PART 3:

DATA ANALYSIS AND RESULTS

Chapter 6:

Research methodology design

6.1 Introduction

The research study presented in this thesis is a combination of exploratory and comparative research. An exploratory study is used to explore a phenomenon, event, issue or problem and a comparative study is used to compare two or more research processes (Page & Meyer, 2003).

Although the questionnaire to assess some of the previously identified project management activities indicated in the proposed model, Figure 5.2, was designed based on the Chinese culture, South African project managers have also been asked to participate in order to illustrate differences, where applicable. Participants from China and South Africa were involved in this research survey. A confirmation survey was conducted in order to eliminate the unreasonable measurements established from the literature study. A comparative survey was implemented after the confirmation survey. The questionnaire and research design were developed in accordance with the recommendations of Cooper and Schindler (2006). The samples of both South African (63 valid returned questionnaires) and Chinese project managers (75

valid returned questionnaires) were selected mainly from advanced courses for experienced engineering and technology project managers.

In this study, several statistical techniques were used to empirically examine the proposed model. The cultural behaviours impacting on project activities by Chinese and South African project managers were explored by using the t-test for independent samples. In addition, the strength of the relationship between cultural behaviours and project activities was explored using Spearman's rho correlations. This statistical technique determines the strength of the correlation between two variables (with a significant level of $p<0.001$). Moreover, the relationships between mitigating solutions and cultural differences were explored using the same statistical technique.

6.2 The questionnaire design

As discussed in Chapter 5, five typical Chinese behaviours and five project management activities have been identified and utilised in the questionnaire. They are listed in Table 6.1 and Table 6.2:

Table 6.1: Typical Chinese behaviours

Typical Chinese behaviours and their description
B1: Philosophy of surviving: Ming Zhe Bao Shen – wise people should be skilled at protecting themselves as a prerequisite to avoid being involved in conflicts or fights. **Sub-behaviours** B1.1 As a manager, keep track of your team members to avoid being cheated/undermined by them one day. B1.2 As a team member, always protect yourself when doing a job to avoid risks. B1.3 Trust can only be established after a series of tests/trials from small events. B1.4 Act modestly and hide your ability and power to survive. B1.5 Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame).

Typical Chinese behaviours and their description
B2: “Face/image” is important to the Chinese, as it represents prestige, respect, dignity and social status **Sub-behaviours** B2.1 Commenting directly on or rejecting others’ opinions to make them lose “face/image”. B2.2 Saving others “face/image” to maintain harmonious Guanxi (personal relationships) B2.3 “Face/image” is more important than profits in some cases B2.4 Strive for your own “face/image” to be recognised and save others’ face at the same time
B3: Personal relationships: Guanxi – is critical for getting favours and conducting business successfully. **Sub-behaviours** B3.1 Developing Guanxi (personal relationships) is an important job for a manager. B3.2 Guanxi (personal relationships) is a resource of sustainable competitive advantage. B3.3 Prefer business partners with good Guanxi (personal relationships). B3.4 Guanxi (personal relationship) is more stable than contractual relationships. B3.5 Establishing trust and “face/image” saving are the foundations of establishing good Guanxi (personal relationships). B3.6 The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager. B3.7 First make friends and then do business. B3.8 Reciprocity determines whether Guanxi (personal relationships) can be established successfully.
B4: Communication – the purpose is to maintain satisfactory harmony **Sub-behaviours** B4.1 Indirectly communicating with others and trying to make nobody lose face/image to pursue a conflict-free interpersonal and social relationship. B4.2 Communicating with appropriately is sometimes more important than revealing the truth. B4.3 Announcing decisions during meetings while discussions should be held upfront and privately. B4.4 Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen). B4.5 Not willing to take the initiative in communication with others.
B5: Conflict-solving: Hua Jie – softening, smoothing, compromising and aligning instead of direct solving to uphold harmonious relationships **Sub-behaviours** B5.1 Transform serious problems to small problems and then soften small problems to nothing (Da Shi Hua Xiao, Xiao Shi Hua Liao). B5.2 Refusing, delaying, avoiding and aligning as the way to problem-solving (Tui Tuo La). B5.3 Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi). B5.4 Not causing others to lose “face/image” in the conflict-solving process (Liu Mianzi). B5.5 Believe that personal trust and mutual interests are important to avoid conflicts. B5.6 Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships). B5.7 Agree publicly but disobey privately to avoid conflicts if one disagrees with one’s supervisor’s opinions (Yang Feng Yin Wei). B5.8 If one disagrees with the company or government policies, one will behave as follws: “You have your policies, and I have my ways of getting around them.” (Shang You Zheng Ce, Xia You Dui Ce).

Table 6.2: The five identified project management activities

Project management activities	Description
A1	Project communication
A2	Project negotiation
A3	Project conflict resolution
A4	Project contract process
A5	Project team building

The research questionnaire used in the survey consists of four sections:

Section A: Contact information (optional)

In this section, the respondents are asked to fill in basic information such as name, company telephone number and email. This section is optional.

Section B: General information (not optional)

Gender, age and working experience in project management should be provided in this section.

Section C: Project descriptions

The basic information of the project with which the respondents are/were involved should be provided.

Section D: Personal behaviours and project management activities

In this section, the respondents are asked whether the identified cultural behaviours occurred during their project-management activities. If they answer in the affirmative, they are asked to rate the importance of those behaviours.

6.3 The survey process

The research survey was carried out on a population of Chinese and South African project managers. The process comprised six steps, which will be discussed in detail below.

Step 1: Identify the typical Chinese behaviours and five project management activities

The five typical Chinese behaviours and sub-behaviours have been generalised from the literature study. Five project management activities that may be affected by cultural differences have been identified. The variables are listed in paragraph 5.2.

Step 2: A confirmation test

The purpose with identifying the typical Chinese behaviours from the literature study was to draw up a questionnaire based on the Chinese culture. However, the typical Chinese behaviours obtained from the literature study still needed to confirmed by a pre-test because the real Chinese survey sample might

disagree with aspects of the literature. In order for the questionnaire to be representative and reasonable, a confirmation test was conducted to eliminate the behaviours that Chinese people disagreed with from the literature study. The number of participants of the confirmation test is 25 Chinese project managers selected from the advanced project management course (they have at least 3 years working experience). A behaviour was eliminated when more than 50% of the respondents rejected it.

After the confirmation test, the Chinese behaviours to be surveyed were modified and renumbered, as indicated in the following tables.

Table 6.3: Revised Chinese behaviours

Typical Chinese behaviours and descriptions
B1: Philosophy of surviving: Ming Zhe Bao Shen –wise people should be skilled at protecting themselves to avoid being involved in conflicts or fights. **Sub-behaviours** B1.1 As a manager, keep track of your team members to avoid being cheated/undermined by them one day. B1.2 As a team member, always protect yourself first when doing a job to avoid risks. B1.3 Trust can only be established after a series of tests/trials from small events. B1.4 Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame).
B2: “Face/image” is important to Chinese as it represents prestige, respect, dignity and social status. **Sub-behaviours** B2.1 Commenting directly on others’ opinions or rejecting them to make them lose “face/image”. B2.2 Saving others “face/image” to maintain harmonious Guanxi (personal relationships). B2.3 “Face/image” is more important than profits in some cases. B2.4 Strive for your own face/image to be recognised and save others' “face/image” at the same time.

Typical Chinese behaviours and descriptions
B3: Personal relationships: Guanxi –is critical for getting favours and conducting business successfully. **Sub-behaviours** B3.1 Developing Guanxi (personal relationships) is an important job for a manager. B3.2 Guanxi (personal relationships) is a source of a sustainable competitive advantage. B3.3 Prefer business partners with good Guanxi (personal relationships). B3.4 Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships). B3.5 The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager. B3.6 Reciprocity determines whether Guanxi (personal relationships) can be established successfully.
B4: Communication – the purpose is maintaining satisfactory harmony. **Sub-behaviours** B4.1 Communicating appropriately is more important than revealing the truth. B4.2 Announce decisions during meetings while discussions should be held upfront and privately. B4.3 Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen)
B5: Conflict-solving: Hua Jie –softening, smoothing, compromising and aligning instead of direct solving to uphold harmonious relationships. **Sub-behaviours** B5.1 Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi). B5.2 Not causing others to lose face/image in the conflict-solving process (Liu Mianzi). B5.3 Believe that personal trust and mutual interests are important to avoid conflicts. B5.4 Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships).

After comparing Table 6.2 with Table 6.3, nine identified Chinese behaviours (B1.4, B3.4, B3.7, B4.1, B4.5, B5.1, B5.2, B5.7 and B5.8) were deleted in accordance with the confirmation test. After having revised the surveyed

Chinese behaviours, the generalised variables in the main survey are listed in the following tables (table 6.4 to 6.8):

Table 6.4: Variables generalised from B1

B1: Philosophy of surviving: Ming Zhe Bao Shen – wise people should be skilled at protecting themselves to avoid being involved in conflicts or fights.	
B1.1A1	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project communication.
B1.1A2	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project negotiation.
B1.1A3	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project conflict resolution.
B1.1A4	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project contract process.
B1.1A5	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project team building.
B1.2A1	As a team member, always protect yourself first when doing a job to avoid risks during project communication.
B1.2A2	As a team member, always protect yourself first when doing a job to avoid risks during project negotiation.
B1.2A3	As a team member, always protect yourself first when doing a job to avoid risks during project conflict resolution.
B1.2A4	As a team member, always protect yourself first when doing a job to avoid risks during project contract process.
B1.2A5	As a team member, always protect yourself first when doing a job to avoid risks during project team building.
B1.3 A1	Trust can only be established after a series of tests/trials from small events during project communication.
B1.3 A2	Trust can only be established after a series of tests/trials from small events during project negotiation.
B1.3 A3	Trust can only be established after a series of tests/trials from small events during project conflict resolution.
B1.3 A4	Trust can only be established after a series of tests/trials from small events during project contract process.
B1.3 A5	Trust can only be established after a series of tests/trials from small events during project team building
B1.4 A1	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project communication.
B1.4 A2	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project negotiation.
B1.4A3	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project conflict resolution.
B1.4A4	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project contract process.
B1.4A5	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project team building.

Table 6.5: Variables generalised from B2

B2: "Face/image" is important to Chinese people as it represents prestige, respect, dignity and social status.	
B2.1A1	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project communication.
B2.1A2	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project negotiation.
B2.1A3	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project conflict resolution.
B2.1A4	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project contract process.
B2.1A5	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project team building.
B2.2A1	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project communication.
B2.2A2	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project negotiation.
B2.2A3	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project conflict resolution.
B2.2A4	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project contract process.
B2.2A5	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project team building
B2.3A1	"Face/image" is more important than profits in some cases during project communication.
B2.3A2	"Face/image" is more important than profits in some cases during project negotiation.
B2.3A3	"Face/image" is more important than profits in some cases during project conflict resolution.
B2.3A4	"Face/image" is more important than profits in some cases during project contract process.
B2.3A5	"Face/image" is more important than profits in some cases during project team building.
B2.4A1	Strive for your own "face/image" to be recognised and save others' face at the same time during project communication.
B2.4A2	Strive for your own "face/image" to be recognised and save others' face at the same time during project negotiation.
B2.4A3	Strive for your own "face/image" to be recognised and save others' face at the same time during project conflict resolution.
B2.4A4	Strive for your own "face/image" to be recognised and save others' face at the same time during project contract process.
B2.4A5	Strive for your own "face/image" to be recognised and save others' face at the same time during project team building.

Table 6.6: Variables generalised from B3

B3: Personal relationships: Guanxi – is critical for getting favours and conducting business successfully.	
B3.1A1	Developing Guanxi (personal relationships) is an important job for a manager during project communication.
B3.1A2	Developing Guanxi (personal relationships) is an important job for a manager during project negotiation.
B3.1A3	Developing Guanxi (personal relationships) is an important job for a manager during project conflict resolution.
B3.1A4	Developing Guanxi (personal relationships) is an important job for a manager during project contract process.
B3.1A5	Developing Guanxi (personal relationships) is an important job for a manager during project team building.
B3.2A1	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project communication.
B3.2A2	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project negotiation.
B3.2A3	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project conflict resolution.
B3.2A4	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project contract process.
B3.2A5	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project team building.
B3.3A1	Prefer business partners with good Guanxi (personal relationships) during project communication.
B3.3A2	Prefer business partners with good Guanxi (personal relationships) during project negotiation.
B3.3A3	Prefer business partners with good Guanxi (personal relationships) during project conflict resolution.
B3.3A4	Prefer business partners with good Guanxi (personal relationships) during project contract process.
B3.3A5	Prefer business partners with good Guanxi (personal relationships) during project team building.
B3.4A1	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project communication.
B3.4A2	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project negotiation.
B3.4A3	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project conflict resolution.
B3.4A4	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project contract process.
B3.4A5	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project team building.
B3.5A1	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project communication.
B3.5A2	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project negotiation.
B3.5A3	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project conflict resolution.

B3: Personal relationships: Guanxi – is critical for getting favours and conducting business successfully.	
B3.5A4	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project contract process.
B3.5A5	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project team building.
B3.6A1	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project communication.
B3.6A2	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project negotiation.
B3.6A3	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project conflict resolution.
B3.6A4	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project contract process.
B3.6A5	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project team building.

Table 6.7: Variables generalised from B4

B4: Communication – maintaining satisfactory harmony is the purpose	
B4.1A1	Communicating appropriately is more important than revealing the truth during project communication.
B4.1A2	Communicating appropriately is more important than revealing the truth during project negotiation.
B4.1A3	Communicating appropriately is more important than revealing the truth during project conflict resolution.
B4.1A4	Communicating appropriately is more important than revealing the truth during project contract process.
B4.1A5	Communicating appropriately is more important than revealing the truth during project team building.
B4.2A1	Announcing decisions during meetings while discussions should be held upfront and privately during project communication.
B4.2A2	Announcing decisions during meetings while discussions should be held upfront and privately during project negotiation.
B4.2A3	Announcing decisions during meetings while discussion should be held upfront and privately project conflict resolution.
B4.2A4	Announcing decisions during meetings while discussion should be held upfront and privately during the contract process.
B4.2A5	Announce decisions during meetings while discussion should be held upfront and privately during project team building.
B4.3A1	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project communication.
B4.3A2	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project negotiation.
B4.3A3	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project conflict resolution.
B4.3A4	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project contract process.
B4.3A5	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project team building.

