranked as the highest among the dimension of corporate culture (mean value=4.04) implying that respondent emphasized the importance of attention to details. While the lowest value was ranked for innovation (mean score=3.12) suggesting that respondents were moderately innovative.

5.2.3.6 Organizational Structure

Table 5.18 also discloses that the mean scores for overall organizational culture and its two dimensions, namely, formalization and centralization. The overall mean score for organizational structure was 3.69. This suggests that the participants in this research could be generally considered as mechanistic firms.

The mean value for formalization was 3.88 indicating that rules, policies, procedures and jobs were highly standardized. This also represents that job descriptions are provided to all the employees, employees and supervised are ensured to obey the standards set in the job description very closely, very little latitude employees are allowed from standard, and written operating instruction or procedures for jobs are outlined. Supervisors, middle managers, as well as non-managerial employees have to follow the given written instructions or procedures to a very great extent, and a high percentage of all the rules and procedures are written in the job description.

The mean value for centralization was 3.50. It suggests that participating firms generally adopted centralized structure, and operating decisions were made by those at higher level in an organization, such as top management. Top management is involved in gathering the input information, participated in interpreting the input information, and controlling the execution of the decision to a great extent, while, the first-line supervisors have very limited authority to make operational decision for their own divisions.

5.2.3.6 ABC Success Implementation

Table 5.19 presents the overall mean score for the perceived overall ABC success and its four dimensions, namely, user attitude, technical characteristics, perceived usefulness in improving user job performance and impact on organizational process.

The overall mean score for ABC success was 3.58 suggesting that the level of ABC success implementation was above average level. Technical characteristics was ranked as the highest in terms of mean value (3.66) suggesting that respondents perceived that information supplied by ABC were more accurate, more accessible, more reliable, more timely, and more understandable than their previous costing system.

Table 5.19: Descriptive Statistics for ABC Success Implementation (N=106)

Variables	Mean	S.D	Actual Range		Theoretical Range	
			Min	Max	Min	Max
ABC success						
1. User Attitude	3.60	0.87	1.00	5.00	1.00	5.00
2. Technical Characteristics	3.66	0.90	1.25	5.00	1.00	5.00
3. Perceived usefulness in improving user job performance	3.44	0.86	1.00	5.00	1.00	5.00
4. Impact on Organizational Process	3.62	0.89	1.67	5.00	1.00	5.00
Overall ABC success	3.58	0.73	1.25	5.00	1.00	5.00

Scale: 1 (strongly disagree) to 5 (strongly agree)
For User Attitude 1 (not value at all) to 5 (value at a great deal)

5.2.3.7 Firm Performance

The mean value for the overall, manufacturing and business performance can be seen in the Table 5.20. The mean score for manufacturing performance was 3.04. It suggests that respondents agreed that their performance after ABC implementation were marginally improved. Among the three perspectives of manufacturing performance, the highest mean value was rated for reduction in cycle time (mean=3.07), followed by quality (mean=3.03), while the lowest mean score was for the lead time (mean=3.02). It indicates that respondents perceived that ABC success implementation leads to a marginal reduction in manufacturing lead time, customers waiting time and also improvement in quality.

As for the business performance perspective, performance based on cost was rated the highest (mean score= 3.32), while a low mean score was given to the sales volume (mean score=2.95) and market share (mean score=2.43). This is an indication that the respondents perceived that their firms were most satisfied with their firms' ability to meet the targets relating to costs after ABC success, but were dissatisfied with their

firms' ability to meet the targets on sales volume and market share by ABC success implementation.

Table 5.20: Descriptive Statistics for Perceived Firm Performance (N=106)

Variable	Mean	S.D	Actual Range		Theoretical Range	
			Min	Max	Min	Max
Manufacturing performance:						
1. Quality	3.03	1.02	1.00	5.00	1.00	5.00
2. Cycle Time	3.07	1.01	1.00	5.00	1.00	5.00
3. Lead Time	3.02	1.09	1.00	5.00	1.00	5.00
Overall (MPERFORMANCE)	**3.04**	**0.94**	**1.00**	**5.00**	**1.00**	**5.00**
Business Performance						
1. Productivity	3.11	0.81	1.00	5.00	1.00	5.00
2. Costs	3.32	0.91	1.00	5.00	1.00	5.00
3. Quality	3.19	0.91	1.00	5.00	1.00	5.00
4. Service	3.16	0.94	1.00	5.00	1.00	5.00
5. Profit	3.25	0.87	1.00	5.00	1.00	5.00
6. Sales Volume	2.95	0.95	1.00	5.00	1.00	5.00
7. Market Share	2.43	0.99	1.00	5.00	1.00	5.00
Overall (BUPERFORMANCE)	**3.06**	**0.63**	**1.29**	**5.00**	**1.00**	**5.00**
Overall Performance	**3.05**	**0.68**	**1.29**	**5.00**	**1.00**	**5.00**

5.2.4 Pearson Correlation

Hair *et al.* (2006) stated that if the collected data in a survey questionnaire are measured at interval scale, the Pearson's product moment correlation (r) is considered the most appropriate tool to measure the strength and the direction of the relationship among the main variables. Pearson's product moment coefficient falls into the value of -1 to +1. The closer to 1 the correlation value is, the stronger correlation between the variables. Positive correlation value stands for positive correlation between research variables, while negative correlation value indicates negative correlation between research variables. Table 5.21 shows the correlations between the main variables.

Table 5.21: Correlation (p values) for Measured Variables (N=106)

Variables	**1**	**2**	**3**	**4**	**5**	**6**
1. ABC success	1					
2. Performance	0.339 P=0.000	1				
3. Behavioral & Organizational	0.650 P=0.000	0.115 P=0.112	1			
4. Technical problems	-0.479 P=0.000	-0.100 P=0.154	-0.318 P=0.000	1		
5. Structure	0.248 P=0.010	-0.312 P=0.001	0.257 P=0.000	-0.339 P=0.000	1	
6. Culture	0.637 P=0.005	0.319 P=0.000	0.553 P=0.000	-0.420 P=0.000	0.202 P=0.019	1

The Pearson correlation shows a positive correlation between behavioral and organizational variables and ABC success (r=0.650, p=0.000) at the significance level of 0.01. The correlation results provide a preliminary support for Hypothesis H1.

The Pearson correlation shows a strong negative correlation (r=-0.479, p=0.000) between technical factors and ABC success at the level of 0.01. It indicates that a low level of technical variable correlated with a high level of ABC success. The result is consistent with Hypothesis 2.

