EFFECTIVE COLLABORATION
OF GLOBAL TEAMS

Master's (one year) thesis in Informatics (15 credits)

Meng Hao
Title: Effective Collaboration of Global Teams

Year: 2012

Author/s: Meng Hao

Supervisor: Ramon Nurman (Volvo Information Technology)
           Bertil Lind (University of Borås)

Abstract:
With the quick development of multinational enterprise, the concept of “global team” has interiorized in people’s mind. Global collaboration keeps business ongoing around the clock. This thesis through theoretical and empirical survey archives original goal of finding global collaboration improvement. Three sub-level research questions all get fulfill answers from integrating theoretical and empirical research result. Good fundamental work environment with equal attitude, attention on individual behavior bases on different culture understanding, frequently communication with rich information construct the most important fact of effective collaboration. Correct choosing and renewing of collaboration tools can push work faster and safer. Modern Informatics as the main power of current society, also improve the development of remote collaboration work. Empirical survey conclusion as a kind of supplement completes current theory.

Keywords: global team collaboration, collaboration tool, communication, culture difference, modern IT
Acknowledgements

This thesis lasts for half a year, from first protocol to final writing, I get huge amount of support and encourage from my supervisors, my colleagues, friends and family.

Firstly I would like to thank Volvo IT gives me this chance to join Graduate Program and the opportunity to write this thesis. Thanks for giving financial support of Bangalore travelling. During this half year, I become more mutual and independent in Volvo’s work environment. I will have enough confidence to accept future challenge.

Secondly, I must thank my two supervisors: Ramon Nurman and Bertil Lind. Ramon as my supervisor in Volvo IT helps me to arrange interviews and care for me when I was sick in Bangalore. I learned lots of things from him. For me, he is both teacher and my good friend in my life. Bertil Lind as my supervisor in university guides me the whole process of thesis writing. His patient and erudition let me successfully solve writing problems and achieve the goal. From these two supervisors, I learned valuable knowledge and experience, I think in my future life, what I learned from them can help me pull through difficulties.

Thirdly, I would like to thank all participants who joined my interviews and gave me help. Thank all of you would like to cooperate with me and give your suggestion of the thesis topic. Except your participation, I would not finish my study.

At last, I would like to thank my friends and family. Thanks for the spiritual support you provide to me. Especially I have to thank Cheuk, thanks for all support and encourage you gave me when I was tired and down.

Thanks all of you to help me finish this thesis. I will work harder and harder, trying to gain more progresses!
# Contents

1 INTRODUCTION .................................................................................................................. 1

1.1 Background ....................................................................................................................... 1

1.2 Statement of problem ........................................................................................................ 2

1.3 Purpose of the study .......................................................................................................... 2

1.4 Research questions ........................................................................................................... 2

1.5 Target group ....................................................................................................................... 3

1.6 Delimitations ..................................................................................................................... 3

1.7 Expected outcome ............................................................................................................. 3

1.8 The author’s own experience and background ................................................................. 3

1.9 Structure of the thesis ....................................................................................................... 3

2 RESEARCH DESIGN ............................................................................................................ 5

2.1 Research perspective ........................................................................................................ 5

2.2 Research strategy ............................................................................................................. 5

2.3 Data collection procedures ............................................................................................. 6

2.4 Data analysis procedures ............................................................................................... 7

2.5 Strategies for validating findings ...................................................................................... 7

2.6 Result presentation method ............................................................................................. 8

3 THEORETICAL STUDIES .................................................................................................. 9

3.1 Key concepts ..................................................................................................................... 9

3.2 Subject areas relevant for the research ........................................................................... 9

3.3 Relevant literature sources ............................................................................................. 10

3.4 Collaboration ................................................................................................................... 10

3.4.1 Elaborate of collaboration ......................................................................................... 10

3.4.2 Leadership collaboration ............................................................................................. 11

3.4.3 Project collaboration .................................................................................................... 13

3.4.4 Cross-functional collaboration .................................................................................. 15

3.4.5 Internal collaboration ................................................................................................. 15

3.4.6 Collaboration platform and tool ................................................................................. 16

3.4.7 Summary of findings ................................................................................................. 18

3.5 Communication ............................................................................................................... 19