Table 6.8: Variables generalised from B5

B5: Conflict-solving: Hua Jie – softening, smoothing, compromising and aligning instead of direct solving to uphold harmonious relationships**.**	
B5.1A1	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during project communication.
B5.1A2	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during project negotiation.
B5.1A3	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during conflict resolution.
B5.1A4	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during the contract process.
B5.1A5	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during project team building.
B5.2A1	Not causing others to lose face/image in conflict-solving process (Liu Mianzi) during project communication.
B5.2A2	Not causing others to lose face/image in conflict-solving process (Liu Mianzi) during project negotiation.
B5.2A3	Not causing others to lose face/image in conflict-solving process (Liu Mianzi) during conflict resolution.
B5.2A4	Not causing others to lose face/image in conflict-solving (Liu Mianzi) during project contract process.
B5.2A5	Not causing others to lose face/image in conflict-solving (Liu Mianzi) during project team building.
B5.3A1	Believe that personal trust and mutual interests are important to avoid conflicts during project communication.
B5.3A2	Believe that personal trust and mutual interests are important to avoid conflicts during project negotiation.
B5.3A3	Believe that personal trust and mutual interests are important to avoid conflicts during project conflict resolution.
B5.3A4	Believe that personal trust and mutual interests are important to avoid conflicts during project contract process.
B5.3A5	Believe that personal trust and mutual interests are important to avoid conflicts during project team building.
B5.4A1	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project communication.
B5.4A2	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project negotiation.
B5.4A3	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project resolution.
B5.4A4	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project contract process.
B5.4A5	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project team building.

Step 3: Revising the questionnaire

After the confirmation test, the Chinese behaviours that were not acceptable to the Chinese people were eliminated and the questionnaire was revised in accordance with the new variables that are listed in Step 2.

Step 4: The questionnaire was sent to Chinese and South African project managers (mainly those who have attended advanced courses in engineering and technology management).

Both Chinese and South African project managers were asked to participate in this academic PhD research. The respondents filled in the questionnaire according to their working experience and knowledge. A cover letter was attached to the questionnaire to describe the purpose and contents of the research. In the letter, all respondents were thanked for using their precious time to fill in the questionnaire.

Step 5: Data collection

In the data collection process, only the valid questionnaires were recognised as useful data. The total of 200 questionnaires were distributed and after careful selection, the questionnaires of 75 Chinese project managers and 63 South African project managers were deemed to be valid. Therefore the response rate is 69%.

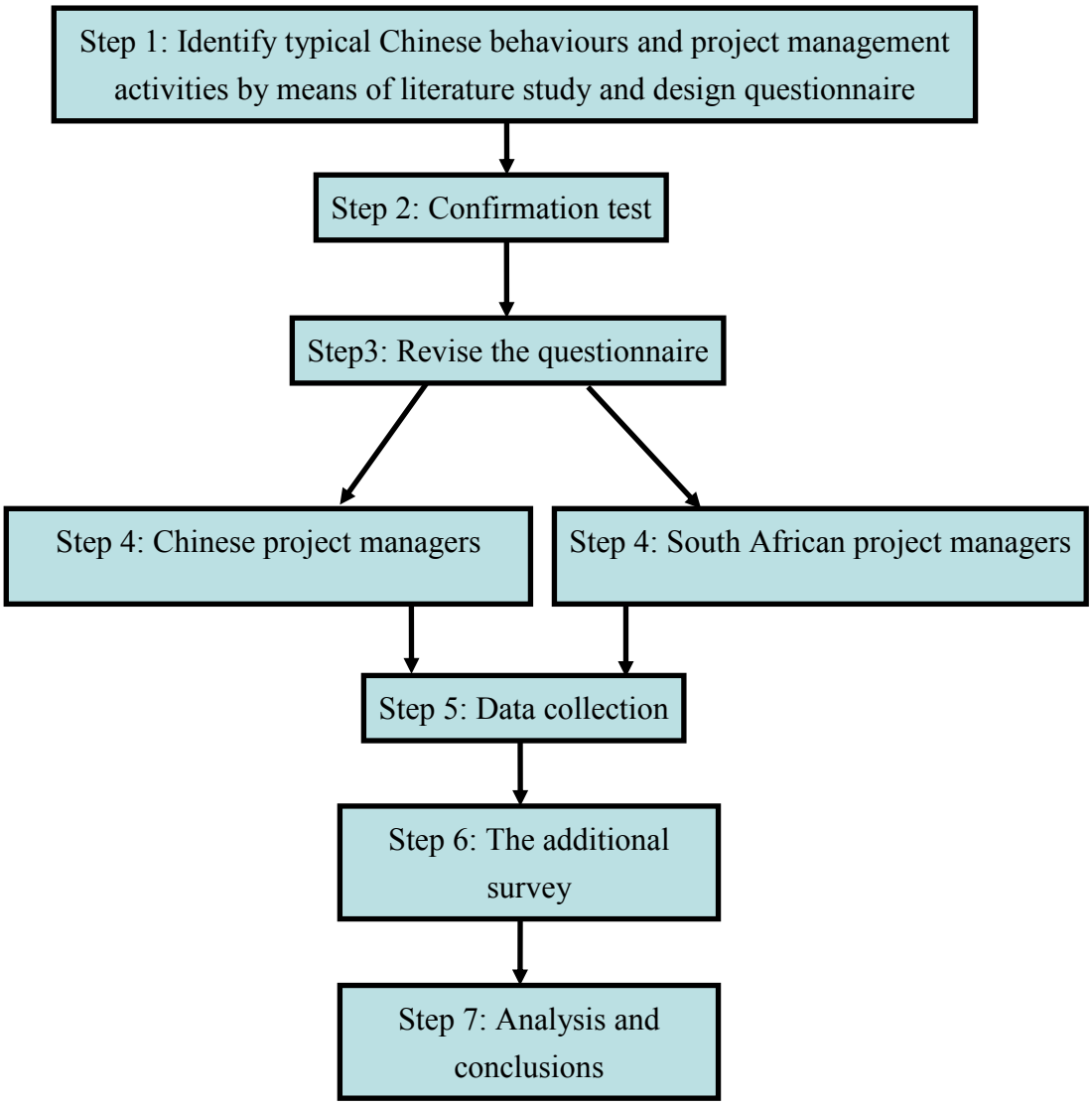
Step 6: An additional survey was conducted to obtain more information on the effect of cultural behaviours on each phase of a project and on the proposed mitigating solutions.

The purpose of the additional survey was to establish the influence of the identified cultural behaviours' effect on different project management processes and to confirm the proposed mitigating solutions that were found during the literature study.

Step 7: Data analysis and conclusion

The SPSS data analysis software was used in this research. A combination of quantitative and qualitative analysis was used in the data analysis and conclusion. The research and survey processes used are summarised in Figure 6.1.

Figure 6.1: Research and survey process



6.4 Conclusions

After the confirmation research survey, the unreasonable variables were eliminated. The variables that were used in the main research survey were renumbered and listed as indicated in tables 6.4 to 6.8. The entire survey comprised seven steps. The research methodology process is presented in Figure 6.2. In the data-collection process, only the valid questionnaires were

recognised as useful data. After careful selection, the questionnaires of 75 Chinese project managers and 63 South African project managers were deemed to be valid. In the additional survey, 40 selected valid questionnaires (20 from China and 20 from South Africa) were analysed.

The data analysis and a discussion of results are presented in Chapter 7 and some interesting points are addressed.

Chapter 7:

Date analysis and discussion of results

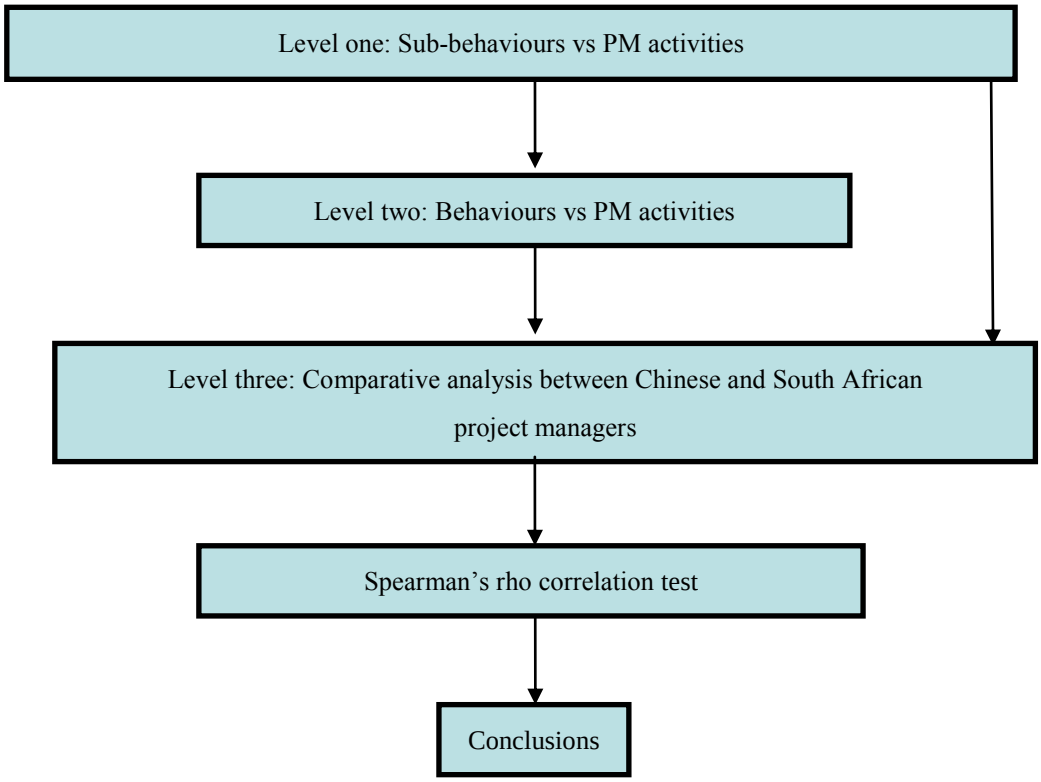
7.1 Introduction to data analysis

Although the questionnaire used in this research to assess some of the previously identified project management activities was designed based on Chinese culture, South African project managers have also been asked to participate in order to illustrate differences, where applicable. A survey was conducted to validate the cultural behaviours obtained from a literature study prior to the main survey. The questionnaire and research design were done in accordance with the recommendations of Cooper and Schindler (2006). The samples of South African (63 valid returned questionnaires) and Chinese project managers (75 valid returned questionnaires) were selected mainly from advanced courses for experienced project managers. In the questionnaire, they were asked to rate the importance of a specific cultural behaviour during a specific project activity. For example, Behaviour 2.1 during Activity 1 (denoted as B2.1A1 later in this section). A Likert scale is used in the questionnaire. If respondents choose “no”, the value is 0. If respondents choose “yes”, 1 to 5 was used to indicate the opinion on the relevant questions.

SPSS was used as the data analysis tool. A comparative study between the two samples was conducted by performing independent sample t-tests on the group means (Group 0: South African project managers, Group 1: Chinese project managers). The data analysis consists of three levels plus exploring relationships between some variables using Spearman’s rho correlation test.

The research methodology can be interpreted using the diagram in Figure 7.1.

Figure 7.1: The data analysis level



The entire data analysis process was designed in three levels, from the sub-behaviours level to group level. Each level was analysed according to the results listed in the tables. Some recommendations were made in view of the results. A comparative analysis was done in some cases, as indicated.

Level 1: Sub-behaviour vs project management activities

The survey score of each sub-behaviour was calculated to determine their degree of application against each project management activity for the two groups. Some analyses, such as ranking and comparison, were done at this level. Subsequently, a comparative analysis was conducted to evaluate the differences between Chinese and South African project managers in terms of sub-behaviour level against project management activities.

Level 2: Behaviours vs project management activities

The total score of the sub-behaviours for each behaviour was calculated using a reliability test to decide if the score could represent each behaviour. If the score was representative, a comparative analysis between Chinese and South African project managers was done. Otherwise, a factor analysis was done to compare the differences between the two groups. A corresponding analysis was conducted for each behaviour result.

Level 3: Group comparison between two groups

After the analysis of each behaviour on the second level, one comparison analysis of each behaviour vs each project management activity between Chinese and South African project managers was conducted to see if any differences existed. Some special recommendations were made on this level.

Spearman's rho correlation test:

The relationships between cultural behaviours and project activities are explored by using Spearman's rho correlation test. This statistical technique determines the strength of correlation between two variables (with a significant level of $p<0.001$). Moreover, the relationships between mitigating solutions and cultural differences are explored using the same statistical technique. Causality can however not be inferred from this test and will be the focus of future research but is excluded from the research for this thesis.

7.2 Data analysis and results

7.2.1 Demographics of participants

The demographics of the participants in the survey are described in Table 7.1. Basic information such as age and working experience is listed in the table. It is about 57.3% Chinese participants' age between and 35 years old and 63.5% that of South African participants. 54.7 % of Chinese participants and 52.4% of South African participants have working experience no more than 5 years. According to the results, the demographic profiles of the two groups are similar.

Table 7.1: Demographics of participants

Age	**Chinese**		**South African**	
	No.	Percentage	No.	Percentage
<25 years	6	8.0	2	3.2
25 <= 35 years	43	57.3	40	63.5
35 < =45 years	25	33.3	16	25.4
> 45 years	1	1.3	5	7.9
Total	75	100.0	63	100.0
Working experience	**Chinese**		**South African**	
	No.	Percentage	No.	Percentage
=<5 years	41	54.7	33	52.4
6=<10 years	24	32.0	17	27.0
11=<15 years	8	10.7	8	12.7
>15 years	2	2.7	5	7.9
Total	75	100.0	63	100.0