A significant positive correlation was also found by between organizational structure and ABC success (r=0.248, p=0.000) at the significance level of 0.01 indicating that higher level of mechanistic structure correlated with the higher level of ABC success. Thus, providing a preliminary support provided for Hypothesis 3.

Also as expected, a positive significant correlation was found between organizational culture factor and ABC success (r=0.637, p=0.000) at the significance level of 0.01. It indicates that a higher level of organizational culture is correlated with a higher level of ABC success. The finding also supports the statement in hypothesis 4.

In addition, Pearson correlation result also showed another expected positive correlation between ABC success and performance at the significant level of 0.01 (r=0.339, p=0.000) indicating that the higher level of ABC success correlated with the higher level of firms' performance. The result is also consistent with hypothesis 5 stated in the Chapter 3.

5.2.4.1 Correlation between Behavioral and Organizational Variables and ABC Success

In this section, the correlation was used to explore the relationship between ABC success and the sub components of behavioral and organizational factors, namely, top management support, resources needed to implement ABC, adequate training, link ABC to performance measure and compensation, non-accounting ownership, linkage of ABC to competitive strategy, as well as clarity of ABC objectives. The results are depicted in the Table 5.22.

Table 5.22: Correlation Coefficients for Sub Components of Main Variables and ABC Success

Variables	ABC success (Overall)	ABC Success Implementation			
		Attitude	Technical	Usefulness	Process
Management support	0.653 P=0.000	0.499 P=0.000	0.608 P=0.000	0.480 P=0.000	0.556 P=0.000
Resources	0.476 P=0.000	0.365 P=0.000	0.345 P=0.000	0.329 P=0.000	0.526 P=0.000
Training	0.508 P=0.000	0.440 P=0.000	0.411 P=0.000	0.422 P=0.000	0.400 P=0.000
Link to performance	0.484 P=0.000	0.409 P=0.000	0.341 P=0.000	0.353 P=0.000	0.488 P=0.000
Non-accounting Ownership	0.356 P=0.000	0.298 P=0.000	0.194 P=0.033	0.356 P=0.000	0.326 P=0.000
Link to strategy	0.553 P=0.000	0.529 P=0.000	0.416 P=0.000	0.400 P=0.000	0.474 P=0.000
Clarity of ABC objectives	0.394 P=0.000	0.553 P=0.000	0.248 P=0.005	0.193 P=0.029	0.305 P=0.001
Formalization	0.376 P=0.000	0.411 P=0.000	0.368 P=0.000	0.125 P=0.203	0.295 P=0.002
Centralization	0.051 P=0.604	0.043 P=0.660	0.043 P=0.662	0.055 P=0.579	0.216 P=0.216
Outcome	0.628 P=0.000	0.496 P=0.000	0.518 P=0.000	0.497 P=0.000	0.552 P=0.000
Innovation	0.211 P=0.030	0.112 P=0.253	0.193 P=0.048	0.291 P=0.003	0.101 P=0.304
Team	0.523 P=0.000	0.416 P=0.000	0.490 P=0.000	0.386 P=0.000	0.425 P=0.000
Attention to details	0.444 P=0.000	0.377 P=0.000	0.353 P=0.000	0.327 P=0.001	0.402 P=0.001

Top management support was significantly correlated with the overall ABC success (r=0.653, p=0.000), as well as the sub components of ABC success, namely, overall attitude towards ABC implementation (r=0.499, p=0.000), technical characteristics (r=0.608, p=0.000), perceived usefulness in improving job performances (r=0.480, p=0.000), and impact on operational process (r=0.556, p=0.000). It suggests that the higher level of support provided by top management correlated with a higher level of ABC success and the sub components of ABC success. These results are consistent with the view that top management support plays a vital role in the implementation of ABC and provided the initial support for Hypothesis 1a.

Also, it can be seen from Table 5.22, resource was also positively correlated to ABC success (r=0.476, p=0.000) and its four dimensions. This indicates that a higher level of resource correlated with a higher level of ABC success. The result also provides support for the argument that adequate resources could make a cost management system successful and a preliminary support was provided for hypothesis 1b.

Table 5.22 also depicts that training, link ABC to performance measure and compensation, Non-accounting ownership, link ABC to competitive strategies, clarity of the objectives of ABC were all associated with overall ABC success with r value of 0.508, 0.484, 0.356, 0.553 and 0.394 at the significance level of 0.01 respectively. And they were also correlated with sub components of ABC success implementation significantly. The results also provide preliminary support to Hypothesis 1c, Hypothesis 1d, Hypothesis 1e, as well as Hypothesis 1f.

5.2.4.2 Correlation between Organizational Structure and ABC success

Table 5.21 shows the significant and positive correlation between organizational structure and ABC success (r=0.248, p=0.005) and its sub components. Positive and significant correlation was found between organizational structure and ABC success and with the sub components of ABC success.

Among the sub components of organizational culture, the results showed that formalization had a significant correlation with overall ABC success and attitude towards ABC, technical characteristics, and impact on process at significance level of 0.01. The r value were 0.376 (p=0.000) for overall ABC success, 0.411 (p=0.000) was for overall attitude toward ABC, 0.398 (p=0.000) was for perceived technical characteristics

(p=0.000), and 0.295 (p=0.002) for impact on process. Furthermore, the finding shows a positive but insignificant correlation between formalization and perceived usefulness in the improvement for job performance (r=0.125, p=0.203). The findings indicate that a higher level of formalized structure correlated with the higher level of ABC, and provided an initial support to hypothesis 3a which stated positive relationship between ABC success and formalized structure.

Centralization also showed a positive but insignificant correlation with overall ABC success (r=0.051, p=0.604), technical characteristics of ABC implementation (r=0.043, p=0.662), attitude toward ABC implementation (r=0.043, p=0.660) and perceived usefulness in improving job performance (r=0.055, p=0.579). Additionally, the results also present a positive and significant correlation with impact on operational process (r=0.216, p=0.026). Thus, the finding did not provide initial support to hypothesis 3b.

5.2.4.3 Correlation between Organizational Culture and ABC success

Pearson Correlation analysis was employed to examine whether there were any significant correlation between the dimensions of corporate culture and ABC success. The results are summarized in the Table 5.22.

The outcome orientation correlated significantly with overall ABC success and the subcomponents of ABC success. It suggests a higher level of outcome orientation correlated with higher level of ABC success. And it also indicates that initial support was provided for hypothesis 4a which states a positive and significant relationship between ABC success and outcome orientation.

Team orientation and attention to details also show a positive correlation with ABC and the sub components of ABC indicating a higher the level of team work and a higher level of attention to details which correlated a higher level of ABC success.