3.5.1 Intercultural communication ...................................................................................... 19
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5.2 Business communication</td>
<td>20</td>
</tr>
<tr>
<td>3.5.3 Summary of findings</td>
<td>21</td>
</tr>
<tr>
<td>3.6 Knowledge Management</td>
<td>21</td>
</tr>
<tr>
<td>3.6.1 Knowledge transfer</td>
<td>21</td>
</tr>
<tr>
<td>3.6.2 Summary of findings</td>
<td>22</td>
</tr>
<tr>
<td>3.7 Project Management</td>
<td>23</td>
</tr>
<tr>
<td>3.7.1 IT project management</td>
<td>23</td>
</tr>
<tr>
<td>3.7.2 Summary of findings</td>
<td>23</td>
</tr>
<tr>
<td>3.8 System Analysis and Information System</td>
<td>23</td>
</tr>
<tr>
<td>3.8.1 Evaluation of system analysis and information system</td>
<td>23</td>
</tr>
<tr>
<td>3.8.2 Summary of findings</td>
<td>24</td>
</tr>
<tr>
<td>3.9 Summary of theoretical findings</td>
<td>24</td>
</tr>
<tr>
<td>3.10 Arguments for an empirical study</td>
<td>25</td>
</tr>
<tr>
<td>4 EMPIRICAL SURVEYS</td>
<td>26</td>
</tr>
<tr>
<td>4.1 Purpose</td>
<td>26</td>
</tr>
<tr>
<td>4.2 Sampling</td>
<td>26</td>
</tr>
<tr>
<td>4.3 The interviews</td>
<td>26</td>
</tr>
<tr>
<td>4.4 Empirical research result</td>
<td>28</td>
</tr>
<tr>
<td>5 ANALYSES AND RESULT</td>
<td>37</td>
</tr>
<tr>
<td>5.1 Analysis</td>
<td>37</td>
</tr>
<tr>
<td>5.2 Result summary</td>
<td>38</td>
</tr>
<tr>
<td>6 DISCUSSIONS</td>
<td>39</td>
</tr>
<tr>
<td>6.1 Conclusions</td>
<td>39</td>
</tr>
<tr>
<td>6.2 Implications for Informatics</td>
<td>39</td>
</tr>
<tr>
<td>6.3 Evaluations</td>
<td>39</td>
</tr>
<tr>
<td>6.3.1 Method evaluation</td>
<td>39</td>
</tr>
<tr>
<td>6.3.2 Result evaluation</td>
<td>39</td>
</tr>
<tr>
<td>6.4 Generalizability</td>
<td>40</td>
</tr>
<tr>
<td>6.5 Ideas on future research</td>
<td>40</td>
</tr>
<tr>
<td>References</td>
<td>41</td>
</tr>
</tbody>
</table>
1 INTRODUCTION

1.1 Background

With the development of emerging markets and cheap work force in Asia, many European companies turn attention to Asia, in order to crack offshore market. They transfer large volumes of production and sales to reduce production costs and expand market. Nowadays, the whole South and East Asia is the “world factory”, South and East Asia region has become an economic and industrial powerhouse which the largest part is manufacturing and other ancillary industries followed by. U.S., European companies have been building up blue-collar and back-office operations and representative offices in places like China, India and Singapore. Now top-level executives are joining them, increasing the amount of quality time they spend in those areas. Except the main part of foreign investment, petrochemicals, Dynamic environment, offshore and rubber industry also increasing when the whole Europe faces economic gliding.

IT industry, as the most important pillar industry followed by manufacturing, develops quickly in Asia. Many IT companies open subsidiaries in Asia one after another, especially in Bangalore of India, where is famous as “Asian silicon valley”. Bangalore has one quarter of the Indian software companies (Bangalore IT.com) and owns even more engineers than Silicon Valley. Bangalore has developed into a critical hub in the global shift towards a knowledge-based economy. Below is the comparison of compensation between Europe and India (Peter, Eric, 2010).

<table>
<thead>
<tr>
<th>Employee category with experience years</th>
<th>India</th>
<th>Europe</th>
<th>India as % of Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior software engineer (0-2 years)</td>
<td>3,500-4,500</td>
<td>25,000-35,000</td>
<td>10-15</td>
</tr>
<tr>
<td>Systems analyst (2-4 years )</td>
<td>7,000-9,000</td>
<td>40,000-50,000</td>
<td>15-20</td>
</tr>
<tr>
<td>Senior systems analyst (4-6 years)</td>
<td>11,000-14,000</td>
<td>55,000-70,000</td>
<td>15-25</td>
</tr>
<tr>
<td>Technical architect</td>
<td>18,000-24,000</td>
<td>55,000-80,000</td>
<td>22-32</td>
</tr>
<tr>
<td>Project leader (6-10 years)</td>
<td>18,500-24,000</td>
<td>70,000-85,000</td>
<td>22-35</td>
</tr>
<tr>
<td>Project manager (10+ years)</td>
<td>28,000-40,000</td>
<td>100,000-120,000</td>
<td>23-35</td>
</tr>
<tr>
<td>Head of development center</td>
<td>40,000-80,000</td>
<td>120,000-130,000</td>
<td>35-60</td>
</tr>
</tbody>
</table>

Source: Company data and Value Leadership Group analysis
Notes: Exchange rate Euro: RS = 55:1

Figure 1.1 - Typical compensation levels in India vs. Europe

Thus, when one project transfers from tradition to global, the issues of management and communication are exposed, like different interests, local culture, work practice and the most important is over-distance communication (Binder, 2008). All of these aspects can be included into one concept: Collaboration. Collaboration is a process of working together to create value. During this process, people share information and other physical and virtual
space. (Rosen, 2007) Especially in IT project, how to collaborate effectively using modern collaboration tool and scientific communication way is an important topic both in IT and management areas. Also, as it mentioned above, after financial crisis, more and more European companies transfer market to Asia, these multinationals use instant communication tools connecting over-distance subsidiaries and head quarter.