Figure 7.2: Age distribution of Chinese participants

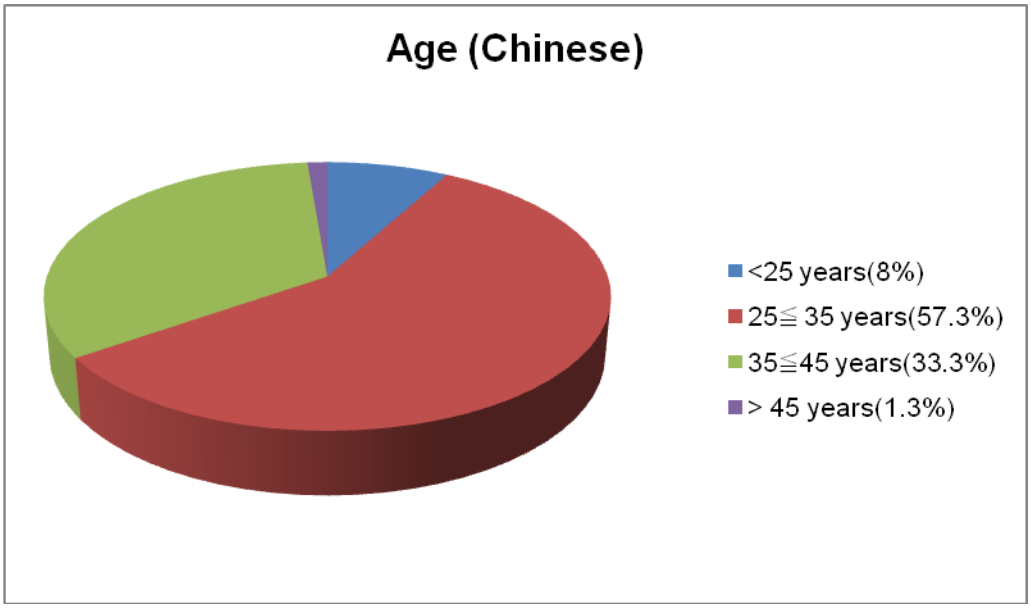


Figure 7.3: Age distribution of South African participants

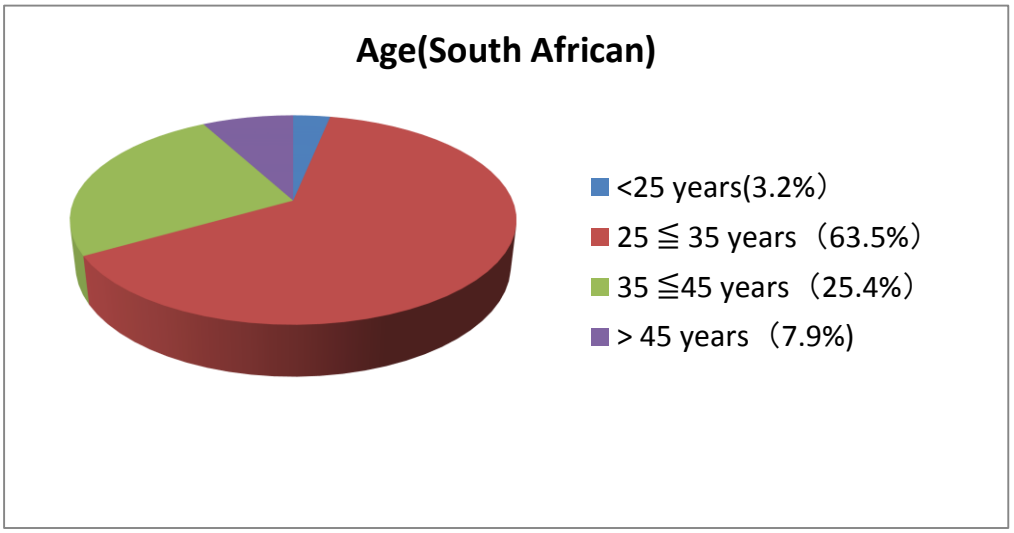


Figure 7.4: Working experience distribution of Chinese participants

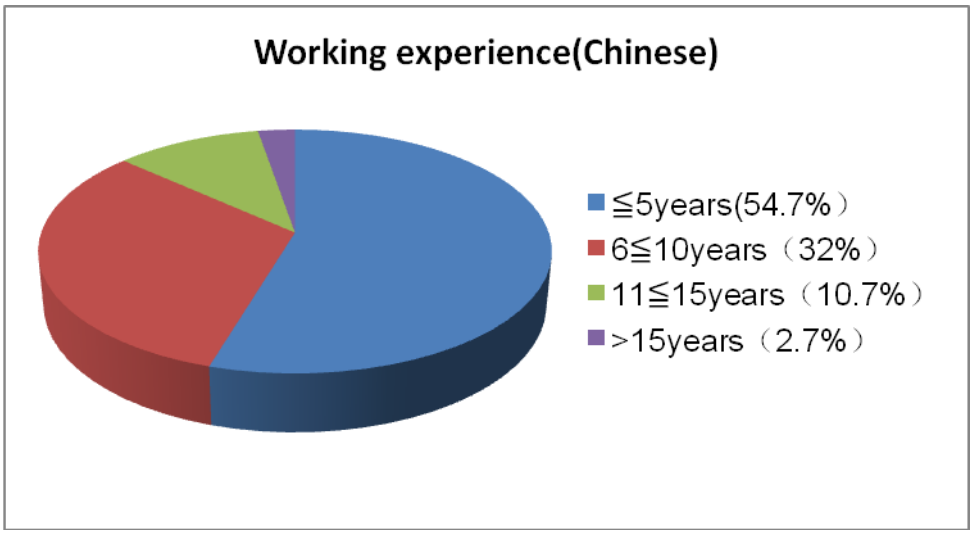


Figure 7.5: Working experience distribution of South African participants

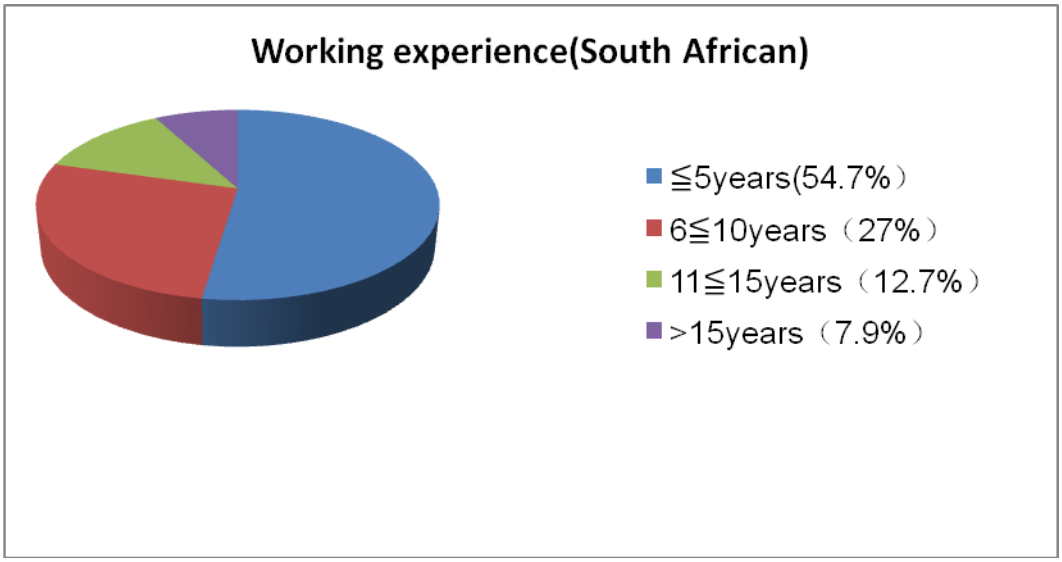
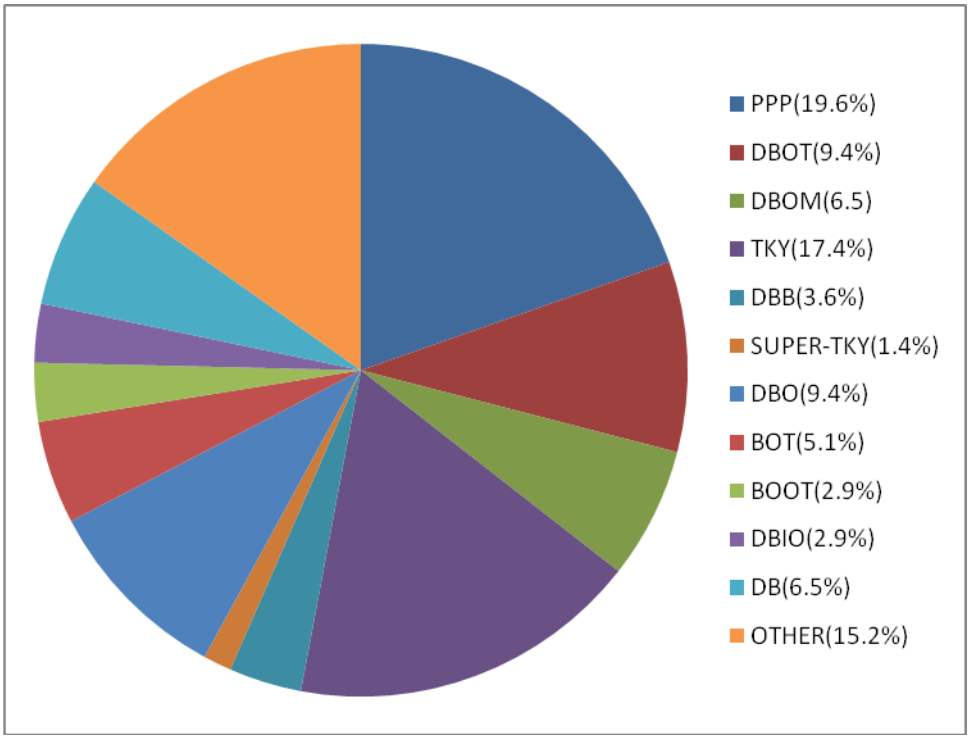


Figure 7.6: Project style distribution of participants



As indicated in Figure 7.6, 84.8% of projects that participants involved are constrcution projects. Others are 15.2%.

7.2.2 Data analysis of B1 vs PM activities (A1 to A5)

The variables identified in the survey of B1 are listed in the following table:

Table 7.2: Identified variables in B1

B1: Philosophy of surviving: Ming Zhe Bao Shen – wise people should be skilled at protecting themselves to avoid being involved in conflicts or fights.	
B1.1A1	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project communication.
B1.1A2	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project negotiation.
B1.1A3	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project conflict resolution.
B1.1A4	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project contract process.
B1.1A5	As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project team building.
B1.2A1	As a team member, always protect yourself first when doing a job to avoid risks during project communication.
B1.2A2	As a team member, always protect yourself first when doing a job to avoid risks during project negotiation.
B1.2A3	As a team member, always protect yourself first when doing a job to avoid risks during project conflict resolution.
B1.2A4	As a team member, always protect yourself first when doing a job to avoid risks during project contract process.
B1.2A5	As a team member, always protect yourself first when doing a job to avoid risks during project team building.
B1.3 A1	Trust can only be established after a series of tests/trials from small events during project communication.
B1.3 A2	Trust can only be established after a series of tests/trials from small events during project negotiation.
B1.3 A3	Trust can only be established after a series of tests/trials from small events during project conflict resolution.
B1.3 A4	Trust can only be established after a series of tests/trials from small events during project contract process.
B1.3 A5	Trust can only be established after a series of tests/trials from small events during project team building
B1.4 A1	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project communication.
B1.4 A2	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project negotiation.
B1.4A3	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project conflict resolution.
B1.4A4	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project contract process.
B1.4A5	Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project team building.

Level 1: Data analysis of surviving behaviour effects on PM activities at sub-behaviour level

Certain variables are highlighted to assist the reader in understanding the discussions that follow the tables.

Table 7.3: Survey results of Chinese respondents on Level 1 of B1

Chinese	N	Minimum	Maximum	Mean	Std. deviation
B1.3.A1	75	0	5	3.71	1.531
B1.1.A1	75	0	5	3.43	1.726
B1.3.A5	75	0	5	2.84	1.838
B1.1.A5	75	0	5	2.76	1.859
B1.4.A1	75	0	5	2.75	1.932
B1.1.A4	75	0	5	2.69	1.770
B1.4.A3	75	0	5	2.67	1.913
B1.3.A3	75	0	5	2.65	1.797
B1.2.A4	75	0	5	2.52	1.982
B1.2.A3	75	0	5	2.35	1.856
B1.1.A3	75	0	5	2.32	1.725
B1.3.A2	75	0	5	2.21	1.855
B1.3.A4	75	0	5	2.20	1.867
B1.2.A2	75	0	5	2.17	1.920
B1.4.A5	75	0	5	2.11	1.997
B1.2.A1	75	0	5	2.00	1.845
B1.4.A2	75	0	5	1.92	1.937
B1.2.A5	75	0	5	1.88	1.881
B1.1.A2	75	0	5	1.65	1.573
B1.4.A4	75	0	5	1.57	1.932

Table 7.4: Survey results of South African respondents on Level 1 of B1

South African	N	Minimum	Maximum	Mean	Std. deviation
B1.1.A1	63	0	5	3.33	1.503
B1.2.A1	63	0	5	3.10	1.701
B1.3.A1	63	0	5	2.87	1.809
B1.3.A5	63	0	5	2.71	1.979
B1.1.A5	63	0	5	2.68	1.925
B1.1.A3	63	0	5	2.59	1.593
B1.1.A4	63	0	5	2.56	1.890
B1.2.A4	63	0	5	2.48	1.891
B1.2.A3	63	0	5	2.30	1.811
B1.1.A2	63	0	5	2.21	1.797
B1.3.A4	63	0	5	2.14	2.007
B1.3.A3	63	0	5	2.13	1.888
B1.2.A2	63	0	5	2.11	1.824
B1.3.A2	63	0	5	2.08	1.817
B1.4.A1	63	0	5	1.98	1.988
B1.4.A3	63	0	5	1.94	1.917
B1.4.A5	63	0	5	1.92	1.994
B1.2.A5	63	0	5	1.81	1.857
B1.4.A2	63	0	5	1.73	1.944
B1.4.A4	63	0	5	1.46	1.803

Chinese project managers gave higher ratings to B1.3A1 (Trust can only be established after a series of tests/trials from small events during project communication) and B1.1A1 (As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project communication), for which the values were above 3.00. This means that

Chinese project managers do not easily trust team members or counterparts. This result indicates that Chinese project managers feel strongly about risk avoidance during project management activities. On the other hand, South African project managers rated B1.1A1 (As a manager, keep track of your team members to avoid being cheated/undermined by them one day during project communication) and B1.2A1 (As a team member, always protect yourself first when doing a job, to avoid risks during project communication) a value above 3.00. This shows that South African project managers have high-risk avoidance characteristics as well.

A very interesting phenomenon was observed, namely that B1.4A4 (Life is much more important than Ming Li (wealth and fame) and one does not strive for Ming Li (wealth and fame) during project contract process) were both rated at the lowest value. Both groups of respondents believed that a project contract process should strive for benefit.

We can also note from above tables that South African project managers all gave very low response values to variables from B1.4A1 to B1.4A5 (five out of six lowest values). This shows that B1.4 of South African respondents has very little effect on the five project activities. However, Chinese respondents gave a relatively high value to the variables of B1.4A1 to B1.4A3. This illustrates that the effect of behaviour B1.4 of Chinese respondents does affect project communication and conflict resolution.

Level 2: philosophy of surviving behaviour effects on PM activities

In this section, an average value of rated sub-behaviour is calculated to represent a philosophy of surviving behaviour AveB1Ax:

AveB1Ax = (B1.1Ax+B1.2Ax+B1.3Ax+B1.4Ax)/4

Table 7.5: Survey results of Chinese respondents on Level 2 of B1

Chinese	N	Minimum	Maximum	Mean	Std. deviation
AVEB1A1	75	0	5	2.9700	1.09356
AVEB1A3	75	0	5	2.4967	1.15189
AVEB1A5	75	0	5	2.3967	1.20605
AVEB1A4	75	0	5	2.2467	1.25033
AVEB1A2	75	0	5	1.9900	1.16061

Table 7.6: Survey results of South African respondents on Level 2 of B1

South African	N	Minimum	Maximum	Mean	Std. deviation
AVEB1A1	63	0	5	2.8214	1.09841
AVEB1A3	63	0	5	2.2817	1.39085
AVEB1A5	63	0	5	2.2381	1.25276
AVEB1A4	63	0	5	2.1587	1.31853
AVEB1A2	63	0	5	2.0317	1.37187

Note: the reliability test has proven that B1 can be represented by sub-behaviours.

B1A1 (Philosophy of surviving: Ming Zhe Bao Shen – wise people should be skilled at protecting themselves to avoid being involved in conflicts or fights during project communication) was rated the highest by both Chinese and

South African project managers, as can be seen in tables 7.5 and 7.6. This indicates that the philosophy of surviving has a relatively big effect on project communication in both groups. Both Chinese and South African project managers have a tendency to protect themselves when communicating in project management.