Also, a positive significant correlation was found between innovation and ABC success (r=0.211, p=0.030). This indicates that the higher level of innovation correlated with the higher level of ABC success. Table 5.22 also presents that innovation correlated significantly with the technical characteristics (r=0.193, p=0.048) and with perceive usefulness in improving performance (r=0.291, p=0.003) positively and significantly. However, innovation was found to correlate attitude toward ABC (r=0.112, p=0.253) and impact on operational process (r=0.101, p=0.304) positively but not significantly. Thus, the finding does not provide the preliminary support to hypothesis 4b.

5.2.4.4 Correlation between ABC Success and Firm Performance

Table 5.23 shows the overall ABC success and Firms' performance and the subcomponents of firms' performance, namely, manufacturing performance and business performance.

Table 5.23: Correlation between ABC Success and Firms Performance

Variable	**1**	**2**	**3**	**4**
1. ABC Success	1			
2. Overall Performance	0.339 P=0.000	1		
3.Manufacturing Performance	0.192 P=0.049	0.913 P=0.000	1	
4. Business Performance	0.446 P=0.000	0.796 P=0.000	0.480 P=0.000	1

The results show that ABC success implementation was significantly correlated with the firms' overall performance (r=0.339, p=0.000), manufacturing performance (r=0.192, p=0.049), as well as business performance (r=0.446, p=0.000). This indicates that a higher level of ABC success correlate with a higher level of manufacturing performance and business performance. Thus, there is a preliminary support for hypothesis 6 is provided.

5.2.5 Hypothesis Testing

The roles of the independent variables in predicting the dependent variable can be examined by conducting multiple regression analysis. In this study, the following relationships were tested:

H1: There is a positive relationship between behavioral and organizational factors and ABC success

H2: There is a negative relationship between technical variable and ABC success.

H3: There is a positive relationship between organizational structure and ABC success.

H4: There is a positive relationship between organizational culture and ABC success

H5: Among companies that adopt ABC; defenders have a higher level of ABC success than prospectors and analyzers.

H6: There is a positive relationship between ABC success and firms' performance.

5.2.5.1The Relationship Between the Independent Variables and the Dependent Variable

This section shows the results of multiple regressions to test the overall effect of behavioral and organizational variables, technical variables, organizational structure, and organizational culture on ABC success. The regression equation is as follow:

$$Y_1=b_0 + b_1X_1 +b_2X_2 +b_3X_3 + b_4X_4 + e$$

Where:

b_0 = constant

Y_1 = ABC success implementation

X1 = behavioral and organizational variables

X_2 = technical variable

X3 = organizational structure

X4 = Organizational culture

e = error term

Regression was adopted to examine whether the independent variables affect the dependent variable significantly. In this study, the overall ABC success, which was the dependent variable, was regressed against the independent variables: behavioral and organizational factors, technical factors, organizational structure, and organizational culture. Table 5.24 summaries the regression model and presents the regression results, while the full regression results are presented in Appendix D.

The “enter” method was adopted to conduct multiple regression analysis. The independent variables were entered into a multiple regression with ABC as the dependent variable, and in regression analysis, the significant level was specified at 0.05.

Table 5.24 shows that the R squared was 0.571 indicating that a total 56.6% of the variations in ABC success can be explained by the four independent variables, namely behavioral and organizational variables, technical variables, organizational structure and organizational culture. Thus it suggests that the overall regression model is supported. Table 5.24 shows the detailed regression results.

Table 5.24: Summary of Regression Analysis Results for the Relationship between Independent Variables and ABC Success

Independent Variables	**Std Beta**	**Sig.**
Behavioral & organizational	0.400	0.000
Technical problems	-0.212	0.006
Organizational structure	0.008	0.911
Organizational culture	0.325	0.000
Dependent Variable	ABC success	
R Squared	0.571	
Adjusted R Squared	0.554	
F	33.597	
Sig	0.000	

For the independent variable of behavioral and organizational variable, the Beta coefficient was 0.400 and it has a significant effect on the ABC success with a p value of 0.000 ($p<0.05$). So, it can be concluded that there is a significant relationship between behavioral and organizational and ABC success and Hypothesis 1 is therefore might be supported.

The results from Table 5.24 depict the Beta coefficient for technical variable was -0.138. This provides evidence that ABC is negatively influenced by technical variable (p=0.010). The result also suggests a negative and significant relationship between technical factors and ABC success (p=0.006). Thus, Hypothesis 2 which suggests there is a negative positive relationship between technical problems and ABC success implementation can be supported.

In addition, the results in Table 5.24 shows that the Beta coefficients for organizational structure was 0.008, and the p value was 0.911 (p>0.05). Hence, Hypothesis 3 cannot be supported and a conclusion can be drawn that there is no significant relationship between ABC success implementation and organizational structure.

Furthermore, the results in Table 5.24 shows that the Beta coefficient for corporate culture was 0.325, and the p value was 0.000 (p<0.050). This indicates that corporate culture affected ABC success significantly. Therefore, Hypothesis 4 that stated that there is positive significant relationship between corporate culture and ABC success might be supported.

5.2.5.2 The Relationship between ABC Success and Firms Performance

One of the research objectives is to explore whether there is any significant relationship between ABC success and the firm performance. The regression equation for the relationship between ABC success and the firms' performance is shown below:

$Y_1=b_0 + b_1X_1 + e$

Where:

b_0 = constant

Y_1 = Firm's overall performance

X_1 = ABC success

e = error term

The dependent variable, overall firm performance was regressed against the independent variable, ABC success. Furthermore, separate regressions were carried out for two components of firm's performance, manufacturing performance and business performance against ABC success, the regression results is shown in the Table 5.25. The results of full regression can be found in the Appendix D.

Table 5.25: Summary of Regression Analysis Results for the Relationship between ABC Success and Perceived Performance

IDV	**DV: Perceived Firms Performance**								
	Overall Performance			**Manufacturing performance**			**Business Performance**		
	Beta	**P**	**R^2**	**Beta**	**P**	**R^2**	**Beta**	**P**	**R^2**
ABC success	0.339	0.000	0.115	0.192	0.049	0.037	0.446	0.000	0.191

Table 5.25 shows that the regression results for the relationship between overall performance, manufacturing performance and business performance. The findings indicate a significant relationship between ABC success and firm's overall performance (p=0.000), ABC success and manufacturing performance (p=0.049), as well as ABC success and business performance (p=0.000) at significance level of 0.05.