1.2 Statement of problem

As it defined above, collaboration parties should work for common goal and share information. Since the subject of this thesis is offshore companies, the collaboration needs to be done by long-distance communication. In order to make it effectively, over-distance parties should exchange or share mind by oral, written or nonverbal ways (Encyclopedia of Management, 2009), using communication tools like email, telephone or instant communication tools.

Even though nowadays using instant communication is not an issue around the world, but how to communicate and manage project with culture difference and the value of IT itself in this situation are still topics in scientific fields.

1.3 Purpose of the study

The main focus of this thesis is to discuss how IT can be used to improve collaboration among over-distance companies and also how IT and management can be integrated to push the process of IT project. Especially when more and more European and American companies transfer market to southeastern Asia, similar problems exposes more and more. The importance to do relative research shows obviously.

From theoretical aspect, the purpose is also to complete current solution of over-distance collaboration. Base on case study, more description and suggestion can be added to current definition and conclusion.

1.4 Research questions

The main question for this thesis is trying to find improvement of global team collaboration. This includes several aspects which also can be seen as sub-level question for this article.

- **How to improve communication and cooperation during knowledge transfer period and sequent daily work with culture and value difference?**
  Since knowledge transfer is a special period for new rising company, how that can be done remotely base on technical approach is valuable to investigate.

- **How important is collaboration tools performance in long-distance collaboration?**
  Continue with the first question, here the focus puts on the use of modern IT tools to improve long-distance communication.

- **Explore the value of modern Informatics in long-distance collaboration.**
  Analysis the reason of current situation and give advanced suggestion.
1.5 Target group

The practical target group of this thesis is focus on IT multinational enterprise, especially the one which locates in Europe but has subsidiary in Asia, and also project team organized with international employees. Since this thesis chooses Volvo IT as case study, empirical research part can also be seen as Volvo IT consultant report. All interview analysis data and result can be used for internal management reference.

The academic target group includes researchers and students in major of Informatics and relative fields. This thesis can also be seen a reference for researchers who is doing research in intercultural communication, project management and information management topics.

Even though it is an Informatics article, but it is also useful for knowledge management, multinational corporation management and relative areas. For general reader it is also a valuable article.

1.6 Delimitations

This thesis is an Informatics master thesis, but because collaboration also involves culture, knowledge management and other knowledge, the management part is included in the research question but it is not the main research area in this article. Part of the knowledge will be mentioned but the use for that is just to complete the description of main conclusion.

1.7 Expected outcome

The main topic of this thesis is to find valuable usage of Informatics in global project collaboration. The author also wishes that academic reader can find more new information bases on current theoretical conclusion, and multinationals can get better inspiration from case study and comprehensive conclusion.

1.8 The author’s own experience and background

The author herself is a master student both in Informatics and Economics. She can integrate two scientific fields knowledge and add her own understanding base on her international education and living background.

1.9 Structure of the thesis

This thesis can be divided into six parts:

- Part 1 (Chapter 1): Introduce background and present research question. This part is used for guiding reader to specific reading environment.

- Part 2 (Chapter 2): Brief introduction of research design, include method, strategy and data collection method. This part can be seen as a “how to” section. Below parts will follow the rules which are illustrated in this chapter.
• Part 3 (Chapter 3): Theoretical research. Show previous research result according to research questions. Find out if previous achievement can be used for current analysis and answer research question in this thesis.

• Part 4 (Chapter 4): Empirical study. Collect data for case analysis in the next chapter. This part will elaborate the process and result of case study in detail.

• Part 5 (Chapter 5): Analysis bases on theoretical and empirical research. This part will use the method for analysis which is described in Chapter 2 to integrate theoretical and empirical result.

• Part 6 (Chapter 6): Conclusion part will present the most important result from analysis above; compare the difference of previous and current research result. This part will also be used for evaluating method and result, present implication for Informatics.

Below is the figure of each part with main content (Figure 1.2)

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Research design</th>
<th>Theoretical research</th>
<th>Empirical study</th>
<th>Analysis</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td>Method</td>
<td>Key concept</td>
<td>Interview elaboration</td>
<td>Analyse using theoretical and empirical research result</td>
<td></td>
</tr>
<tr>
<td>Research questions and purpose</td>
<td>Strategy</td>
<td>Subject area for research</td>
<td>Observation procedure</td>
<td>Evaluation</td>
<td>Conclusion</td>
</tr>
<tr>
<td>Other explanation</td>
<td>Data collection method</td>
<td>Conclusion</td>
<td>Conclusion</td>
<td></td>
<td>Implication for Informatics</td>
</tr>
</tbody>
</table>

Figure 1.2 - Structure of thesis
2 RESEARCH DESIGN

2.1 Research perspective

Research methods can be classified in various ways. However, one of the most common distinctions is between: qualitative and quantitative methods (Myers, 1997).