Attention should be given to B1A2 (Philosophy of surviving: Ming Zhe Bao Shen – wise people should be skilled at protecting themselves to avoid being involved in conflicts or fights during project negotiation). B1A2 was rated the lowest by both groups. It is interesting to conclude that respondents from China and South Africa will not protect themselves too much and will dare to take some kind of risk in project negotiation. Therefore, the impact of a philosophy of surviving is small on the two groups during negotiation.

Level 3: Group comparative analysis of philosophy of surviving behaviour of Chinese and South African project managers

In this section, the independent sample's t-test was employed to compare group means from the results of the data analysis of Level 2.

There are two groups: South African project managers (denoted as group 0) and Chinese project managers (Group 1). The purpose of this test was to explore if there is any difference between the ways in the two groups rate the impacts of each behaviour on the five project activities. A significant level of 0.05 is selected (95% confidence that the difference is not a chance difference).

Table 7.7: Survey results of Chinese and South African respondents on Level 3 of B1

	South African/ Chinese	N	Mean	Std. deviation	Sig/No (level 0.05)
AVEB1A1	South African	63	2.8214	1.09841	No
	Chinese	75	2.9700	1.09356	
AVEB1A2	South African	63	2.0317	1.37187	No
	Chinese	75	1.9900	1.16061	
AVEB1A3	South African	63	2.2381	1.25276	No
	Chinese	75	2.4967	1.15189	
AVEB1A4	South African	63	2.1587	1.31853	No
	Chinese	75	2.2467	1.25033	
AVEB1A5	South African	63	2.2817	1.39085	No
	Chinese	75	2.3967	1.20605	

The survey results show that there is no significant difference between Chinese and South African project managers on the effect of item of B1 (Philosophy of surviving) on the five identified project activities (A1 to A5).

7.2.3 Data analysis of B2 vs PM activities (A1 to A5)

The variables identified in the survey are listed in Table 7.8 below.

Table 7.8: Identified variables in B2

B2: "Face/image" is important to Chinese people as it represents prestige, respect, dignity and social status.	
B2.1A1	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project communication.
B2.1A2	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project negotiation.
B2.1A3	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project conflict resolution.
B2.1A4	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project contract process.
B2.1A5	Commenting directly on or rejecting others' opinions to make them lose "face/image" during project team building.
B2.2A1	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project communication.
B2.2A2	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project negotiation.
B2.2A3	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project conflict resolution.
B2.2A4	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project contract process.
B2.2A5	Saving others' "face/image" to maintain harmonious Guanxi (personal relationships) during project team building
B2.3A1	"Face/image" is more important than profits in some cases during project communication.
B2.3A2	"Face/image" is more important than profits in some cases during project negotiation.
B2.3A3	"Face/image" is more important than profits in some cases during project conflict resolution.
B2.3A4	"Face/image" is more important than profits in some cases during project contract process.
B2.3A5	"Face/image" is more important than profits in some cases during project team building.
B2.4A1	Strive for your own "face/image" to be recognised and save others' face at the same time during project communication.
B2.4A2	Strive for your own "face/image" to be recognised and save others' face at the same time during project negotiation.
B2.4A3	Strive for your own "face/image" to be recognised and save others' face at the same time during project conflict resolution.
B2.4A4	Strive for your own "face/image" to be recognised and save others' face at the same time during project contract process.
B2.4A5	Strive for your own "face/image" to be recognised and save others' face at the same time during project team building.

Level 1: Data analysis of the effects of "face/image" behaviour on PM activities at sub-behaviour level

Table 7.9: Survey results of Chinese respondents on Level 1 of B2

Chinese	N	Minimum	Maximum	Mean	Std. deviation
B2.2.A1	75	0	5	3.72	1.429
B2.4.A1	75	0	5	3.52	1.554
B2.4.A3	75	0	5	3.21	1.613
B2.4.A2	75	0	5	2.93	1.679
B2.1.A1	75	0	5	2.91	1.847
B2.2.A2	75	0	5	2.75	1.853
B2.3.A1	75	0	5	2.61	1.747
B2.4.A5	75	0	5	2.56	1.772
B2.3.A3	75	0	5	2.47	1.711
B2.2.A3	75	0	5	2.27	1.913
B2.2.A5	75	0	5	2.25	1.889
B2.1.A3	75	0	5	2.16	1.925
B2.3.A5	75	0	5	2.00	1.924
B2.4.A4	75	0	5	1.92	1.844
B2.1.A2	75	0	5	1.77	1.871
B2.1.A5	75	0	5	1.75	1.802
B2.3.A2	75	0	5	1.69	1.747
B2.2.A4	75	0	5	1.63	1.858
B2.3.A4	75	0	5	1.43	1.764
B2.1.A4	75	0	5	1.32	1.733

Table 7.10: Survey results of South African respondents on Level 1 of B2

South African	N	Minimum	Maximum	Mean	Std. deviation
B2.2.A1	63	0	5	2.73	1.825
B2.4.A1	63	0	5	2.41	1.793
B2.4.A3	63	0	5	2.30	1.898
B2.4.A5	63	0	5	2.30	1.964
B2.2.A2	63	0	5	2.24	1.820
B2.4.A2	63	0	5	2.21	1.815
B2.2.A3	63	0	5	2.16	1.825
B2.2.A5	63	0	5	2.16	1.928
B2.4.A4	63	0	5	2.06	1.839
B2.3.A5	63	0	5	1.97	1.934
B2.3.A1	63	0	5	1.75	1.750
B2.3.A3	63	0	5	1.73	1.743
B2.3.A2	63	0	5	1.60	1.709
B2.2.A4	63	0	5	1.59	1.681
B2.1.A3	63	0	5	1.46	1.767
B2.1.A2	63	0	5	1.46	1.785
B2.1.A1	63	0	5	1.32	1.865
B2.3.A4	63	0	5	1.27	1.598
B2.1.A5	63	0	5	1.14	1.865
B2.1.A4	63	0	5	1.10	1.604

The results indicate that the top three variables of both surveyed groups are the same.

B2.2A1: Saving others' “face/image” to maintain harmonious Guanxi (personal relationships) during project communication.

B2.4A1: Strive for your own “face/image” to be recognised and save others’ face at the same time during project communication.

B2.4A3: Strive for your own “face/image” to be recognised and save others’ face at the same time during conflict resolution.

The respondents show similar perceptions of the above behaviours during project communication and conflict resolution. It seems that during project communication and conflict resolution, “face/image” is important for Chinese and South African respondents. They do not like to lose “face/image” in project communication and conflict resolution activities.

B2.1.A4 (Commenting directly on or rejecting others’ opinions to make them lose “face/image” during project contract process) is another variable that should be noted. It was rated the lowest by both Chinese and South African respondents. Communicating directly with little concern for the “face/image” of one's counterpart in project contract process attracted remarkable consensus from both groups.

It is worth noting that B2.1.A1 (Commenting directly or rejecting on others’ opinions to make them lose “face/image” during project communication) was rated highly by Chinese respondents and very low by South African respondents. There is a real difference between the two groups on this

variable. Chinese project managers consider the “face/image” of others more than South African project managers during project communication. It seems that “face/image” is not that important to South African project managers during project communication.

Level 2: The effects of “face/image” behaviour on PM activities

In this section, the average value of rated sub-behaviour is calculated to represent philosophy of surviving behaviour AveB1Ax:

AveB2Ax = (B2.1Ax+B2.2Ax+B2.3Ax+B2.4Ax)/4

Table 7.11: Survey results of Chinese respondents on Level 2 of B2

Chinese	N	Minimum	Maximum	Mean	Std. deviation
aveB2A1	75	0	5	3.1900	1.13961
aveB2A3	75	0	5	2.5267	1.28962
aveB2A2	75	0	5	2.2867	1.24844
aveB2A5	75	0	5	2.1400	1.35270
aveB2A4	75	0	5	1.5733	1.39423

Table 7.12: Survey results of South African respondents on Level 2 of B2

South African	N	Minimum	Maximum	Mean	Std. deviation
aveB2A1	63	0	5	2.0516	1.21662
aveB2A3	63	0	5	1.9127	1.21662
aveB2A5	63	0	5	1.8929	1.34233
aveB2A2	63	0	5	1.8770	1.14465
aveB2A4	63	0	5	1.5040	1.21855

Note: the reliability test has proven the B2 can be represented by sub-behaviours.

It is can be seen from tables 7.11 and 7.12 that the mean of the score for “face/image” behaviour of Chinese respondents is much higher than that of South African respondents. The recognition of “face/image” in the identified five project management activities by Chinese project managers is much higher than that of South African project managers. However, behaviour B2A4 was given almost the same low scores by both groups. This indicates that both groups believe that “face/image” in the project contract process is not a critical factor to be considered.

Level 3: Group comparative analysis of “face/image” behaviour by Chinese and South African project managers

In this section, the independent sample’s t- test is employed to compare group means from the results of the data analysis of Level 2.

There are two groups: South African project managers (denoted as group 0) and Chinese project managers (Group 1). The purpose of this test is to determine if there is any difference between the ways in which the two groups rate the impacts of each behaviour on the five project activities. A significant level of 0.05 is selected (95% confidence that the difference is not a chance difference).

Table 7.13: Survey results of Chinese and South African respondents on Level 3 of B2

	South African/ Chinese	N	Mean	Std. deviation	Sig/No (level 0.05)
Average of B2A1	South African	63	2.0516	1.21662	Sig
	Chinese	75	3.1900	1.13961	
Average of B2A2	South African	63	1.8770	1.14465	Sig
	Chinese	75	2.2867	1.24844	
Average of B2A3	South African	63	1.9127	1.21662	Sig
	Chinese	75	2.5267	1.28962	
Average of B2A4	South African	63	1.5040	1.21855	No
	Chinese	75	1.5733	1.39423	
Average of B2A5	South African	63	1.8929	1.34233	No
	Chinese	75	2.1400	1.35270	

Generally, there are significant differences between Chinese and South African project managers' “face/image” behaviour with regard to three project activities (A1: project communication, A2: project negotiation, and A3: project conflict resolution), as can be seen from Table 7.13. These differences could have a negative impact on project communication, negotiation and conflict resolution, and thus lead to more problems. Chinese project managers consider the “face/image” as representative of prestige, respect, dignity and social status, but it seems as if South African project managers do not care about Chinese project managers’ “face/image” during project communication, negotiation and conflict resolution. Some difficulties may arise in the above project management activities of international engineering teams because of cultural differences. Chinese project managers also seem to realise that

South African project managers do not have the same conception of "face/image" in some project management activities, as can be gathered from Table 7.13.

7.2.4 Data analysis of B3 vs PM activities (A1 to A5)

The relevant variables identified in the survey are listed in Table 7.14 below.

Table 7.14: Identified variables in B3

B3: Personal relationships: Guanxi – is critical for getting favours and conducting business successfully.	
B3.1A1	Developing Guanxi (personal relationships) is an important job for a manager during project communication.
B3.1A2	Developing Guanxi (personal relationships) is an important job for a manager during project negotiation.
B3.1A3	Developing Guanxi (personal relationships) is an important job for a manager during project conflict resolution.
B3.1A4	Developing Guanxi (personal relationships) is an important job for a manager during project contract process.
B3.1A5	Developing Guanxi (personal relationships) is an important job for a manager during project team building.
B3.2A1	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project communication.
B3.2A2	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project negotiation.
B3.2A3	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project conflict resolution.
B3.2A4	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project contract process.
B3.2A5	Guanxi (personal relationships) is a resource of sustainable competitive advantage during project team building.
B3.3A1	Prefer business partners with good Guanxi (personal relationships) during project communication.
B3.3A2	Prefer business partners with good Guanxi (personal relationships) during project negotiation.
B3.3A3	Prefer business partners with good Guanxi (personal relationships) during project conflict resolution.
B3.3A4	Prefer business partners with good Guanxi (personal relationships) during project contract process.

B3: Personal relationships: Guanxi – is critical for getting favours and conducting business successfully.	
B3.3A5	Prefer business partners with good Guanxi (personal relationships) during project team building.
B3.4A1	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project communication.
B3.4A2	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project negotiation.
B3.4A3	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project conflict resolution.
B3.4A4	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project contract process.
B3.4A5	Establishing trust and face/image saving are the foundations of establishing good Guanxi (personal relationships) during project team building.
B3.5A1	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project communication.
B3.5A2	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project negotiation.
B3.5A3	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project conflict resolution.
B3.5A4	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project contract process.
B3.5A5	The ability to build good Guanxi (personal relationships) is a critical criterion for a competitive manager during project team building.
B3.6A1	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project communication.
B3.6A2	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project negotiation.
B3.6A3	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project conflict resolution.
B3.6A4	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project contract process.
B3.6A5	Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project team building.

Level 1: Data analysis of the effects of personal relationships (Guanxi) behaviour on PM activities at a sub-behaviour level

Table 7.15: Survey results of Chinese respondents on Level 1 of B3

Chinese	N	Minimum	Maximum	Mean	Std. deviation
B3.1.A1	75	0	5	4.03	1.230
B3.4.A1	75	0	5	3.60	1.375
B3.2.A1	75	0	5	3.56	1.445
B3.1.A5	75	0	5	3.31	1.668
B3.6.A1	75	0	5	3.25	1.817
B3.5.A1	75	0	5	3.20	1.708
B3.3.A1	75	0	5	3.07	1.758
B3.1.A3	75	0	5	3.05	1.723
B3.2.A5	75	0	5	2.99	1.842
B3.2.A3	75	0	5	2.95	1.700
B3.1.A2	75	0	5	2.92	1.873
B3.2.A2	75	0	5	2.87	1.803
B3.6.A2	75	0	5	2.85	1.814
B3.5.A5	75	0	5	2.80	1.867
B3.5.A2	75	0	5	2.79	1.840
B3.4.A2	75	0	5	2.79	1.605
B3.4.A5	75	0	5	2.77	1.907
B3.6.A4	75	0	5	2.72	1.983
B3.4.A3	75	0	5	2.68	1.795
B3.5.A3	75	0	5	2.67	1.982
B3.1.A4	75	0	5	2.60	1.993
B3.2.A4	75	0	5	2.60	1.845
B3.6.A3	75	0	5	2.57	1.939
B3.3.A2	75	0	5	2.53	1.870
B3.3.A4	75	0	5	2.51	1.906
B3.3.A5	75	0	5	2.45	1.905
B3.6.A5	75	0	5	2.40	1.938
B3.4.A4	75	0	5	2.29	1.844
B3.5.A4	75	0	5	2.24	1.965
B3.3.A3	75	0	5	2.07	1.848

Table 7.16: Survey results of South African respondents on Level 1 of B3

South African	N	Minimum	Maximum	Mean	Std. deviation
B3.1.A1	63	0	5	3.41	1.738
B3.5.A1	63	0	5	3.21	1.824
B3.1.A5	63	0	5	3.21	1.993
B3.3.A1	63	0	5	3.03	1.858
B3.1.A2	63	0	5	2.98	1.972
B3.5.A2	63	0	5	2.89	2.017
B3.5.A3	63	0	5	2.89	1.952
B3.2.A5	63	0	5	2.87	2.136
B3.5.A5	63	0	5	2.86	2.031
B3.4.A1	63	0	5	2.81	1.874
B3.2.A1	63	0	5	2.76	2.022
B3.3.A2	63	0	5	2.76	2.046
B3.1.A3	63	0	5	2.75	2.000
B3.4.A5	63	0	5	2.68	1.999
B3.3.A5	63	0	5	2.65	2.215
B3.4.A2	63	0	5	2.63	1.970
B3.2.A2	63	0	5	2.60	2.044
B3.3.A4	63	0	5	2.59	2.076
B3.3.A3	63	0	5	2.56	2.131
B3.4.A3	63	0	5	2.38	2.075
B3.1.A4	63	0	5	2.37	2.074
B3.5.A4	63	0	5	2.32	2.078
B3.2.A3	63	0	5	2.30	2.068
B3.2.A4	63	0	5	2.22	2.075
B3.4.A4	63	0	5	2.16	1.928
B3.6.A1	63	0	5	2.05	1.938
B3.6.A2	63	0	5	1.84	1.928
B3.6.A5	63	0	5	1.76	2.014
B3.6.A3	63	0	5	1.75	1.900
B3.6.A4	63	0	5	1.51	1.795

Several interesting points were noted here. B3.1A1 (Developing Guanxi (personal relationships) is an important job for a manager during project communication) was rated the highest by both groups. The respondents agreed that using project communication to develop Guanxi (personal relationships) is an important job for a project manager. Therefore, the behaviour B3.1 has a great influence on project management activity A1. Another variable, B3.1A5 (Developing Guanxi (personal relationships) is an important job for a manager during project team building) was also given a relatively high score in the survey. It is clear that project managers place emphasis on project team building as a medium to develop Guanxi (personal relationships).