Also, the Beta coefficients for overall performance, manufacturing performance and business performance were 0.339, 0.192 and 0.446 respectively. This indicates that a positive relationship exists between ABC success and the firm's overall performance, between ABC success and manufacturing performance, as well as between ABC success and business performance. This finding is consistent with the finding generated by conducting Pearson correlation as discussed in the previous section. Hence, the Hypothesis 6 which states that a positive relationship exists between ABC success and the firms' performance is supported. And its sub hypothesis 6a and 6b which suggests that ABC success implementation impacts manufacturing performance and business performance significantly are also supported.

5.2.5.3 The Effect of Sub Components of Behavioral and Organizational Variable on ABC Success

This section shows the regression results relating to the effect of the sub components of behavioral and organizational variable has on the overall ABC success. The components are top management support, adequate resources, training, link ABC to performance measurement and compensation, non-accounting ownership, Linkage of ABC to competitive strategy, and clarity of the ABC objectives. The related regression equation is as follows:

$Y_1=b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + e$

Where:

b_0 = constant

Y_1 = ABC success implementation

X1 = Top management support

X_2 = Adequate resources

X_3 = Training

X_4 = Link ABC to performance measurement and compensation

X_5 = Non-accounting ownership

X_6 = Link ABC to competitive strategy

X_7 = Clarity of ABC objectives

e = error term

The dependent variable, overall ABC success was regressed against the sub components of behavioral and organizational variable. The results were shown in the Table 5.26, and the full regression results are shown in Appendix D.

The results depicted that the R Squared was 0.493. It can be concluded that 49.3% of the ABC success can be explained by the seven subcomponents of behavioral and organizational factors, and the output model is significant (F=14.449, p=0.000).

Table 5.26: Summary of Regression Analysis for the relationship between Sub Components of Behavioral and Organizational Variable on ABC Success

Variables	**Std Beta**	**Sig.**
Top management support	0.435	0.000
Adequate resources	0.142	0.140
Training	0.072	0.551
Link to performance measurement & compensation	0.139	0.140
Non-accounting ownership	0.086	0.328
Link ABC to competitive strategy	0.185	0.101
Clarity of ABC objectives	0.058	0.567
Dependent Variable	**ABC Success**	
R Square	0.493	
Adjusted R Square	0.457	
F	13.604	
Sig	0.000	

Only one component of the behavioral and organizational variables produced significant impacts on ABC success at the significance level of 0.05, namely, top management support ($p=0.000<0.005$). The regression results suggest a significant relationship between ABC success and top management support. Thus Hypothesis 1a was supported. However, other components of behavioral and organizational factors, such as training ($p=0.343$), link ABC to performance measure and compensation ($p=0.124$), Non-accounting ownership ($p=0.337$), clarity of ABC objectives ($p=0.643$), adequate resources ($p=0.140$), as well as Linkage of ABC to competitive strategy ($p=0.101$) did not play a significant role in explaining the variations in ABC success. Therefore, Hypothesis 1b, Hypothesis 1c, Hypothesis 1d, Hypothesis 1e, Hypothesis 1f and Hypothesis 1g were not supported. Hence, the Hypothesis 1 which states that there

is a positive and significant relationship between behavioral and organizational variables and ABC success implementation can be only partially supported. The support for Hypothesis 1 was driven by top management support.

5.2.5.4 The Relationship between Sub Components of Structure and ABC Success

The impacts of sub components of organizational structure on ABC success was also examined using multiple regressions. The regression equation is presented as follows:

$$Y_1=b_0 + b_1X_1 +b_2X_2 + e$$

Where:

b_0 = constant

Y_1 = ABC success implementation

X_1 = Formalization

X_2 = Centralization

e = error term

In this section, ABC success was treated as the dependent variable, it was regressed against each subcomponents of organizational structure, the results are summarized in Table 5.27, and the full regressions results can be found in Appendix C.

Table 5.27 shows that the R squared was 0.141, indicating that two dimensions of organizational structure, namely, formalization and centralization could predict 14.1% of total variation in ABC success The overall model is also significant due to the p value (F=8.468, P=0.000).

Table 5.27: The Summary of Regression Analysis for the relationship between Sub Components of Organizational Structure on ABC Success

Independent Variables	**Std Beta**	**Sig.**
Formalization	0.377	0.000
Centralization	0.009	0.926
Dependent Variable	ABC Success	
R Square	0.141	
Adjusted R Square	0.125	
F	8.468	
Sig	0.000	

For formalization, the Beta is 0.377. It indicates that a significant and positive impact on ABC success at p=0.000 (p<0.05). Therefore, Hypothesis 3a which suggests that there is a significant relationship between formalization structure and ABC success can be supported.

However, centralization did not play a significant role in predicting ABC success (beta=0.009, p=0.613). Thus Hypothesis 3b which suggests that there is a significant relationship between centralization structure and ABC success cannot be supported. Hence, the Hypothesis 3 which states that there is a significant and positive relationship between ABC success implementation and mechanistic structure cannot be supported, and the support of Hypothesis 3 cannot be driven by the formalization.

5.2.5.5 The Relationship Between Subcomponents of Culture and ABC Success

Multiple regressions was performed by using ABC success as the dependent variable, and the independent variable were outcome orientation, innovation, team orientation, as well as attention to details. Table 5.28 presents that four dimension of corporate culture could explain 47.9% of ABC success (R squared =0.479), and the overall model is also significant (F=23.203, P=0.000).

Two variables impacted ABC success significantly at the significance level of 0.05. They were outcome orientation (beta=0.475, p=0.000) and team orientation (beta=0.229, p=0.019). It indicates there were significant and positive relationship between ABC success and outcome orientation and team orientation. Hence, Hypothesis 4a which predicts a positive significant relationship between outcome orientation and ABC success, as well as Hypothesis 4d which predicts a positive significant relationship between team orientation and ABC success are supported.

Table 5.28: Summary of Regression Analysis Results for Relationship between ABC Success and subcomponents of Culture

Independent Variables	**Std Beta**	**Sig.**
Outcome orientation	0.475	0.000
Attention to details	0.139	0.129
Innovation	0.003	0.969
Team orientation	0.226	0.019
Dependent Variables	ABC Success	
R Square	0.479	
Adjusted R Square	0.458	
F	23.203	
Sig	0.000	

However, no significant relationship were found between Innovation (beta=0.003, p=0.969), attention to details (beta=0.139, p=0.129) and ABC success. Hence a conclusion can be drawn that hypothesis 4b which states a significant relationship exists between innovation and ABC success, and also Hypothesis 4c which suggests that there is a significant relationship between ABC success and attention to details cannot be supported. Thus, Hypothesis 4 which suggests a positive and significant relationship between ABC success implementation and organizational culture can only be marginally supported, and the support for Hypothesis 4 were driven by outcome orientation and team orientation.