Quantitative research refers to investigate social and scientific phenomena through statistical, mathematical or computational techniques (Given, 2008). Quantitative research was firstly used in natural science research. Nowadays, quantitative methods have been accepted widely in social science. Like economics can use survey methods, laboratory experiments and formal methods. Numerical methods such as mathematical modeling can also be used in social research (Cheong, 1999). In easy word, quantitative research is the method that disposal data with models and calculation.

Qualitative method is the premise of quantitative method, which use deduction and conclusion, analysis and synthesis, or obstruct and summarization to analysis properties of object. Qualitative methods are best for addressing many of the why and how questions that researchers have in mind when they develop their projects. The methods approaches are appropriate for examining behavior and event, but it is not suitable for analyzing event’s principle (Given, 2008).

Mix-methods approach can be defined as “include at least one qualitative approach (collect word data) and one quantitative approach (collect numbers), where neither type of method is inherently linked to a particular inquiry paradigm or philosophy (Caracelli, Greene, 1993).”

According to this thesis, both of qualitative and quantitative methods will be used for date collection and analysis. According to the research questions which are presented above, the best way to get current situation of daily work and the usage of one tool is interview. Interview is a type of data collection approach in qualitative research. But through interviews, original word information will be collected, part of that will be chosen for statistic, such as trend or current situation presentation, which can be seen as quantitative research. The other information will be used to answer questions which cannot be shown in clear type of figures. That can be seen as qualitative research part. In summarize, this thesis will choose mixed-method approach as main research approach. Data collection will choose qualitative research approach and data analysis will choose mixed-method approach.

2.2 Research strategy

From Chapter 1 it clearly shows that the purpose of this thesis is to find out how Informatics can be used in global team collaboration improvement. Case study is used as empirical research approach. G. Thomas (2011) offers the following definition of case study: "Case studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides an analytical frame — an object — within which the study is conducted and which the case illuminates and explicates." Yin (1994) is explicit when it comes to the choice of suitable research design. He stresses that a case study is appropriate when explorative questions such as why and how are asked, and when a modern phenomenon is in focus. Here author chooses a target company as
a sample from general situation. The business environment of this company should fix the premise, which should be a multinational company and has global team organization.

One thesis has two main parts, one is theoretical part and the other is empirical part. Theoretical research increase understanding of fundamental principle. Scientific theories are well-confirmed from explanation of nature. That is different from empirical study which bases on certain condition. Theories are scientific abstracts which are “applicable to a defined group or class of phenomena and expressible by the statement that a particular phenomenon always occurs if certain conditions be present” (Oxford English Dictionary, 2001). The theoretical part of this article will be used as trying to get existing authoritative answers from research before. And that can be expanded directly to general situation. Similar articles can also provide valuable information for current research and give latter researchers enlightenment. Predecessor’s study logic and process can also help new article formation. Theoretical part is the first core part of the whole paper.

Empirical study is used to apply known standard to unknown fields. In other words, it describes the research that never happens before. Though empirical research, current theory can be fulfilled or given opposite explanation. In this thesis, empirical study will choose case study to analyze specific research unit. A critical case has strategic important relation to general problem. It allows generalization from one case to all similar situations (Yin, 2009). In this thesis, author chooses one typical multinational enterprise as case study object. From that research, part of research questions can find answer and it can also contribute to current theory to fulfill previous conclusions.

2.3 Data collection procedures

In the case study, interview will be chosen as the data collection approach. Interview as a technique to investigate true experience is different from other data collection approach. It is more exploratory in nature and flexible to get insight of “subjective understanding”. The research questions stem from people’s behavior, but it is not enough to just observe behavior, but to subsequently understand the meaning behind. In order to get that goal, researchers need participates themselves to explain their own words (Seidman, I, 1998)

From practical view, both questionnaire and interview can be chosen as data collection approach. But since the study will be launched in two long-distance countries, questionnaire easily causes misunderstanding of questions and also it is harder to get true thinking from respondent. Compare with questionnaire, interview is easier to investigate deeper individual experience and dig meanings behind behavior.

Interviews can be divided into two kinds, one includes fixed questions and the other is more general, just cover same question areas. Here the latter will be chosen for this thesis. The reason is that general interview guide is intended to ensure that the same general areas of information are collected from each participant, which provides more focus than the conversational approach, but still allows a degree of freedom and adaptability in getting the information from the participants.

Participates for interviews are all from target multinational enterprise but separate in two long-distance locations. One location is the head quarter of the enterprise which is in Sweden, and the other is new rising subsidiary which locates in India. The chosen participates in head quarter all have remote work experience, most of them are managers of global team. The other group of participates works in Indian subsidiary, they are all members of global project
teams. Two groups of participates all work together for common project or maintaining. From these two different groups, not only individual feedback but also culture and value difference can be found through investigation.

2.4 Data analysis procedures

As it is mentioned above, this thesis chooses general interview as data collected approach, which all participates will face same question area but not exactly the same question. That means collected words need to be disposed before analysis. The word answers have three different types, one is judgment, one of them includes data information and the left type is pure individual formulation. All of the interview notes will be concentrated into simple table. For the judgment answer, blanks will fill simple attitude word such as “yes” or “no”; for answers include data information, numbers or less word will be written in the table; for the personal explanation, key words will be chosen to fill table. In that way, all participates’ information can be present in one table. It is easier for later analyze and also convenient for comparison.