Another very special phenomenon was observed regarding B3.6 A1–B3.6A5 (see Table 7.15 and Table 7.16).

All the participating South African project managers gave those five variables (the bottom five) very low scores. However, the Chinese project managers' choices are very scattered. B3.6A2 (Reciprocity determines whether Guanxi (personal relationships) can be established successfully during project negotiation) obtained a relatively high score. The diversity of scores by Chinese respondents and the consistency of South African respondents' scores for this behaviour illustrate that B3.6 (Reciprocity determines whether Guanxi (personal relationships) can be established successfully) has little influence on the five project activities according to the South African project managers; however there seems to be differences in the degree of influence on different project activities to the Chinese project managers .

Level 2: The effects of personal relationships (Guanxi) behaviour on PM activities

In this section, the average value of rated sub-behaviour is calculated to represent philosophy of surviving behaviour AveB1Ax:

AveB3Ax = (B3.1Ax+B3.2Ax+B3.3Ax+B3.4Ax+B3.5Ax+B3.6Ax)/6

Table 7.17: Survey results of Chinese respondents on Level 2 of B3

Chinese	N	Minimum	Maximum	Mean	Std. deviation
aveB3A1	75	0	5	3.4511	1.11997
aveB3A2	75	0	5	2.7911	1.21832
aveB3A5	75	0	5	2.7867	1.30446
aveB3A3	75	0	5	2.6644	1.35885
aveB3A4	75	0	5	2.4933	1.32555

Table 7.18: Survey results of South African respondents on Level 2 of B3

South African	N	Minimum	Maximum	Mean	Std. deviation
aveB3A1	63	0	5	2.8783	1.35573
aveB3A5	63	0	5	2.6720	1.57801
aveB3A2	63	0	5	2.6190	1.55555
aveB3A3	63	0	5	2.4365	1.58748
aveB3A4	63	0	5	2.1931	1.62259

Note: The reliability test has proven that B3 can be represented by sub-behaviours.

The analysis of Level 2 shows that the results of the two groups are similar. Personal relationships (Guanxi) have a big effect on A1 (project communication) and a smaller effect on A4 (project contract process). The standard deviation of scores of the South African group is higher than that of the Chinese, probably because the cultural diversity of South Africa.

Level 3: Group comparative analysis of personal relationships (Guanxi) behaviour by Chinese and South African project managers

In this section, the independent sample's t- test is employed to compare group means from the results of the data analysis of Level 2.

There are two groups: South African project managers (denoted as group 0) and Chinese project managers (Group 1). The purpose of this test is to determine if there is any difference in the ways in which the two groups rate the impacts of each behaviour on the five project activities. A significant level of 0.05 was selected (95% confidence that the difference is not a chance difference)

Table 7.19: Survey results of Chinese and South African respondents on Level 3 of B3

	South African/ Chinese	N	Mean	Std. deviation	Sig/No (level 0.05)
Average of B3A1	South African	63	2.8783	1.35573	Sig
	Chinese	75	3.4511	1.11997	
Average of B3A2	South African	63	2.6190	1.55555	No
	Chinese	75	2.7911	1.21832	
Average of B3A3	South African	63	2.4365	1.58748	No
	Chinese	75	2.6644	1.35885	
Average of B3A4	South African	63	2.1931	1.62259	No
	Chinese	75	2.4933	1.32555	
Average of B3A5	South African	63	2.6720	1.57801	No
	Chinese	75	2.7867	1.30446	

The analysis of Level 3 showed a significant difference in the scores for variable B3A1. This means that although both groups place emphasis on personal relationships (Guanxi) during project communication (the average score is high for both groups), the influence of personal relationships (Guanxi) on project communication is seen as significantly different. The two groups may have some similarities in some sub-behaviours, but from an overall perspective of B3A1 they still have distinct perceptions of it. If they are not aware of their different perceptions of this behaviour in project communication, the result may be a barrier to a successful project for an international team composed of South African and Chinese nationals. The influence of B3 on A2, A3 and A4 is not significantly different between the surveyed groups, as can be concluded from Table 7.19.

7.2.5 Data analysis of B4 vs PM activities (A1 to A5)

The relevant variables identified in the survey are listed in Table 7.20 below.

Table 7.20: Identified variables in B4

B4: Communication – maintaining satisfactory harmony is the purpose	
B4.1A1	Communicating appropriately is more important than revealing the truth during project communication.
B4.1A2	Communicating appropriately is more important than revealing the truth during project negotiation.
B4.1A3	Communicating appropriately is more important than revealing the truth during project conflict resolution.
B4.1A4	Communicating appropriately is more important than revealing the truth during project contract process.
B4.1A5	Communicating appropriately is more important than revealing the truth during project team building.
B4.2A1	Announcing decisions during meetings while discussions should be held upfront and privately during project communication.
B4.2A2	Announcing decisions during meetings while discussions should be held upfront and privately during project negotiation.
B4.2A3	Announcing decisions during meetings while discussion should be held upfront and privately project conflict resolution.
B4.2A4	Announcing decisions during meetings while discussion should be held upfront and privately during the contract process.
B4.2A5	Announce decisions during meetings while discussion should be held upfront and privately during project team building.
B4.3A1	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project communication.
B4.3A2	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project negotiation.
B4.3A3	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project conflict resolution.
B4.3A4	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project contract process.
B4.3A5	Not delivering all the information by using vague language to protect yourself (Hua Liu San Fen) during project team building.

Level 1: Data analysis of the effects of communication behaviour on PM activities at sub-behaviour level

The analysis of the ratings (B4.1, B4.2, B4.3) for communication behaviours in activities (A1, A2, A3, A4, A5) from the survey results are shown in Table 7.21 and Table 7.22 below.

Table 7.21: Survey results of Chinese respondents on Level 1 of B4

Chinese	N	Minimum	Maximum	Mean	Std. deviation
B4.1.A1	75	0	5	2.91	1.726
B4.3.A1	75	0	5	2.31	1.924
B4.3.A2	75	0	5	2.23	1.984
B4.1.A3	75	0	5	2.17	1.920
B4.2.A1	75	0	5	2.16	1.925
B4.2.A2	75	0	5	1.81	1.964
B4.1.A5	75	0	5	1.76	1.895
B4.3.A3	75	0	5	1.72	1.857
B4.1.A2	75	0	5	1.71	1.880
B4.2.A3	75	0	5	1.69	1.860
B4.2.A5	75	0	5	1.44	1.742
B4.3.A5	75	0	5	1.43	1.702
B4.3.A4	75	0	5	1.35	1.782
B4.2.A4	75	0	5	1.35	1.728
B4.1.A4	75	0	5	1.23	1.783

Table 7.22: Survey results of South African respondents on Level 1 of B4

South African	N	Minimum	Maximum	Mean	Std. deviation
B4.2.A1	63	0	5	1.67	1.926
B4.2.A5	63	0	5	1.56	2.038
B4.1.A1	63	0	5	1.56	1.899
B4.2.A2	63	0	5	1.37	1.799
B4.3.A1	63	0	5	1.22	1.773
B4.2.A3	63	0	5	1.19	1.777
B4.1.A2	63	0	5	1.17	1.700
B4.2.A4	63	0	5	1.16	1.743
B4.3.A4	63	0	5	1.13	1.727
B4.3.A2	63	0	5	1.11	1.733
B4.3.A5	63	0	5	1.11	1.788
B4.3.A3	63	0	5	1.00	1.732
B4.1.A5	63	0	5	1.00	1.675
B4.1.A3	63	0	5	.98	1.540
B4.1.A4	63	0	5	.94	1.564

In an item level analysis, the results of Chinese project managers can be categorised into two sections according to the level of effects. The means of five items are above 2.00 (see Table 7.21). B4.1.A1 was rated the highest by the Chinese project managers. That means that, in project communication, Chinese project managers may be inclined to use appropriateness instead of telling the truth in order to maintain a harmonious relationship. B4.3.A1 is rated in the second place after B4.1.A1. This is also recognised to be a characteristic of Chinese communication behaviour in project management communication. Chinese project managers do not deliver all the information to counterparts, due to self-protection. South African project managers gave all items a low

rating on average. This seems reasonable, because this questionnaire was designed based on the Chinese culture.

An interesting point that should be noted is that one item scores below 1.00 (B4.1.A3), as shown in Table 7.22. The Chinese project managers rated this item relatively highly. There is a big difference between two groups. The implication of this is that South African project managers seem to disagree with Chinese project managers on this communication behaviour in project management activity (B4.1.A3): *Communicating appropriately is more important than revealing the truth in conflict resolution.* This means that South African managers do not behave like Chinese project managers in project conflict resolution. This situation may cause new conflicts during project conflict resolution.

Interestingly, B4.1.A4 was rated the lowest by both groups. Therefore, both sides agreed that communication in the contract process should be straight and to the point, aimed at and telling or revealing the truth.

Level 2: Communication behaviour effects on PM activities

In this section, an average value of each rated communication behaviour is calculated to represent communication AveBAx:

AveB4Ax = (B4.1Ax+B4.2Ax+B4.3Ax)/3

The reliability tests showed that B could be represented by calculating the mean of measurements B4.1, B4.2 and B4.3 for the various activities. The results of the two surveyed groups are listed in tables 7.23 and 7.24.

Table 7.23: Survey results of Chinese respondents on Level 2 of B4

Chinese	N	Minimum	Maximum	Mean	Std. deviation
AVEB4A1	75	0	5	2.4578	1.38609
AVEB4A2	75	0	5	1.9156	1.43225
AVEB4A3	75	0	5	1.8622	1.44892
AVEB4A5	75	0	5	1.5422	1.41716
AVEB4A4	75	0	5	1.3067	1.40757

Table 7.24: Survey results of South African respondents on Level 2 of B4

South African	N	Minimum	Maximum	Mean	Std. deviation
AVEB4A1	63	0	5	1.4815	1.45269
AVEB4A5	63	0	5	1.2222	1.47743
AVEB4A2	63	0	5	1.2169	1.34692
AVEB4A4	63	0	5	1.0741	1.35261
AVEB4A3	63	0	5	1.0582	1.35670

Note: The reliability test has proven that B4 can be represented by sub-behaviours.

According to Table 7.23, the outstanding average communication behaviour of project managers that affects project management activities is AveB4A1 (*A1: project communication*). AveB4A1 was rated first by the Chinese respondents. South African project managers also rated AveB4A1 the highest in the survey.

This indicates that both sides have a tendency to maintain a satisfactory and harmonious environment during project communication activities. This also shows that both South African and Chinese project managers try to avoid conflict during project communication. AveB4A4 (*in A4: Project contract process*) was rated relatively low by the two groups. This means that both Chinese and South African project managers try to convey the information in the project contract management process activity clearly and comprehensively. They endeavour to mitigate the cultural effects of communication behaviour on the contract management process. On this point, there is a similar result in the analysis of Level 1 measurement level. The average SD value is a little higher in the South African project manager group than in the Chinese project manager group. This could be because the South African culture is more diverse than that of China.

Level 3: Group comparative analysis of communication behaviours by Chinese and South African project managers

In this section, the independent sample's t- test is employed to compare group means from the results of the data analysis of Level 2.

There are two groups: South African project managers (denoted as group 0) and Chinese project managers (Group 1). The purpose of this test was to determine if there are differences in the ways in which the two groups score the impacts of each behaviour on the five project activities. A significant level of 0.05 is selected (95% confidence that the difference is not a chance difference).

From the results of the group test (Table 7.25), AveB4A1, AveB4A2 and AveB4A3 are recognised to be rated significantly differently by Chinese and South African project managers in terms of communication behaviour effects on project activities. The ultimate purpose of communication behaviour (B4) for Chinese project managers is to maintain a satisfactory harmony. In order to achieve this, Chinese project managers often use B4.1, B4.2 and B4.3 as tools. The statistical results show that the communication behaviours of the two groups in project communication (A1), project negotiation (A2) and project conflict resolution (A3) activities are significantly different. The main implication of the difference is that the South African group disagrees with the Chinese group's communication behaviour in project activities, because the mean value of the South African group is much lower than that of the Chinese group.

Table 7.25: Survey results of Chinese and South African respondents on Level 3 of B4

	South African/ Chinese	N	Mean	Std. deviation	Sig/No (level 0.05)
AVEB4A1	South African	63	1.4815	1.45269	Sig
	Chinese	75	2.4578	1.38609	
AVEB4A2	South African	63	1.2169	1.34692	Sig
	Chinese	75	1.9156	1.43225	
AVEB4A3	South African	63	1.0582	1.35670	Sig
	Chinese	75	1.8622	1.44892	
AVEB4A4	South African	63	1.0741	1.35261	No
	Chinese	75	1.3067	1.40757	
AVEB4A5	South African	63	1.2222	1.47743	No
	Chinese	75	1.5422	1.41716	

Although there is no significant difference between variables B4A4 and B4A5, this does not mean that no risks emanate from B4A4 and B4A5. It could only imply that the two groups' communication behaviours in the project contract process and project team building activities are similar.

7.2.6 Data analysis of B5 vs PM activities (A1 to A5)

The relevant variables identified in the survey are listed in Table 7.26 below.