5.3 Analysis of Sub-Group

Gosselin (1997) stated that the type of strategy produces the significant impact on various stages of Activity Management (AM). Therefore, the effect of type of strategy

on ABC success also needs considering. This section presents the results of further analysis of certain factors and ABC success. Analysis of Variance (ANOVA) employed to the effect of type of strategy on ABC success.

5.3.1 The Difference In Terms of ABC Success between Different Types of Strategy

Analysis of Variance (ANOVA) was employed to examine any significant differences between ABC success and type of strategy that a firm adopts. A graphical representation of the frequency distribution of firms according to type of strategy is presented in the Figure 5.1

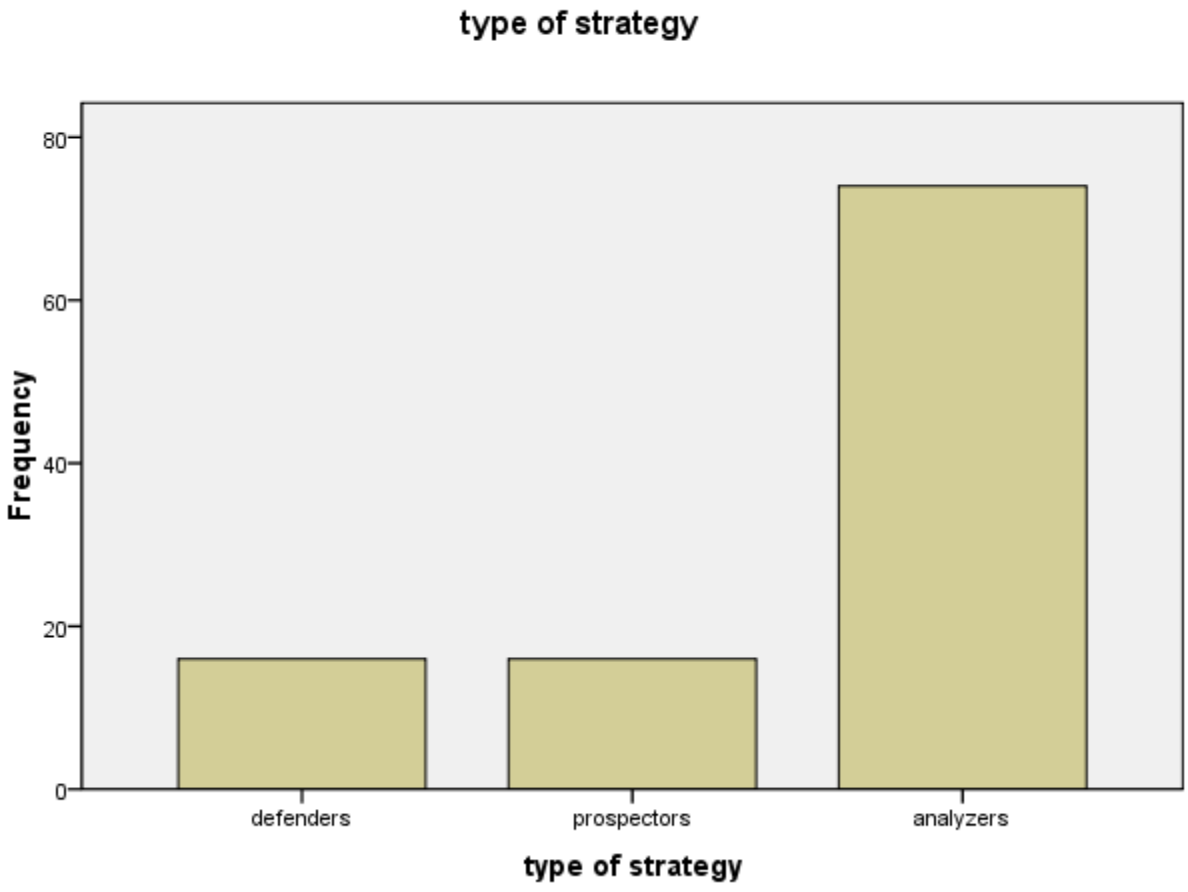

Figure 5.1 shows the analyzers which accounted for the largest number of total respondents (74 or 69.8%), while, there is an equal number of defender and prospector (15.1% or 16).

The One-way ANOVA was applied to test the difference in overall ABC success firms among the prospectors, analyzers and defenders. The results are summarized in Table 5.29. The significance value of 0.228 ($p<0.05$) indicates that there were no significant difference in ABC success among the different types of strategy (P=0.228). So Hypothesis 5 which stated that there is a significant difference between ABC success and type of strategy is not supported. The full result of the One-way ANOVA is included in Appendix C.

Table 5.29: ANOVA Test For ABC Success among Different Type of Strategy

ABC success	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.359	2	.679	1.308	.275
Within Groups	53.515	103	.520		
Total	54.874	105			

5.3.2 The Implementation of ABC between Chinese and Foreign Firms

This section aims to examine whether there is any significant difference in terms of ABC success between Chinese and Foreign firms. In this section, respondents were divided into three categories according to the ownership structure. If more than 51% of a firm's share was owned by Chinese party, this firm was categorized as Chinese local firms. However, if foreign party owned more than 51% of shares, the firm was

considered as foreign firm. Furthermore, if a firm's share was owned by foreign parties partially, this firm was considered as joint venture.

In this study, Chinese local firms accounted for 69.8% of total respondents, and foreign firms made up of 22.6% of total participants, while; only 7.6% were joint venture firms. Due to the small number of joint venture firms, this study only highlights the comparison between Chinese firms and foreign firms.

ABC Application among Chinese Local and Foreign Firms:

The descriptive statistics for ABC application in Table 5.30 showed that 33 out of 74 Chinese local firms fully adopted ABC system to allocate overhead costs to their products. While, 41 of Chinese local firms only implement certain aspects of ABC system, such as employing a multiple cost driver or basis to trace overhead costs, and allocating period costs and general administrative expenses to products for its internal management decision-making purposes. However, among foreign firms, 21 out of 24 firms reported that they implemented ABC system fully to trace overhead cost, while, only 3 foreign firms adopted certain aspects of ABC system in their organizations (Two Japanese firms and one Thai firm).