After simplifying information, the next step is analysis. According to the three different types of answers, the first two types (judgment and data) can be used for statistic, through trend figure and possibility index can get certain conclusions. That can be seen as quantitative analysis. The left word information can be used as evidence for specific issue, like some why and how questions, which can be included into qualitative research.

The third step is interpretation. From trend figure and possibility index number, either previous theory can be proved in this hypothesis or provide another opposite conclusion, both of them can be seen as a kind of fulfill of current theory. According to text information which cannot be simplified into number or simple words, important section of original answer will be quoted as individual interpretation of one specific phenomenon.

For the theoretical study, articles which have the same key words with this thesis will be searched from on-line library system. Authoritative articles will be considered firstly. There is not too much data needs to be disposal, but huge amount of different conclusion depending on virtual research circumstance. In that case, existing material will be divided into different part, according to the key words. (For example, this thesis will use Collaboration, Project Management et al.). The relative articles firstly will be gathered with same or similar key words or research area; secondly, similar useful conclusion will be put together and then drawn up the content which relate to research questions.

2.5 Strategies for validating findings

Validation establishes evidence which provides high degree assurance that a specific process will consistent running meets its predetermined specification and quality characteristics. (Chitlange, Pawar A., J, Pawar H. I., Bhujbal; Kulkarni, 2006) Here are five aspects of criteria are chosen as standard, research design strategies follow these criteria to interpret research questions.

a) Confirmation

Clear research perspective and strategies needs to be explained before real investigation starts.
b) **Dependability**
For one scientific article, one conclusion should be present in the final paragraph. It is not allowable that after analysis, result can still be changed depends on situations. Dependability is the criterion which shows the result can be expanded to many different environments.

c) **Credibility**
Credibility needs selected research method and object fix research question and research environment.

d) **Transferability**
Final conclusion is also applicable for other situation according to similar research questions.

e) **Ethics**
The research of this topic is valuable and positive for social and science development.

### 2.6 Result presentation method

There are four methods will be used in research illustration. All of them are selected for typical use in analysis:

- **Table.** Table is used for showing the original result after processing from interview. In the type of table, different type of answers will have been sorted before calculate.

- **Chart.** There will be many diagrams in analysis part. Statistic charts are used for showing the trend of answers.

- **Text.** As mention above, answers which cannot change into data will be quoted anonymously as evident of one argument.

- **Diagram.** Diagram is used here as model to explain issues clearly.
3 THEORETICAL STUDIES

3.1 Key concepts

There are several concepts that can be seen as the most important words in this thesis.

- **Global team collaboration**
  The global team here specially focuses on one functional team but have many locations globally. Remote collaboration happens inside of the team for service support and project. The benefit of having global team is to keep business running longer time.

- **Technical communication tool**
  Communication tools are a set of technical platforms that can be used for communicating and sharing useful information.

- **Remote communication**
  Parties who join the communication locate in long-distance countries. Communication should be done with the help of modern technical tools.

3.2 Subject areas relevant for the research

- **Collaboration**
  Collaboration is the main focus area in this thesis. It is defined as individuals or units work together in a coordinated model for common goal which is deep, collective and identical (Marinez-Moyano, 2006) It can let collaborated teams get more resources, recognition and reward (Wagner, Caroline S., Loet L., 2005).

- **Communication**
  Communication is the way to share or exchange mind for others by oral, written or non-verbal ways (Encyclopedia of Management, 2009). Communication is a generalized concept. When people do practical research, they choose different points to describe particular area. According to this, the communication involving culture, business and IT are the most important aspects which need to be concerned. Intercultural communication and business communication are the two sub-fields of communication:

  - Samovar, Porter and McDaniel (2003) defines Intercultural Communication as "investigates those elements of culture that influence the utmost interaction between members two or more cultures, when individuals are in situations of interpersonal communication”.

  - Business communication is the type of communication bases on information and communication technology. It is used between employees but with the help of technical tools. (Bauer, Stiefel, 2009)
Knowledge Management
On Blackwell Encyclopedia of Sociology (2009), Knowledge management is defined as “organization's strategic efforts to gain a competitive advantage by capturing and using the intellectual assets held by its employees and customers. Efforts to archive best practices and lessons learned, and to make better use of information stored in databases, also fall under the rubric of knowledge management.”

Knowledge management seeks to increase organizational capability to use knowledge as a source of competitive advantage. Knowledge transfer is a sub-level field of knowledge management. People share their own experience and skills to other individual or organization, creating trust and interaction among participates (Dyer and Singh, 1998).

Project Management
Project management is the concept includes plan, organization, security, management, leadership, and control. The goal for project management is to use resources to achieve an established goal (Nokes, Major, Greenwood, 2007).

For project management, the main attention will be put on global project management. Global Project combines international, distributed and virtual projects, which include people from different countries and organizations who work together with the same goal (Binder, 2009). This novel mainly pays focus on people from the same work area but sit globally work for same project.