Table 7.26: Identified variables in B5

B5: Conflict-solving: Hua Jie – softening, smoothing, compromising and aligning instead of direct solving to uphold harmonious relationships**.**	
B5.1A1	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during project communication.
B5.1A2	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during project negotiation.
B5.1A3	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during conflict resolution.
B5.1A4	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during the contract process.
B5.1A5	Indirect way of conflict-solving by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during project team building.
B5.2A1	Not causing others to lose face/image in conflict-solving process (Liu Mianzi) during project communication.
B5.2A2	Not causing others to lose face/image in conflict-solving process (Liu Mianzi) during project negotiation.
B5.2A3	Not causing others to lose face/image in conflict-solving process (Liu Mianzi) during conflict resolution.
B5.2A4	Not causing others to lose face/image in conflict-solving (Liu Mianzi) during project contract process.
B5.2A5	Not causing others to lose face/image in conflict-solving (Liu Mianzi) during project team building.
B5.3A1	Believe that personal trust and mutual interests are important to avoid conflicts during project communication.
B5.3A2	Believe that personal trust and mutual interests are important to avoid conflicts during project negotiation.
B5.3A3	Believe that personal trust and mutual interests are important to avoid conflicts during project conflict resolution.
B5.3A4	Believe that personal trust and mutual interests are important to avoid conflicts during project contract process.
B5.3A5	Believe that personal trust and mutual interests are important to avoid conflicts during project team building.
B5.4A1	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project communication.
B5.4A2	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project negotiation.
B5.4A3	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project resolution.
B5.4A4	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project contract process.
B5.4A5	Respect people who are older and have a higher status in conflict-solving in order to maintain Guanxi (personal relationships) during project team building.

Level 1: Data analysis of the effects of conflict-solving behaviour on PM activities at sub-behaviour level

Table 7.27: Survey results of Chinese respondents on Level 1 of B5

Chinese	N	Minimum	Maximum	Mean	Std. deviation
B5.4.A1	75	0	5	3.17	1.631
B5.2.A3	75	0	5	3.07	1.687
B5.3.A1	75	0	5	3.07	1.671
B5.4.A3	75	0	5	3.00	1.693
B5.2.A1	75	0	5	2.99	1.697
B5.1.A3	75	0	5	2.71	1.887
B5.1.A1	75	0	5	2.55	1.848
B5.4.A5	75	0	5	2.49	1.891
B5.2.A2	75	0	5	2.39	1.777
B5.3.A3	75	0	5	2.39	1.859
B5.3.A2	75	0	5	2.32	1.810
B5.2.A5	75	0	5	2.29	1.880
B5.4.A2	75	0	5	2.29	1.880
B5.3.A5	75	0	5	2.07	1.954
B5.1.A2	75	0	5	1.96	1.892
B5.2.A4	75	0	5	1.81	1.836
B5.1.A5	75	0	5	1.64	1.998
B5.4.A4	75	0	5	1.56	1.840
B5.3.A4	75	0	5	1.45	1.773
B5.1.A4	75	0	5	.92	1.667

Table 7.28: Survey results of South African respondents on Level 1 of B5

South African	N	Minimum	Maximum	Mean	Std. deviation
B5.4.A1	63	0	5	2.33	1.926
B5.3.A1	63	0	5	2.33	1.832
B5.3.A5	63	0	5	2.27	2.034
B5.3.A3	63	0	5	2.22	1.862
B5.4.A5	63	0	5	2.02	1.988
B5.3.A2	63	0	5	1.97	1.892
B5.4.A3	63	0	5	1.94	1.857
B5.2.A1	63	0	5	1.86	1.857
B5.2.A3	63	0	5	1.81	1.916
B5.2.A2	63	0	5	1.79	1.842
B5.3.A4	63	0	5	1.78	1.853
B5.4.A2	63	0	5	1.78	1.896
B5.2.A5	63	0	5	1.71	1.913
B5.2.A4	63	0	5	1.56	1.873
B5.4.A4	63	0	5	1.32	1.803
B5.1.A3	63	0	5	1.19	1.683
B5.1.A1	63	0	5	1.05	1.549
B5.1.A5	63	0	5	.95	1.621
B5.1.A2	63	0	5	.94	1.501
B5.1.A4	63	0	5	.87	1.529

At this level of analysis, B5.4A1 (Respect people who are older and have a higher status during conflict-solving in order to maintain Guanxi (personal relationships) during project communication) was rated in the first place by both groups. It indicates that Chinese and South African project managers consider the opinions of older people with a higher status as more important

than others in project communication during conflict resolution. In this respect, the culture-related behaviour has a similar influence on activity A1.

Another interesting variable is B5.3A5 (Believe that personal trust and mutual interests are important to avoid conflicts during project team building). The Chinese respondents gave it a low rating, and the South African group positioned this variable in the third place. It can be concluded that Chinese and South African project managers have different opinions on conflict resolution during project team building. Chinese project managers may like to use power and authority to solve conflicts during project team building and South African project managers may like to use personal trust and mutual interests such humanistic methods to avoid conflicts.

B5.1A3 (Indirect way of conflict resolution by giving evasive answers or saying "no" in a subtle and non-verbal way (Bu Shang He Qi) during conflict resolution) is another variable where a big difference in the results is evident. The Chinese group placed it in the top six, but the South Africans placed it in the last five positions. The cultural impact of conflict resolution on project activities is obviously different. This difference may easily lead to new conflicts during conflict resolution.

Another very interesting point that needs to be noted resulted from behaviours B5.1A1 to B5.1A5. The South African project managers strongly disagreed with those statements. Therefore, those variables are the last five in the results for the South African respondents; however, Chinese respondents showed a scattered distribution of ratings of these behaviours and activities.

Level 2: The effects of conflict-solving behaviour on PM activities

In this section, the average value of each rated conflict-solving behaviour was calculated to represent conflict-solving AveBAx:

AveB5Ax = (B5.1Ax +B5.2Ax+B5.3Ax+B4.4Ax)/4

The reliability tests showed that B could be represented by calculating the mean of measurements B5.1, B5.2, B3.3 and B5.4 for the various activities. The results for the two surveyed groups are listed in Table 7.29 and Table 7.30.

Table 7.29: Survey results of Chinese respondents on Level 2 of B5

Chinese	N	Minimum	Maximum	Mean	Std. deviation
AVE_B5A1	75	0	5	2.9433	1.28503
AVE_B5A3	75	0	5	2.7900	1.39802
AVE_B5A2	75	0	5	2.2400	1.36402
AVE_B5A5	75	0	5	2.1233	1.60677
AVE_B5A4	75	0	5	1.4367	1.31075

Table 7.30: Survey results of South African respondents on Level 2 of B5

South African	N	Minimum	Maximum	Mean	Std. deviation
aveB5A1	63	0	5	1.8929	1.32646
aveB5A3	63	0	5	1.7897	1.35466
aveB5A5	63	0	5	1.7381	1.51433
aveB5A2	63	0	5	1.6190	1.36404
aveB5A4	63	0	5	1.3810	1.33566

Note: the reliability test has proven that B5 can be represented by sub-behaviours.

The results show that both groups rated B5A1 and B5A4 on the second level in the first place and the last place, respectively. The means of these two variables are obviously different. It indicates the dissimilarity of cultural behaviour in B5: the effects of conflict-solving on the five identified project activities. We can conclude that the ratings of the five behaviours by South African respondents are all much lower than those of the Chinese respondents. This indicates that, from an overall point of view, there is a big difference in conflict-solving behaviour for the five project management activities.

Level 3: Group comparative analysis of conflict-resolving behaviour by Chinese and South African project managers

In this section, the independent sample's t- test was employed to compare the group means from the results of the data analysis of Level 2.

There are two groups: South African project managers (denoted as group 0) and Chinese project managers (Group 1). The purpose of this test is to determine if there are differences between the ways in which the two groups rate the impacts of each behaviour on the five project activities. A significant level of 0.05 is selected (95% confidence that the difference is not a chance difference)

Table 7.31: Survey results of Chinese and South African respondents on Level 3 of B5

	South African/ Chinese	N	Mean	Std. deviation	Sig/No (level 0.05)
Average of B5A1	South African	63	1.8929	1.32646	**Sig**
	Chinese	75	2.9433	1.28503	
Average of B5A2	South African	63	1.6190	1.36404	**Sig**
	Chinese	75	2.2400	1.36402	
Average of B5A3	South African	63	1.7897	1.35466	**Sig**
	Chinese	75	2.7900	1.39802	
Average of B5A4	South African	63	1.3810	1.33566	**No**
	Chinese	75	1.4367	1.31075	
Average of B5A5	South African	63	1.7381	1.51433	**No**
	Chinese	75	2.1233	1.60677	

The big difference in means noted previously in Table 7.29 and Table 7.30 resulted from three variables (B5A1, B5A2 and B5A3) being significantly different, as indicated in Table 7.30. This result proved the observation in the analysis of results at Level 2 for conflict-solving behaviour. South African project managers' perceptions are distinct from those of Chinese project managers in terms of project communication, project negotiation and project conflict resolution activities for conflict-solving behaviour. This situation may cause new conflicts when someone wants to solve the conflicts in the abovementioned project activities of such an international team.

7.2.7 Data analysis of Behaviours and PM activities

To further examine the relationship between culture behaviours (B1 to B5) and PM activities, Spearman's rho correlation is chosen as the statistical technique for the initial exploratory correlation analysis. The variable *cultural behaviour* is seen as how strongly the respondent behaves under the specified cultural behaviour. It is measured in this study by counting the number of 'yes' for each sub-behaviour under a main behaviour in a specific project activity in the questionnaire to indicate 'the level of existence of sub-behaviours'. When a respondent acknowledges the existence of *all* sub-behaviours (by ticking 'yes' in the questionnaire) under a specific main behaviour, he/she is strongly behaving in that specific main behaviour. If the respondent does not acknowledge the existence of one or more sub-behaviours, then the level of existence of sub-behaviours is lower and the respondent can be seen as less strongly acknowledging the specific main behaviour to the fullest extent. The other variable, PM activities, are measured by calculating the average score that the respondents rate in the questionnaire. This average score shows the level of impact of a specific behaviour on a specific PM activity. Spearman's rho is used to initially explore whether there is a statistical significant relationship between the two variables. The correlation coefficients are reported in Table 7.32. All the coefficients in the table are statistically significant ($p<0.001$) and positive. Moreover, all coefficients are larger than 0.7 indicating strong correlations. This means that there is a significant and strong positive relationship between behaviours and PM activities; however it is

realised that causality cannot be inferred from this test but will be explored in future research outside the scope of this thesis.

Table 7.32: correlation coefficients for the relationship between cultural behaviours and PM activities

	A1: *Project communication*	A2: *Project negotiation*	A3: *Project conflict resolution*	A4: *Project contract process*	A5: *Project team building*
B1: *Philosophy of surviving*	0.784	0.881	0.778	0.861	0.872
B2: *Face / Image*	0.790	0.823	0.812	0.914	0.855
B3: *Personal relationship*	0.732	0.823	0.823	0.858	0.825
B4: *Communication*	0.890	0.955	0.947	0.964	0.956
B5: *Conflict- solving*	0.854	0.917	0.877	0.957	0.937

7.3 Data analysis of additional survey

Twenty South African and twenty Chinese project managers were selected to participate in an additional survey. The participants were asked to rate the five cultural behaviours identified previously against each project management process (PMBOK 2008), using a Likert scale in order to discover the cultural behaviours' impact on project management processes. The respondents were also requested to rate the proposed mitigating solutions to overcome the cultural differences. If there was no agreement with the proposed mitigating solution, “0” should be selected, otherwise a choice of 1 to 5 was used to indicate the opinion on the relevant questions.

7.3.1 The demographics of the participants

Figure 7.7: Age distribution of participants

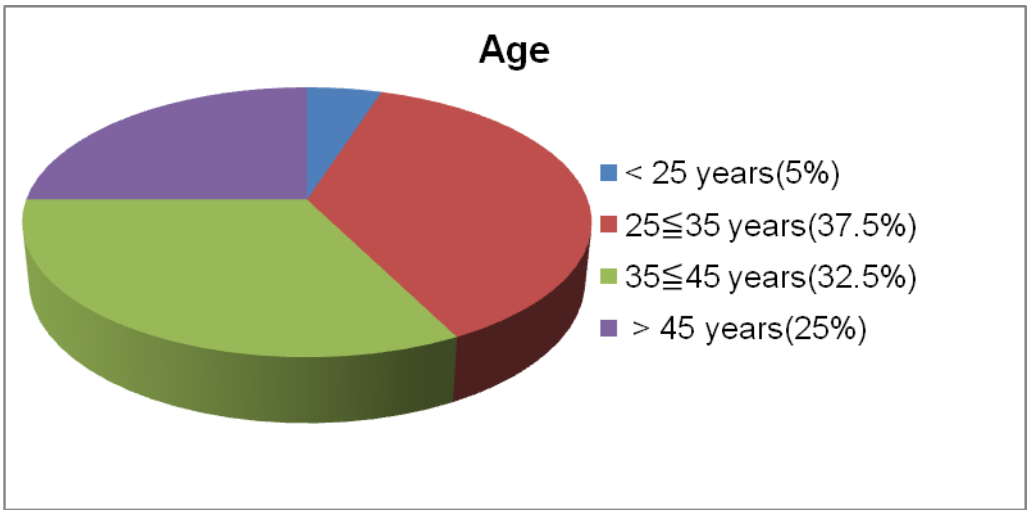
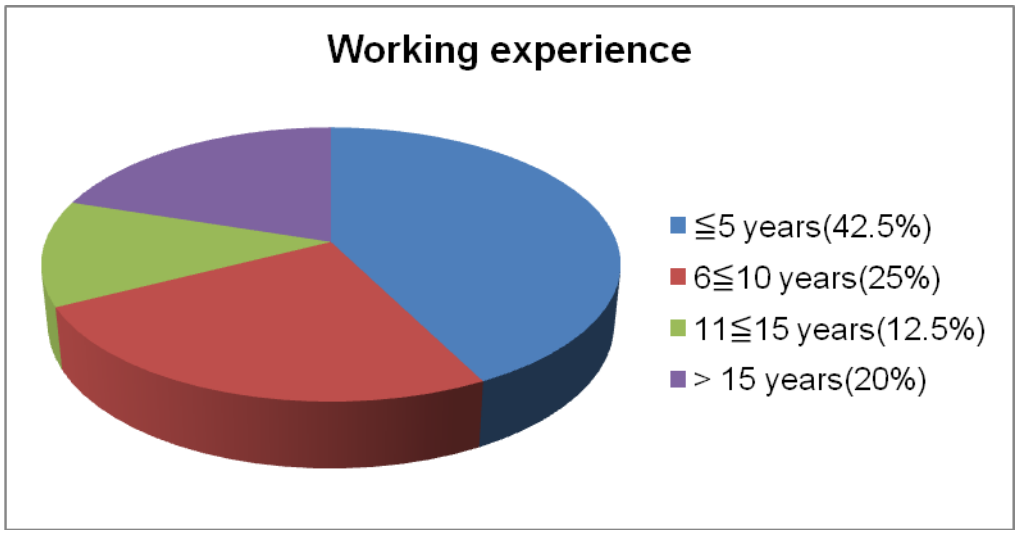