Table 5.30: The ABC Application between Local Firms and Foreign Firms

Ownership Structure	ABC Application			The Stage of ABC Application				Scope		
	Fully Adopters	Partially Adopters	Total	Occasionally Used	Commonly Used	Extensively Used	Total	Whole Firms	Selected Division	Total
Local Firms	33	41	74	14	10	9	33	13	20	33
Foreign Firms	21	3	24	1	5	15	21	18	3	21

For local Chinese fully adopters, 14 out of 33 firms reported that ABC system was occasionally used by top management to make decisions. Ten firms indicated that ABC system was commonly used by top management to make decisions, while, only 9 Chinese firms claimed that ABC was extensively applied and totally combined with primary financial system in their firms. In contrast, among foreign ABC full adopters, the number of firms for each stage of ABC application, namely occasionally used, commonly used, and extensively used were 1, 5 and 15 respectively. Krumwiede and Roth (1997) categorized the final two stages, namely, commonly used and extensively used ABC system as the mature stage of ABC implementation. Table 5.30 shows that only 25.7% of local ABC fully adopters reached the mature stage. However, 79.2% of foreign ABC fully adopters could be considered as mature adopters. Therefore, a conclusion can be drawn that Chinese firms are still at early stage of ABC implementation.

As for the scope of ABC implementation, 13 local Chinese fully ABC adopters claimed that they used ABC in the whole firm and 20 local firms implemented ABC system in certain selected divisions. However, among foreign fully adopters, 18 firms stated that

ABC was used throughout the company and only 3 foreign firms reported that only in selected departments ABC was applied. Hence, ABC was more widely employed in foreign firms than in local Chinese firms.

The Level of ABC Success Among Chinese and Foreign Firms:

T-Test was employed to examine whether there is any significant differences in terms of overall ABC success and its subcomponents between Chinese firms and foreign firms. The results are summarized in the Table 5.31.

Table 5.31: ABC Success between Foreign and Chinese Firms

Variables	Chinese Firms	Foreign Firms	Mean Difference	Sig
ABC Success Implementation	3.41	4.01	-0.60	0.000
Technical Characteristics	3.44	4.27	-0.83	0.000
Perceived Usefulness	3.32	3.78	-0.46	0.021
Impact on Process	3.44	4.06	-0.62	0.002
Overall Attitude	3.45	3.92	-0.47	0.019

Table 5.31 shows that there was a significant difference in terms of overall ABC success (p=0.000). The mean score of overall ABC success for Chinese firm was 0.60 lower than that of foreign firms. It indicates that foreign firms perceived that they achieved a higher level of ABC success than Chinese firms.

Table 5.30 also presents that significant differences existed in terms of subcomponents of ABC success between Chinese firms and foreign firms at the significant level of 0.05. Mean scores of technical characteristics, perceived usefulness, and impact on process and overall attitude for Chinese firms were 0.83, 0.46, 0.62 and 0.47 lower than that of foreign firms respectively. This indicates that after ABC implementation, foreign firms

had a higher level attitude toward ABC, higher level of technical characteristics, higher level of usefulness, and higher level of impact on process than Chinese firms. Thus, ABC implementation was more successful in foreign firms than in Chinese firms.

5.3.3 Additional Test of Mediation Effect

According to Mackinnon (1994), the mediation may exist when 1) a significant relationship exists between independent variable and dependent variable, 2) there is a significant relationship between independent variable and mediating variable, and 3) the mediating variable is significantly related to dependent variable.

The results of this study showed that behavioural and organizational variables, technical problems, and culture were significantly related to ABC success implementation, and the ABC success implementation was also significantly related to firms' performance. Hence, it might be possible that ABC success implementation may mediate the relationship between the main independent variables and the firms' performance. Thus, an additional test of mediation was conducted to confirm whether the ABC success implementation mediates the relationship between the main independent variables, namely behavioral and organizational factors, technical problems, organizational culture, as well as the organizational structure and firms' performance.

The Bootstrap method of AMOS was adopted to examine the mediating effects of the ABC success implementation on the relationship between the major independent

variables and the firms' performance. The mediation test was based on 1000 bootstrap samples. The results of mediation test are shown in the Table 5.33.

Table 5.32: The Results of Mediation Test

Standardized Indirect Effects – Lower Bounds					
	Structure	Culture	Technical problems	Behavioral & organizational	ABC success
ABC success	0.000	0.000	0.000	0.000	0.000
Firms' performance	-0.032	0.041	-0.153	0.065	0.000
Standardized Indirect Effects-Upper Bounds (PC)					
	Structure	Culture	Technical problems	Behavioral & organizational	ABC success
ABC success	0.000	0.000	0.000	0.000	0.000
Firms' performance	0.091	0.228	-0.005	0.267	0.000

Table 5.32 shows that both the value of standardized indirect effects both lower bounds and upper bounds.

The value of lower and upper bounds for behavioral and organizational variable fell into the range from 0.065 to 0.267, and the value of zero does not belong to this range. This indicates that the ABC success implementation could mediate the association between the firms' performance and the behavioral and organizational variable.

For the independent variable of culture, the score of the standardized indirect effects of culture ranged from 0.041 to 0.228. The value of zero does not fall into the range of

lower bounds and upper bounds indicating that the relationship between culture and firms' performance mediated by the ABC success implementation

Furthermore, for the variable of technical problems, zero also does not fall between the value of lower bounds (-0.153) and upper bounds (-0.005). It suggests that the association between the variable of technical problems and the firms' performance are also mediated by ABC success implementation.

However, the results of the mediation test showed that zero falls into the range between lower bounds (-0.032) and upper bounds (0.091) of the structure indicating that the relationship between the organizational structure and the firms' performance was not mediated by ABC success implementation.

In summary, the results of the mediation test indicate that the effect of behavioral and organizational variables, culture, as well as technical problems on the firms' performance were indirect. The effects of behavioral and organizational variables, technical problems, as well as culture on the firms' performance were mediated by the ABC success implementation. While, the results also show that the ABC success implementation did not mediate the relationship between the structure and the firms' performance indicating that the effect of structure on the firms' performance was direct.

5.4 Discussion of the Findings

5.4.1 ABC Success Implementation

The results from the questionnaire survey are presented in the previous sections. The results from the questionnaire survey indicated that ABC implementation was at a satisfactory level of success among Chinese manufacturing firms. Among the four perspectives of ABC success, the highest level was technical characteristics. The finding is consistent with Byrne *et al.*'s (2009) study in the Australian context, which found that respondents perceived technical characteristics as the most successful among the perspectives of ABC success.