System Analysis and Information System.
System analysis uses processes oriented model method to analyze and design business processes. It involves into complementary and dimensions of management (Trienekens, Hvolby, Steger-Jensen, Falster, 2008).

Information system integrates people activities, information technology and operated processes. It is not only used as technology for information and communication, but also represents the interaction of where people support business processes (Kroenke, 2008). As process is one part of collaboration, business analysis and information system will be discussed in this thesis in as collaboration platform in order to find out the solution of improvement.

3.3 Relevant literature sources
Follow the criteria in 2.3, literature sources are chosen after strict selection. All literature sources are from Summon which is a specific academic literature search engine. The literatures which are chosen are authoritative and be quoted frequently.

3.4 Collaboration
3.4.1 Elaborate of collaboration
Collaboration is the process to work together and create value, sharing the same platform, having common goal, learning and building consensus and the individuals or organizations create relationship (Rosen, 2007). Relationship is built basing on trust and commitment. It is operated in organization in truly collaborative mode to gain mutual benefits or achieve a
uniform purpose (Uzzi, Spiro, 2005). Collaboration is different from responsiveness. The former has initial positive attitude, the latter is “a lower willingness to share, participate, elaborate, and partner” (Vigoda, 2002).

The essence of collaboration is that all team members realize the importance of sharing information and understand the culture of collaboration. To achieve this goal, an effective team should pay attention to commit a common goal and focus on implementation, which bases on communication-connection, accountability, and solution focus. That not only needs team member change mindset but also behavior (Bennis, Biederman 1997). Getting everyone in the team to share a common goal and really work together is not simply comes from the stressing of collaboration or a positive manager, but a combination of intangible factors that keep the whole team has a long-lasting and effective work collaboration culture (Falcion, 2011).

3.4.2 Leadership collaboration

Nowadays the demand of professional leader is increasing. Leadership as the main character for leader is used for managing collaboration activities (Streib, 2006).

There are many ways to drive effective collaboration, but explicit situation of 4Ps can make team member ensure the integrated and holistic approach of work together, that is Purpose, People, Processes and Place (The Four Ps of Effective Collaboration, 2009). According to the 4Ps, the point to make the collaboration effectively is not using lots people run a project together, but to have a clear purpose and processes, use right people in suitable place.

![Figure 3.1 - 4Ps model](image)

Especially for remotely collaboration, geographically dispersed virtual global teams have to stress communication and collaboration initially, and also knowledge sharing. But they still need to maintain functional independence and autonomy. Therefore, it is necessary and
important to create and sustain a highly collaborated work atmosphere among team individuals (Adenfelt and Lagerstrom, 2006; 2008; Snell et al., 1998).

Collaboration performs as the result of the increasing interdependence and global impacts of business management. The development of collaboration in business stimulate people start to measure the value of leadership in collaboration and how it can be practiced (Sullivan, Williams, Jeffares, 2011). Lipman-Blumen (1996) argued that leadership should be used directly in new collaborated environment with interdependence and diversity. Individual behavior in three sets to face the challenge of global work environment: direct, relational and instrumental.

Pittinsky (2009) did research about intergroup leadership. He found that when leaders have to face issues which are out of their responsibility and capacity, the problem of leadership explores at the challenge to bring sub-group together. He also pointed out the external conflict caused by internal group diversity. The solution is to create a collaborated circumstance with sharing purpose and highlight sub-group identities. Martion and Uhl-Bien (2001) indicated the importance to build complex leadership situation for new collaboration status. Five aspects are mentioned: new leadership take responsible for network, delegate and empower employee, create new roles, encourage creativity and innovation, advocate deliberate mind. These five aspects can be used for both single-organizational and multi-organizational companies.

There are more researches done similar researches. Brown and Gioia (2002) indicated that it is time to change the mind of having “heroic” leader but “distribute” or “shared” the power to individuals in the group. Here the leadership is seen as multi-level, not limitation in single direction, processes and context. Fletcher and Kaufer (2003) emphasized that mutual learning, shared understanding and positive action are valuable for improving leadership.

Normally, conflicts exist in relative group or individuals, no matter external the business or internal cooperation team. Researchers try to find solution to avoid or remit conflict, but in Vaaland (2004) opinion, the underlying dimensions of tension and reluctance have close relationship with commitment and trust. Vaaland indicates that the conflicts should not be removed from relationship benefit group, but rather than used as a tool for proving insight into different viewpoints of other parties. Below is his opinion process, from the process graph we can see that conflicts can create the balance situation of opposite parties. In some way to say, when the relationship reduces into a survival level, managerial tense can be used for making relationship even stronger.
3.4.3 Project collaboration

When a group of people work together for project, no decision can be made personally. Unified decision needs sharing information and effective participation. There are limits for participation, one is limit of communication, and another is culture and convention. That is why researchers do investigation about project collaboration (Streib, 2006). Nowadays, many studies focus on inter-organizational collaboration in projects, which the transaction happens between internal organizations. This type of collaboration is used in several industries and also consulting (Jang & Lee, 1998). Collaboration between consulting company and industrial company is the key success to continue project. And also the subject company does not need to employ an engineer for long time but special for that project. This relationship reduces cost of controlling of the subject company (Ahola, 2009; Dubois & Gadde, 2000; Ingram & Baum, 2001). In high degree of trust and independent can remit negative effort of mind boundedness incident.