Figure 7.8: Working experience distribution of participants



7.3.2 Discussion of additional survey results

Figures 7.6 and 7.7 show that most participants (95%) are older than 25 years, and 25% of participants are more than 45 years old. Of the participants, 58.5% have six and more years of working experience, and 42.5% of participants have less than five years of working experience. The results show that the project managers from both countries have enough social and working experience, which is good for the survey. 7.3.2 Discussion of additional survey results

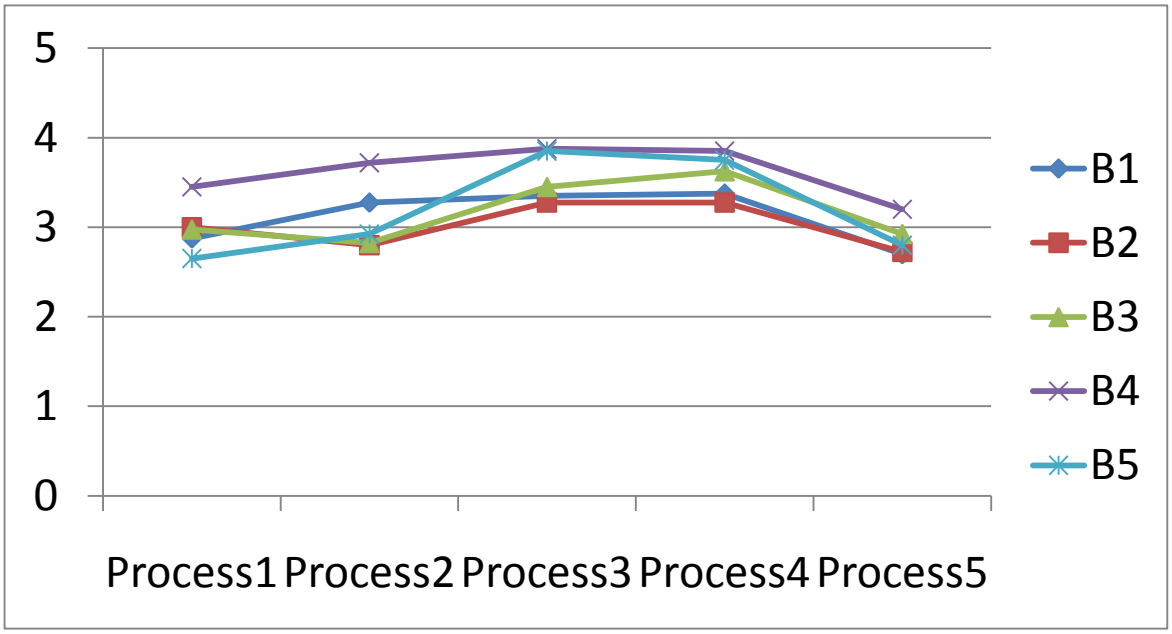
Table 7.33: Statistical results of additional survey

Behaviours		Process 1	Process 2	Process 3	Process 4	Process5
B1	Mean	2.8750	3.2750	3.3500	3.3750	2.7000
	SD	1.20229	0.96044	0.97534	1.05460	1.20256
B2	Mean	3.0000	2.8000	3.2750	3.2750	2.7250
	SD	1.06217	0.91147	0.75064	0.96044	1.01242
B3	Mean	2.9750	2.8250	3.4500	3.6250	2.9250
	SD	1.25038	0.95776	1.10824	1.03000	1.14102
B4	Mean	3.4500	3.7250	3.8750	3.8500	3.2000
	SD	0.93233	0.96044	1.04237	0.97534	0.88289
B5	Mean	2.6500	2.9250	3.8500	3.7500	2.8000
	SD	1.18862	0.97106	1.05125	1.05612	0.93918

Table 7.33 clearly shows that the participants agreed that cultural behaviours B1 to B5 do affect project management processes, because most scores are above 3.00 and the standard deviation is relatively low. The agreement can be confirmed. The influence of identified cultural behaviours on project management processes fluctuates as the projects progress. Project managers

from both countries gave scores above 3.00 on B4 in all project management processes. This shows that the participants agreed that B4 has more effect on project management processes than B1, B2 and B3.

Figure 7.9: Effect of cultural behaviours (B1-B5) in the five project management processes



The results of the additional survey (Figure 7.8) clearly show that cultural behaviours have differing effects in the project management processes in the life-cycle of a project. The cultural influence fluctuates with different project management processes. According to Figure 7.8, the influence of cultural behaviours in Process 3 and Process 4 seems to be stronger than in other processes. The results also show that the cultural behaviours have a relatively large influence in all project management processes because the Likert values are usually above 3. Furthermore, the curve for communication behaviour (B4) is very close to 4.

Some notable conclusions can be drawn from the additional survey.

- The curve of B4 is above that for other cultural behaviours in all project management processes. This indicates that communication behaviour has a greater effect than other behaviours in all project management processes because the curve of communication behaviour is very close to 4. This is a very high value in the survey. Consequently, communication behaviour is a very critical factor in project management (Gido & Clements, 2009).

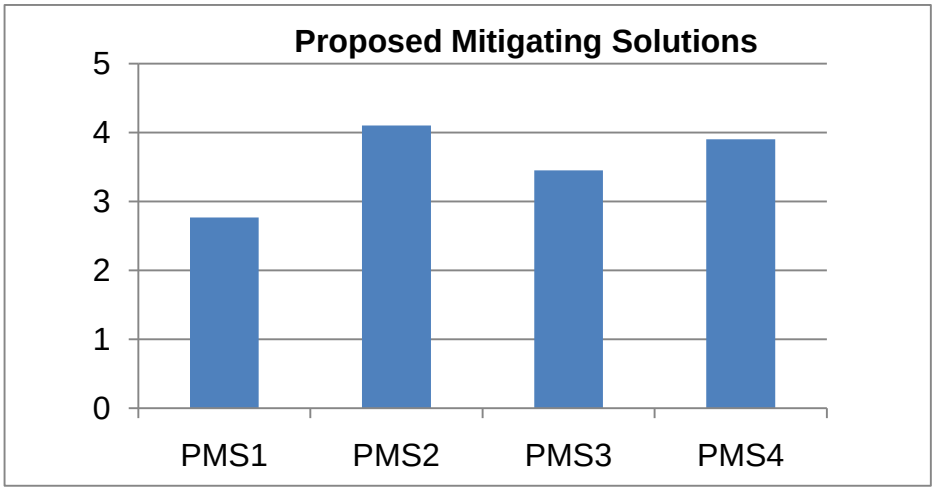
- The curve of B1 has a similar shape to that of B4, but the curve of B1 is below that of B4 (See Figure 7.8).This means that the average value of B1 is lower than B4, and therefore the degree of influence of cultural behaviour B1 is also lower than B4 for most project management processes.

  The B2, B3 and B5 behaviour groups follow a similar “S” shape across all project management processes. B5 is a special member of this group. It has a very low value in Process 1 and very high value in Process 3 and Process 4. This illustrates that there is less conflict in Process 1 than in Process3 and Process 4.

Table 7.34: Likert value results for confirmation of proposed mitigating solutions

Mitigating solutions	Percentage of disagreement	Percentage of agreement	Means and SD
Use intermediaries	5.00%	95.00%	Mean:2.7692 SD: 1.37538
Learn host country culture	2.50%	97.50%	Mean:4.1 SD :1.17233
Create organisation culture	2.50%	97.50%	Mean:3.45 SD :1.25983
Embrace different cultures	2.50%	97.50%	Mean:3.9 SD :1.29694

Figure 7.10: Statistical results for confirmation of proposed mitigating solutions



Another purpose of the additional survey was to discover whether or not the project managers agreed with the proposed mitigating solution (in section 5.7). The four proposed mitigating solutions were evaluated by 40 project managers

(20 from China and 20 from South Africa). The project managers were asked to indicate their disagreement or agreement (using a six -point Likert scale) on the workability of the proposed mitigating solutions (PMS). The results show high mean values and each with a low standard deviation, which indicates a normal distribution for each variable. The results in Figure 7.9 present a strong agreement on 4 proposed mitigating solutions (PMS). This means that the four proposed mitigating solutions may be a workable method to overcome cultural differences in project management practice. In future, project managers who are involved in leading an international project team should benefit from these results.

In order to explore the relationship between the mitigating solutions and its impact on culture differences, this study uses Spearman's rho correlation as the statistical technique. It is however realised that causality cannot be inferred from this test but will be explored in future research outside the scope of this thesis The variable, mitigating solution, is measured by counting the number of 'yes' which is seen as the degree that the respondents use these solutions. If a respondent acknowledges the use of all four mitigating solutions (by ticking 'yes' to all the questions in the questionnaire), then the degree of using mitigating solution is the highest (i.e. number of 'yes' = 4). On the other hand, if the respondent acknowledges only a few mitigating solutions, then the degree is low. The other variable, impacts on cultural differences, is measured by taking the average score of the impact of the mitigating solutions on cultural differences. After analysing the data gathered in this additional survey, the correlation coefficient is 0.867 which is statistically significant (at level

p<0.001). This result shows that there is a significant and positive relationship between mitigating solutions and impact on cultural differences.

7.4 Conclusions

In Chapter 7, the SPSS statistical analysis software was employed in the data analysis. Each cultural behaviour and project activity combination was analysed on three levels (sub-behaviours level, behaviours level and group level). From sub-behaviour level to group level, the differences and similarities were discussed. The additional survey was also discussed in this chapter. From the results, some primary conclusions could be drawn: Also conclude on the correlation tests.

Conclusion 1: The results clearly show that cultural differences affect cultural behaviours, which influence project activities. Risks could be identified due to the differences in personal behaviours because of different cultural backgrounds. The relationship between cultural difference and project success has been established.

Conclusion 2: The effect of cultural behaviours on the project activities of Chinese and South African project managers has been explored. The two groups have similar cultural behaviours in some project activities and differ in others. For example, the results show that both of them have high risk avoidance behaviours and do not easily trust their team members in the beginning. Chinese and South African respondents agree that the “face and image” are not important during the project contract process. However, South African project managers strongly disagree on communication behaviour

(B4.1A3) that obtained a very favourable rating from Chinese project managers. They also disagree on conflict solving during international engineering project team building activities.

Conclusion 3: The impact of five cultural behaviours during project management processes has been researched. The results illustrate that cultural behaviours definitely have effect on project management processes . This also illustrated that project management theory is not a universal tool, but culturally sensitive, as mentioned by Chen and Partington (2004) and Muriithi and Crawford (2003).

Conclusion 4: The proposed mitigating solutions to overcome cultural differences have been accepted by the respondents. The findings should benefit project managers who are involved in project with international engineering project teams. The proposed mitigating solutions should contribute to a reduction of risk and conflict due to their effect on the impact on cultural differences. More detailed conclusions are presented in Chapter 8.

Chapter 8: Conclusions, limitations and recommendations for future research

8.1 Introduction

The conclusions on the identified research themes and gaps will be presented in this chapter and a revised conceptual model resulting from the exploratory literature study and empirical research results discussed in previous sections will be presented. The limitations of this study will be addressed and recommendations for the further research will be made. Some novel contributions to international project performance will be presented.

8.2 Conclusions

Working in an international team is always a challenge for a project manager. Culture is a critical factor in the international project management context. The international business environment is risky and more complicated than domestic environment (Ozorhon, Arditi, Dikmen & Brigonul, 2007). This research has indicated a statistically significant difference in five cultural behaviours in five identified project management activities between South African and Chinese project managers in the engineering and construction environment. The results show that certain cultural behaviours definitely have an influence on project management activities and are therefore important to consider for project success in an international context. Project managers

usually try to adhere to certain project management theories in the international environment. However, the cultural behaviours are an influential factor that can affect the project management activities spontaneously. We cannot ignore its existence and merely copy the project management theories and methodologies of other countries. The results of this study reveal that the significant difference in cultural behaviours between the surveyed two groups may lead to difficulties and barriers to a successful project in an international engineering project management environment.

Detailed conclusions to achieve the research objectives are shown in the sections that follow.

Conclusion 1 to Research Objective 1: Identify typical Chinese behaviours and establish how Chinese behaviours affect project management activities.

The Chinese culture has a strong influence on people's minds. Chinese project managers are not excluded from this. From the empirical research results, it is evident that the Chinese culture influences Chinese project managers' behaviours in various respects. These influences further affect project activities. Some Chinese project managers' characteristics are summarised as follows:

B1. Philosophy of surviving: Ming Zhe Bao Shen – wise people should be skilled at protecting themselves to avoid being involved in conflicts or fights (Zeng, 2003; Li, 2004)

The philosophy of surviving in the Chinese culture results in Chinese project managers not easily trusting their team members or counterparts. They would like to establish trust with team members or counterparts after a series of tests/trials. From this point of view, Chinese project managers show high risk avoidance during project management activities. It is not workable with Chinese project managers to establish trust only by project communication.

Even in the project contract process activity, the philosophy of surviving still plays an important role. This is very different from South African project managers.

Although Chinese project managers overall indicate high risk avoidance, they do not protect themselves too much and dare to take risks in project negotiation. It can be concluded from this result that Chinese project managers usually are hard negotiators.

B2. "Face/image" is important to the Chinese as it represents prestige, respect, dignity and social status (Ji, 2000; leung and Chan, 2003, Yao, 2007)

During project communication, and project conflict resolution, Chinese project managers think the "face/image" is important. On the one hand, they do not want to lose "face/image" in these project activities, but on the other hand they try to save others' "face/image" and do not make counterparts lose "face/image". Therefore, it would be beneficial to South African project

managers involved in project management activities with Chinese counterparts to recognise the “face/image” perception of Chinese project managers.

However, Chinese project managers like to use direct communication and do not consider their “face/image” or that of their counterparts during the project contract process. The “face/image” issue is not very important in the project contract process.

B3. Personal relationships: Guanxi – is critical for getting favours and conducting business successfully (Davies, Leung, Luk & Wong, 1995; Arias, 1998; Xin & Pearce, 1996; Yeung & Tung, 1996; Tsang, 1998; Buckley, Clegg & Tan, 2006; Chen in Chen & Ma, 2001; Pheng & Leong, 2000)

Developing personal relationships (Guanxi) is important to Chinese project managers. They place emphasis on developing personal relationships in their daily jobs and believe that good relationships can easily bring about business favours. Chinese project managers also think that project team building is a good medium for developing personal relationships. Consequently, one should not ignore any casual contact with a Chinese project manager because it may be an opportunity to establish a good personal relationship.

Chinese project managers believe that reciprocity is the basis for establishing good personal relationships. They will even adhere to this policy in project communication and negotiation. However, South African project managers disagree strongly with them on this issue.