5.4.2 The Effect of Behavioral and Organizational Factors on ABC Success

Multiple regression test result in section 5.2.5 marginally confirmed Hypothesis 1. This suggests that the presence of higher level of behavioral and organizational factors could result in higher level of ABC success. This finding is also consistent with the finding of Shields (1995), Shields and McEwen (1996), as well as Krumwiede and Roth (1997) who also found a positive and significant association between ABC success and behavioral and organizational variables. Also, this finding is consistent with organizational change theory, which states that organizational factors play a key role in the implementation stage of an innovation and management practices (Maelah *et al*, 2006).

Also, Pearson correlation (r=0.650, p=0.000) and multiple regression (beta=0.400, p=0.000) were applied to examine the relationship between sub components of behavioral and organizational variables and ABC success. Numerous previous research showed that the ABC systems would be implemented successfully in those companies

with the following characteristics: (1) adequate training in the design and implementation, (2) top management support and give incentives to the ABC's implementation, (3) non-accountant staffs involve in the design and the ABC implementation process, (4) companies have sufficient internal resources, (5) use ABC as the basis for employees' performance measure and compensation, (6) closely link ABC to its quality issues, competitive strategies and (7) let the purpose and benefits of ABC understood by users and designers at the initiatial stage of ABC implementation.

Only one major finding emerged from the present study. The results indicate that the top management support had a positive relationship with ABC success in Chinese manufacturing firms. It suggests that the stronger the top management support for ABC implementation, the higher level of ABC success could be achieved. The respondents also stated that their firms' top management provided visible support to ABC implementation and had a clear commitment to apply information supplied by ABC as the basis for decision making. Therefore, the finding of this research further support the previous work of Shields (1995), Shields and McEwen (1996), Innes and Mitchell (2000), Krumwiede (1998a, 1998b), Maelah *et al.* (2006) and Baird *et al.* (2007), just to name a few. They concluded that top management support is the most crucial factor in the success of ABC implementation. The finding is also consistent with the leadership theory, which claims that the effectiveness of leadership produces significant impact on any innovation (Walton & Susman, 1987; Hoffman & Hegarty, 1993; Scott & Bruce, 1994; Jong *et al*., 2007). As ABC is considered as an administrative innovation and its success is dependent on top management support or leadership in the firms.

However, some sub components such as resources, link ABC to competitive strategies, training, linkage to performance evaluation and compensation, non-accounting ownership, clarity of ABC objectives were not found to be significantly related to ABC success. The results are however consistent with some previous research done by Shields and McEwen (1996) and Innes and Mitchell (2000) who also did not find any significant association between non-accounting ownership and ABC success among largest firms in the U.K. Baird et al. (2007) found an insignificant relationship between link ABC to performance evaluation and compensation and ABC success among Australian business units. Mohammed and Drury (2007) also did not find significant relationship between internal resources and ABC success among manufacturing firms in the UK. Therefore, findings of this study are still considered as reasonable. Furthermore, Maelah *et al.* (2006) also failed to find a significant association between training and ABC success among Malaysian manufacturing businesses.

Maelah *et al*., (2006) stated that training is not an important factor in determining ABC success at the initial stage of ABC implementation. In this study, most of firms are at initial stage of ABC implementation. Therefore, failure to find a significant relationship between training and ABC success is reasonable.

This study found an insignificant relationship between ABC success and link ABC to performance measurement and evaluation might be due to the Chinese national culture. China is categorized by Hofstede (1983) as a high uncertainty avoidance culture. Under this high uncertainty avoidance culture, employees would resist the implementation of ABC if they feel the information supplied by the ABC is used for performance measurement and may affect their status (Brewer, 1998; Supitcha *et al*., 2001).

In addition, an insignificant relationship were found between non-accounting ownership, link ABC to competitive strategy, as well as clarity of ABC objectives and ABC success might be possible if most of firms in this study are at an early stage of ABC implementation, where top management lack knowledge about the critical factors in determining ABC success.

5.4.3 The Relationship between Technical Problems and ABC Success

The Pearson correlation (r=-0.479, p=0.000) and multiple regressions (beta=-0.212, r=0.006) presented a negative significant relationship between ABC success and technical problems, thus providing support for Hypothesis 2. The finding suggests that during the ABC implementation process, if a firm possesses the necessary technical requirements for ABC and experiences less practical problems, then the firm can accomplish higher level of ABC success. The finding is not consistent with Shields (1995) and Shields and McEwen (1996) who concluded that technical problems are not the significant factor in explaining the ABC success. However, this research finding is consistent with the finding of Lana and Fei (2007), who concluded that technical factors, such as selection of suitable cost drivers, identification of activities and so on can influence ABC success in a Chinese state owned manufacturing firm. And the finding is also similar to Taba (2005), who found a significant and negative relationship between technical problems and ABC success in South African Post Office.

5.4.4 The Relationship between Structure and ABC Success

The results of Pearson correlation (r=0.248, p=0.005) and regression (beta=0.008, p=0.911) showed a positive but insignificant relationship between the overall structure and ABC success, thus Hypothesis 3 is not supported.

Among the relationship between ABC success and sub components of the structure, a significant and positive relationship was found between the formalization structure and ABC success. Thus, Hypothesis 3a is supported. This finding is consistent with a previous study by Gosselin (1997), which found that the formalization structure was related to ABC implementation stage. Gosselin (1997) and Burns and Stalker (1961) contended that mechanistic companies are highly centralized and formalized, and ABC implementation is better facilitated in these firms. The result is also consistent with the dual-core model and ambidextrous model, which state that an administrative innovation, such as ABC implementation can be much easier in a highly formalized structure and hence, ABC could be more successful in formalized structure (Gosselin, 1997).

However, Pearson correlation and regression results showed that centralization was not significantly related to ABC success. This result is not consistent with previous research (Gosselin, 1997), which concluded that the centralization structure influence the ABC implementation stage. And this result is also not consistent with the dual-core and ambidextrous model. Hence, hypothesis 3b cannot be supported.

Failure to find a significant relationship between centralization and ABC success may be due to the stages of ABC. Gosselin (1997) pointed out that the decentralized structure facilitates the adoption of ABC, while, the implementation of ABC is associated with centralization. In this study, ABC implementation is still at an early stage for most of the respondents, thus, centralization may not be a significant factor in predicting ABC success.

5.4.5 The Effect of Organizational Culture on ABC Success

Multiple regression test results in section 5.2 indicated that Hypothesis 4 which suggests a positive and significant relationship between organizational culture and ABC success implementation can only be partially supported. The result suggests that if the ABC system is compatible with its organizational 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 the research, they stated that culture could explain the variation in ABC success. This finding also is also consistent with the contingency theory, which claims that culture factors is one of the contextual factors that could determine the design and implementation of a management control system.