Everything has two faces. Even though project collaboration can bring numerous benefits, it also has distinct cost effects. The extra cost from collaboration includes from activates pursued to enhance the exchange information and resolve conflicts between interdependent actors (Rice, 1992). Moreover, the establishment of collaboration between project inter-organizational partners has three challenges from project, which are the characters of the type of project business: discontinuity of demand, uniqueness of project transactions, and complexity of the networks (Skaates & Tikkanen, 2003).

- Discontinuity demand depends on economic situation and also the limitation of projects. Consultants cannot always keep one work status. In addition, discontinuity of demand for projects has negative effect of establishing trust and commitment between customer industry and supplier organization (Eloranta, 2007).

- Uniqueness of project transaction can be seen as goal and also the social structure creates a need for knowledge integration, so that can make sure the collaboration has a common goal (Davies, 2004).
Studies on network identified that single-project network is shaped by the long-term business network, and it self affects by the actor who join the project (Ahola, 2009; Hadjikhani, 1996; Hellgren & Stjernberg, 1995). Artto et al. (2008) indicated that the main risk of project comes from subcontractors of competitive business relationships.

Project collaboration will serve as an example of inclusiveness, awareness and pin-point targeting that has been lacking on most previous occasions (Ralph, 2004).

Evaluation of the collaboration quality depends on the outcomes from collaboration. In this way, managers can decide how to arrange their collaboration, even though they seldom pay attention to consequential effects. There are five factors that relative to the evaluation of project collaboration: Communication, Coordination, Mutual support, aligned efforts and cohesion (Dietrich, Eskerod, Dalcher, Sandhawalia, 2010).

Below is the table for elements of collaboration quality (Hoegl & Gemuenden, 2001).

![Figure 3.3 – Element of collaboration quality](image-url)

- Communication
  - Sufficient, open, and efficient information exchange between collaborative actors

- Coordination
  - Shared mutual understanding on goals, necessary activities
  - Contribution needs to be performed by collaborating actor

- Mutual support
  - Collaborated actors help each other in achieving commonly agreed-upon goals.
  - Existence of mutual flexibility in case of unforeseen incidents and changes.

- Aligned efforts
  - Alignments of contributions provided by collaboration actors with the expectations of the contributions.
  - The correspondence between priorities of actors in collaboration.

- Cohesion
  - Existence of the collaborative spirit between actors
3.4.4 Cross-functional collaboration

Cross-functional collaboration contains cooperation, representation and contribution and other functional units to the project process (Song, Montoya-Weiss, and Schmidt 1997). Cross-functional collaboration is just the form of ideology. It needs to be realized by functional units and cooperate with benefit of organization, especially in the mechanism which has multiple patterns of interaction and can cooperate among different functions (Galunic and Rodan 1998). Meanwhile, cross-functional collaboration pushes all functional units follow one common goal (De Luca & Atuahene-Gima, 2007).

The big contribution of cross-functional collaboration is that it creates more specialists and information flow between partners (Persaud, Kumar, Kumar, 2002). Valuable information can be transferred between cooperated teams and make project effectively (Song & Montoya-Weiss, Massey, 2001). Previous researchers proved that cross-functional collaboration improves performance of project result and production (Jaworski & Kohli, 1993).

Learning and problem solving abilities are also affected by effective cross-functional collaboration (Sherman, Souder, Jenssen, 2000). Except the capacity of transferring information, it also improve the passion of collaborated teams to gather knowledge and share with each other. In that way, all actors will proficient in work skills (Song & Parry, 1997). Apart from that, effective cross-functional collaboration within the company can reduce uncertain risk (Song & Montoya-Weiss, 2001), which means the difference of performance information and the information has already known before (Geertz, 1973). Since cross-functional collaboration can reduce uncertain risk, it is better to implement formal integrative processes (Griffin and Hauser, 1996).

3.4.5 Internal collaboration

Internal collaboration means the collaboration between individuals in one team or between different departments. No matter which type of coordination, it happens inside of the company. External collaboration means the collaboration relationship between supplier and customer. (Johnson & Filippini, 2009)

According to Johanson and Filippini’s (2009) research, internal collaboration does not performance directly. If the collaboration is not good enough, it is difficult to see the result. Not like external collaboration, if customer can have a good relationship with supplier, the business will run well and it can be realized easily. But external collaboration is built basing on internal collaboration. That means if units in company cannot work together, there will be risk for external business. Internal collaboration is more effective and safe.