B4. Communication – the purpose is to maintaining satisfactory harmony (Zeng, 2003, 2005, 2007; Chen & Ma, 2001; Ma,1996)

The communication behaviour of Chinese project managers has a remarkable characteristic. They like using appropriateness instead of revealing the truth in project communication and project conflict resolution. The results further show that Chinese project managers normally do not deliver all the information in project communication. The reason for that is that Chinese project managers want to maintain a harmonious atmosphere.

However, Chinese project managers believe that they should deliver all the information and tell the truth when communicating in the project contract process.

B5. Conflict-solving: Hua Jie – softening, smoothing, compromising and aligning instead of direct solving to uphold harmonious relationships (Zeng, 2003; Chen in Chen & Ma, 2001; Leung, Koch & Lu, 2002; Hwang,1997/8; Kirkbride,Tang & Westwood,1991)

Chinese project managers respect people who are older and have a higher status in conflict solving. Therefore it is advisable to have an old person with a high status as a backup when solving conflicts with Chinese project managers.

From the research results it is evident that Chinese project managers do not want to lose “face/image” or let their counterparts lose it when solving project

conflicts. Therefore they like using an indirect way of saying “no” and believe personal trust and mutual interests are critical factors in solving project conflict.

Conclusion 2 to research objectives 2 and 3: Do a comparative study of Chinese and South African project managers to identify the risks arising from cultural differences and attempt to improve project team performance dynamics through a by systematic analysis of risks emanating from cultural differences.

A comparative empirical survey was conducted to research the differences between the two groups. The results show that Chinese and South African project managers have differences regarding some behaviours and thus affect project activities differently, which can produce potential risks. There are also some similarities between the two groups. The analysis is mainly focused on differences that cause the risks to occur. A detailed analysis is shown in the following sections.

B1. Philosophy of surviving: Ming Zhe Bao Shen – wise people should be skilled at protecting themselves to avoid being involved in conflicts or fights (Zeng, 2003; Li, 2004)

Overall, the results show that Chinese and South African project managers do not differ significantly on the effect of the philosophy of surviving on the five identified project activities. Both groups are avoid high risk by nature. Both have an intention to protect themselves in project management activities. Therefore there is only a small possibility of risks stemming from cultural

behaviour B1 (Philosophy of surviving). There is a little difference during project communication and project conflict resolution, because South African project managers are perhaps more aggressive in terms of benefits in these project activities than Chinese project managers. The results of the survey show that South African project managers have rated the statement of not striving for wealth and fame much lower than their Chinese counterparts.

B2. "Face/image" is important to Chinese as it represents prestige, respect, dignity and social status (Ji, 2000; leung & Chan, 2003; Yao, 2007)

The survey results indicate that there is no significant difference in B2 A4 and B2A5 between the two groups and there are significant differences on B2A1, B2A2 and B2A3. Therefore, the main risks are from these latter aspects. Chinese project managers consider "face/image" as a very important factor during project communication, negotiation and conflict resolution because "face/image" represents prestige, respect, dignity and social status. The different conceptions of "face/image" during those project activities will create potential risks, such as misunderstanding each other, unsatisfactory negotiation results and new conflicts during project conflict resolution. The root of those potential risks is that South African project managers treat "face/image" as less important than Chinese project managers during project activities A1, A2 and A3. For example, Chinese project managers believe that directly commenting on or rejecting the opinions of others will result in losing "face/image". South African project managers do not agree.

B3. Personal relationships: Guanxi – is critical for getting favours and conducting business successfully (Davies, Leung, Luk & Wong, 1995; Arias, 1998; Xin & Pearce, 1996; Yeung & Tung, 1996; Tsang, 1998; Buckley, Clegg & Tan, 2006; Chen in Chen & Ma, 2001; Pheng & Leong, 2000)

The results indicate that South African and Chinese project managers agree that developing personal relationships during project communication and team building is an important job of a competitive project manager.

South African project managers believe that B3.6 has little influence on the five project activities; however, Chinese project managers believe that B3.6 does have an influence on project activities. This is an obvious difference in this section. The results of the group test show that there is a significant difference between the two groups on B3A1. It means that South African and Chinese project managers have different points of view on the statement that “personal relationships are critical for getting favours and conducting business successfully during the project communication activity”. Chinese participants rated it very highly. It seems that Chinese project managers would like to use personal relationships to get favours, but South African project managers do not really believe that personal relationships are a critical factor for obtaining favours. The difference of in the perception of personal relationships (Guanxi) could cause agreement and conflicts in project communication activity.

B4. Communication – the purpose is maintaining satisfactory harmony (Zeng, 2003, 2005,2007; Chen & Ma, 2001; Ma,1996)

There is a significant difference in communication behaviour in project activities A1 (project communication), A2 (project negotiation) A3 (project conflict resolution) at group level. The main cause of these differences is that South African project managers strongly disagree with Chinese project managers on communication behaviours B4.1 and B4.3. Chinese project managers would like to use appropriateness rather than revealing the truth, and partly deliver information by using vague language to protect themselves during project communication. This popular Chinese communication method has a great effect on project activities (A1, A2 and A3). However, South African project managers seem to be confused about it. Therefore, risks could occur in project communication, negotiation and conflict resolution. The potential risks can be summarised as follows:

- Misunderstandings
- Not delivering correct and complete information
- Confusing each other
- Negotiations disrupted with an unhappy ending
- Conflicts cannot be solved because of misunderstanding in the team due to cultural behaviours

Therefore, the performance of an international project team can be greatly reduced because different cultural behaviours affect project management activities differently, which results in inappropriate actions.

B5. Conflict-solving: Hua Jie – softening, smoothing, compromising and aligning instead of direct solving to uphold harmonious relationships (Zeng, 2003; Chen in Chen & Ma, 2001; Leung, Koch & Lu, 2002; Hwang,1997/8; Kirkbride,Tang & Westwood,1991)

The survey results also show that the influence of cultural behaviour B5 (conflict resolution) on A1, A2 and A3 is significantly different between the two groups. Chinese and South African project managers have different approaches to solving conflict in project communication, negotiation and conflict resolution. For example, Chinese project managers have a tendency to use power and authority to solve conflicts during project team building, whereas South African project managers may like to use personal trust and mutual interest to avoid conflict. Another example is that Chinese participants prefer using an indirect way of conflict resolution by giving evasive answers or saying "no" in a subtle and non-verbal way. The South African participants clearly disagree with this approach.

Conflict resolution is critical to international team dynamics. The cultural differences cause different actions in conflict resolution in projects that will definitely act as barrier to team performance. The main risk is that new conflicts will arise during project activities (A1, A2 and A3).

Conclusion 3 to Research Objective 3: Research relevant knowledge related to cultural differences, project success and international project management.

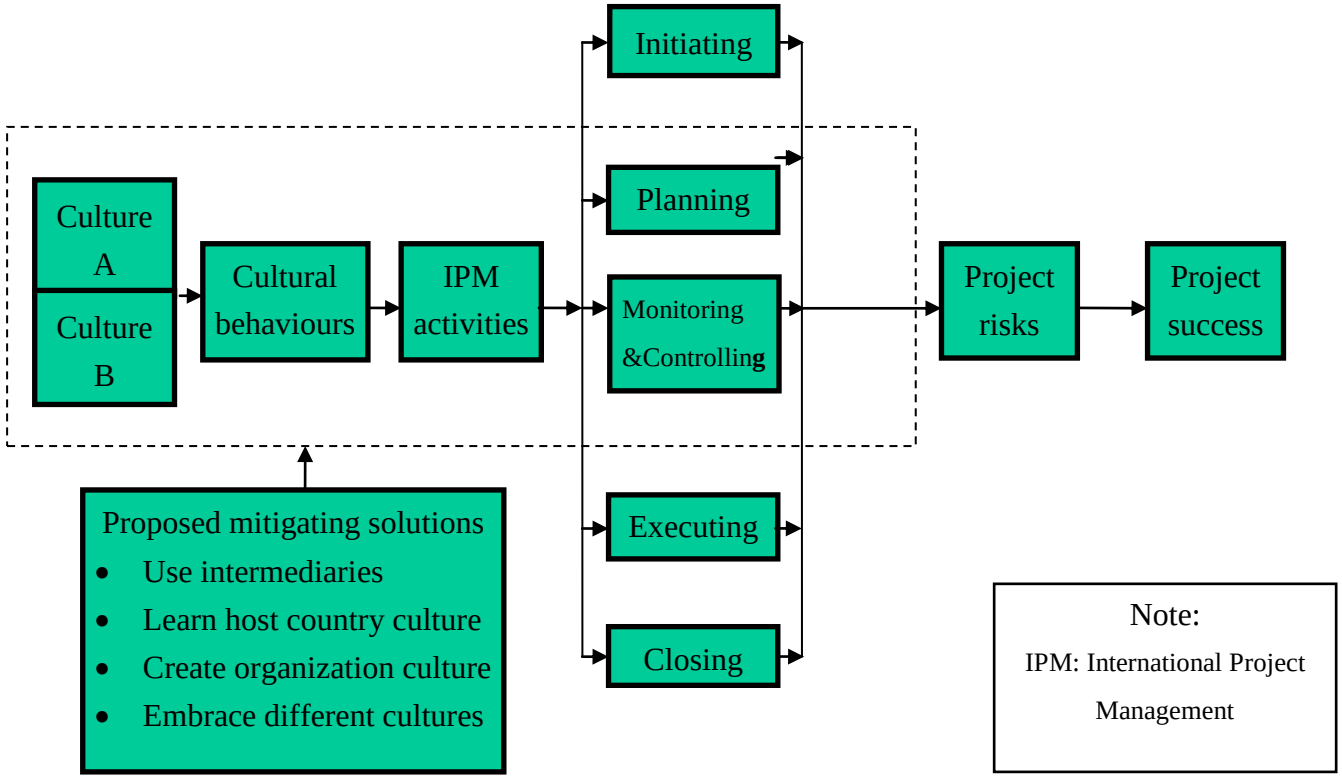
This objective was achieved from Chapter 1 to Chapter 4. Key concepts that are relevant to international project management and cultural difference were assessed. The constraints of international projects were reviewed. Furthermore, project success and project success measurement were studied. The literature review showed that there is not enough research that links the culture issue with project management (Shore & Cross, 2005). A systematic framework for effectively studying the management of cultural differences in international project management needs to be developed.

Conclusion 4 to Research Objective 4: Find out how international project managers overcome these constraint factors in practice.

Four proposed mitigating solutions were identified in a literature review and were proved by the results of an additional survey. The participants strongly agreed with the proposed mitigating solutions and the standard deviation on response values is relatively low. This indicates that the proposed mitigating solutions are useful and effective according to the experience of participants.

Conclusion 5 to Research Objective 5: Develop a systematic framework for modeling, analysis and management of cultural differences in international projects.

Figure 8.1: A model for managing cultural behaviours in project management



Because of the diversity of the global village, it will become more and more important for project management practitioners and academics to know how to control and mitigate the negative effects of cultural differences. The model for cultural differences in cultural behaviours presented in Figure 8.1 as a result of the research results may be useful in mitigating risks in international projects. The model was devised and revised on the basis of the survey results. This study has used several statistical techniques to empirically examine the model proposed. The cultural behaviours impacting on project activities between Chinese and South African project managers are explored by using independent samples t-test. In addition, the strength of the relationships between cultural behaviours and project activities is explored using Spearman's rho correlations. The relationships between mitigating solutions and cultural differences are also examined using the same correlation technique. It is however realised that causality cannot be inferred from this test but will be explored in future research outside the scope of this thesis The other parts of the model, project risk and project success, are explored by using deductive reasoning from literature studies. Some of its attributes can be summarised as follows:

- The model simply illustrates the conceptual relationships between cultural differences and project management. The model bridges the gap between cultural differences and project management. Cultural differences do not affect international project management directly, but rather cause conflicting cultural behaviours. These cultural behaviours then affect project activities and the negative effect on project activities further reduces the performance of the international project team.

- The model systematically demonstrates that cultural differences impact project activities as well as project management processes. Cultural differences influence every project management process of a project lifecycle. The survey results show that the more activities a project management process includes, the stronger the effect of cultural differences.

- The proposed mitigating solutions have been confirmed by the respondents to be an effective way to overcome the negative effects of cultural differences. The proposed mitigating solutions will have an influence on the process of cultural difference, affecting each project management process.

- The model also illustrates that risks would resulting from cultural differences The risks can be mitigated by using the four proposed mitigating solutions indicated in Figure 8.1 in order to reduce the effect of culture differences. The proposed mitigating solutions that have been approved by the participants are not necessarily the only solutions. Other useful mitigating solutions may be found by means of further research.

The model can only partly describe the reality. There are always terms and conditions that apply. The limitations of this research will also be addressed in Section 8.4.

8.3 Contributions of the research

The research established a linkage between cultural differences and international project management, which had not previously been thoroughly researched according to the literature review. The study also established some novel characteristics of behaviours of Chinese project managers as well as the cultural difference between groups of the two countries' project managers through a comparative survey. The results indicate that the cultural behaviours definitely affect project activities on different levels. There are some significant differences between Chinese project managers and South African project managers relating to cultural behaviours in different project activities. For example, Chinese project managers seem to prefer indirect communication in project communication, project negotiation and project conflict resolution. However South African project managers seem disagree with this. They prefer direct communication more than indirect communication. These findings also contribute to cross-cultural research and risk management in international

project management. This study confirms and reinforces the results of previous researchers such as Chen and Partington (2004), Muriithi and Crawford (2003) and Bony (2010) for other cultural contexts. All those researchers' results led to the conclusion that project management theory is not a universal tool, but is culturally sensitive.

The results of this study contain useful managerial implications for improving international project team dynamics and performance. For example, Chinese project managers have a tendency to use power and authority to solve conflicts during project team building, whereas South African project managers may like to use personal trust and mutual interest to avoid conflict in project team building. Some obstacles that reduce international project team performance have been summarised and solutions have been proposed. The research also identified the effect of the cultural behaviours in each project management process. This result is useful for managing cultural differences from a project lifecycle perspective. The proposed risk mitigating solutions promoted in this research will also benefit current and future project managers who are involved or will be involved in an international project team.

8.4 Some limitations of the study and recommendations for future research

The main limitation of this research is the limited number of participants in the survey because of a lack of access to resources and a lack of time and funding. Another factor that could affect the results is the diversity of the South African culture which makes the standard deviation of results for the South African group somewhat higher than for the Chinese group. Future studies may consider the influence of this factor on the results.

The questionnaire was developed from a Chinese perspective. It may be useful to subject both groups to a questionnaire developed from a South African cultural perspective to determine the influence of cultural bias on questionnaire design. Furthermore, when studying the relationships between

cultural behaviours and project management, researchers should examine the different segments in a nation. This is another area for future research.

The Spearman's rho correlation used in this study is to establish useful correlations between cultural behaviours and project activities. It is realised that causality cannot be inferred from this test but can be explored in future research outside the scope of this thesis. Multi-variate regression can also be done for future research.

Lastly, this study Includes project risk and project success in the model based from deductive reasoning but they are not empirically examined for the Chinese South African cultural context. For future research, these two variables can be empirically examined in the model.