In addition, the test was carried out to examine the effect of sub-components of corporate culture on ABC success. Two significant findings emerged from the current study, namely, outcome orientation and team orientation. It indicates that firms, which emphasize on results and actions and having high expectations for performance, and emphasizes the team work, could have a higher level of ABC success. The findings in the present study are consistent with Baird *et al.* 's (2007), which claimed that the outcome orientation is associated with the activity management, and Drake *et al.* (2001), expressed that team orientation is an important factor in implementing ABC.

However, innovation was not related significantly with ABC success. This result is consistent with Baird *et al.* (2007). In the study, they argued that innovation can only affect ABC in the initial stage, however during the ABC implementation stage, innovation need not be sustained, so this finding is explicable. And in their study they

failed to find a significant relationship between ABC success and innovation in the Australian context.

However, failure to find a positive significant relationship between attention to details are less explicable, it does not support the findings of Baird *et al*. (2007), which found that ABC success is largely determined by attention to details. ABC implementation needs great attention to detail in identifying cost drivers, selecting major activities and tracing costs to products. 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.

5.4.6 The Difference between Type of Strategy and ABC Success

One-way ANOVA test showed that the different types of strategies did not significantly affect the success of ABC implementation in manufacturing firms in China. Hence, Hypothesis 5 is not supported. This finding may suggest that the ABC success is not influenced by the type of strategy that firms adopt. The finding is not consistent with the argument of Gosselin (1997), who found that prospectors facilitate technical innovation, while administrative innovation can be easier in defenders. Thus, ABC as an administrative innovation can accomplish a higher level of success in defenders.

The finding is also not consistent with the dual core model, which states that an administrative innovation, such as ABC could be facilitated in defenders (Gosselin, 1997). Gosselin (1997) also found that prospectors were associated with ABC adoption, while, defenders were associated with ABC implementation in the Canadian context. However, in this study, most of the respondents were at early stage of ABC

implementation, hence, it is reasonable that no differences were found between ABC success and type of strategy. Also, an insignificant difference between ABC success and type of strategy might also be that analyzers accounted for the majority of total respondents, while, prospectors and defenders only are made up of relatively small percentage of total respondents.

5.4.7 The Relationship between ABC Success and Firms' Performance

The Pearson correlation and regression results revealed a significant positive relationship between ABC success and the firms' overall performance, manufacturing performance, and business performance. The results suggest that the higher the level of ABC success is, a higher level of manufacturing performance, and business performance could be accomplished. Thus, Hypothesis 6, Hypothesis 6a and Hypothesis 6b are supported.

The findings of this study are consistent with Ittner *et al.*'s (2002)'s research, which found that ABC success is associated with the manufacturing performance, such as reduction in manufacturing cost, decrease in manufacturing leading time and customer waiting time, and improvement in quality time. However, research to date, there is only one research conducted by Isa *et al.* (2004) to examine the relationship between business performance and management accounting and control system change. She found a marginally significant relationship between the two variables. ABC as an important management accounting practices, so the finding of this research can be considered as consistent with Isa *et al.*'s (2004) research.

ABC is developed according to the requirements of current competitive environment, so the result is also consistent with the contingency theory, which claimed that if the design of management accounting system, such as costing system, performance measurement and evaluation system suits the external environment and competitive strategy, the organizational performance could be enhanced (Fisher, 1998; Anderson & Lanen, 1999).

5.4.8 The Mediation Effect of ABC on The Relationship Between The Main Independent Variables and The Firms' Performance.

The Mediation test results show that the relationship between behavioral and organizational variables, culture, and technical problems and the firms' performance was mediated by the success of ABC implementation. This suggests that behavioral and organizational variables, culture and technical problems did not impact the firms' performance directly. However, dealing with behavioral and organizational issues effectively, solving the technical problems during the ABC implementation, and highly valuing organizational culture could lead to the success of ABC implementation, which could ultimately result in the improvement in the firms' performance both financially and non-financially. Furthermore, the bootstrap results show that the relationship between the structure and the firms' performance was not mediated by ABC success implementation but indicated that the structure could impact the firms' performance significantly.

5.5 Summary of the Findings

The results from the survey questionnaire are presented in this chapter. The overall results of the survey suggest that the Chinese Manufacturing firms perceived that the

ABC implementation had accomplished a satisfactory level. Three variables that were found to associate ABC success implementation marginally were behavioral and organizational variables, technical problems, and organizational culture. However, the relationship between ABC success and organizational structure was found to be not insignificant. This study also found that different types of strategy did not produce different level of ABC success.

Among sub items of each main variable, a significant relationship were found between top management supports, formalized structure, outcome orientation, team orientation and overall ABC success.

Furthermore, a significant relationship was also found between ABC success and the perceived firms' overall performance, perceived manufacturing performance and also business performance. The summary of the hypotheses testing is shown in Table 5.33.

Table 5.33: Summary of Hypothesis Testing

Research Hypothesis	Results
H1: There is a positive relationship between behavioral and organizational and ABC success	**Marginally Supported**
H1a: There is a positive relationship between top management and ABC success	Supported
H1b: There is a positive relationship between non-accounting ownership and ABC success	Not Supported
H1c: There is a positive relationship between training and ABC success	Not Supported
H1d: There is a positive relationship between internal resources and ABC success	Not Supported
H1e: There is a positive relationship between link ABC to performance measure & compensation and ABC success	Not Supported
H1f: There is a positive relationship between linkage of ABC to competitive strategies and ABC success	Not Supported
H1g: There is a positive relationship between clarity of ABC objectives and ABC success	Not Supported
H2: There is a negative relationship between technical problems and ABC success	**Supported**
H3: There is a positive relationship between mechanistic structure and ABC success	**Not Supported**
H3a: There is a positive relationship between formalized structure and ABC success	Supported
H3b: There is a positive relationship between centralized structure and ABC success	Not Supported
H4: There is a positive relationship between organizational culture and ABC success	**Partially Supported**
H4a: There is a positive relationship between outcome orientation and ABC success	Supported
H4b: There is a positive relationship between attention to details and ABC success	Not Supported
H4c: There is a positive relationship between Innovation and ABC success	Supported

H4d: There is a positive relationship between team orientation and ABC success	Not Supported
H5: Among companies adopt ABC; defenders have higher level of ABC success than Prospectors and analyzers.	**Not Supported**
H6: There is a positive relationship between ABC success and firms' overall performance	**Supported**
H6a: There is a positive relationship between ABC success and manufacturing performance	Supported
H6b: There is a positive relationship between ABC success and business performance	Supported