Fawcett and Magnan (2002) indicated that many companies are still having the gap to collaborate internal of company. From the managers’ report, it is shown that collaboration between buyer and supplier or between logistic and customer is better than integration among real project groups. This internal gap has been defined as Great Operation Divide (Sabath & Whipple, 2004). The divides can come from many priorities, measures, processes and so on. Managers should sufficiently use internal resource like “water from own harbor” instead of finding outsources (Fawcett and Magnan 2002; Sabath & Whipple, 2004).
Researchers have focused on the need for both internal and external resources long time ago (Lings, 2004). But in implementation, focus on internal users especially the employees who has contact with customer does not work well (Gummesson, 1994). Marketing orientation does not focus on internal market enough which should be set for business in 21 century (Carter and Gray, 2007). Rather than take challenge and risk working with outsources, it is better to pay more attention on how to use current internal resources well (Harrell and Fors, 1992). The internal resources here not only just point at people but all of the knowledge and tools which already exist in company but separate in different units. Managers should recognize that, in fact, internal users are their customers. Marketing inside of the organization is an essential part of delivering value to external partner (Greene et al., 1994). They also need to understand “satisfied employees create more satisfied customers” (Kaur et al., 2010). For this reason, it is quite important for manager to mobilize passion attitude and behavior of employees in order to supply high quality service to external customers (Hartline and Ferrell, 1996).

It can be deal in different way when management team faces to internal collaboration. But the cores are employee’s mood, attitude, behavior, communication pattern and also rewards, leadership and extra (Kaur et al., 2010). All these aspects create a work environment which influences their productive quality and ability (Gani and Shah, 2001). Furthermore, internal communication plays an important role which makes both employee and employer to exchange information and understand organizational requirements (Menon et al., 1996). In order to achieve that goal, manager should treat internal employee and external customer in the same important level (Lings and Brooks, 1998).

Lings (2000) arranged a study about approach of balance internal and external marketing, and also the relationship among manager and customer and employee. He examine that internal collaboration can influence both directly and indirectly to market orientation. The direct impact on internal market orientation is it can improve service quality and customer satisfaction, and can also reduce employee turnover rate and training cost. Indirectly impact performs on creating employee motivation and commitment of project goal, and also it make employee initially consider standing on customer.

Ling’s subsequent research (2004) points out that manager should pay more attention to internal employee as external customer. Current marketing implementation still does oppositely and ignore internal customer (employees). From his research, internal market performs equally well as external market. Moreover, better performance of company in external customer market base on good management internally, such as employee’s satisfaction, retention and commitment.

Gounarisis (2008) did investigation about the relationship among internal market orientation, internal market performance and employee job satisfaction. According to the result, job satisfaction has positive relation with internal market performance. Also, empowerment effects job satisfaction optimally both in direct aspect and indirect aspect (role conflicts reduction). In summary, internal collaboration decides the relationship among job satisfaction, empowerment, communication and participation.

3.4.6 Collaboration platform and tool

People think technical tool is the most necessary tool to improve collaboration, but actually if team members do not have uniform mind of the culture of collaboration, technology can also
lose its value. Collaboration tools are just used for building same work platform to make collaboration more effective, but it is not the premise itself (Library Technology Report, 2009).

Below is the taxonomy of tools from 1990 to 2010 (from AllCollaboration.com). All the tools with yellow fills are the modern tools till 2010. It shows that lots of the companies do not use quite well of modern collaborated tools but still frequently use traditional tools. That affects the collaboration but do not have seriously bad influence of current work. That also proves tool is not the most important aspect of collaboration. People and purpose are the highlight key points. However, even though tool itself cannot be the main part of collaboration, but collaboration cannot operate without any tools. So we can say, tool is not the most important factor, but it is the indispensable element.

The development of tools goes through a long period, from the early tools like e-mail bulletin board, Internet Relay Chat (IRC), whiteboard and desktop sharing. One global team is spread out in different locations and work at different time zone. Collaboration tools need to facilitate the situation to make the communication easy and effective. There are two types of collaborative tools in real operation. One type is synchronous collaboration tool. It requires team members to work in the same time. This kind of tool is instant communication tools. Another type is asynchronous tool. It allows team members to work in different time. Like e-mail, bulletin board and blogs.

Nowadays, open source and cloud computing tools are emerging. Riboulet et al. (2002) investigated the new set of tools for collaboration. He pointed out that emerged new tools really make collaboration effective and power, most of them integrates current collaboration
methods and add some new features. Another aspect, problems increase because of anfractuosity.

Xu et al. (2008) got conclusion after investigating ten collaboration tools. They indicated that different teams choose tools in various reasons. It is difficult to say which specific tool is the most collaborative. But the rules for choosing tools are the same: stability and performance. Integrating but seemingly independent features and improving ease-of-use can make a new and more powerful way of collaboration.

Well-integrated collaborative platform and effective coordination mechanism are critical to support independent task and accomplish definite goal of project team (Krista et al., 2011). Therefore, appropriate adoption of collaboration platform will improve the collaboration effectively. Few years ago, software developers lead to build information modeling. Nowadays, owner advocates using tools to push project collaboration. Researchers did an investigation for project owners, and they got a result that more than average 60% of the owners would like to invest for collaboration tool.

Lavagnon, Denis and Amadou (2009) get result from more than 600 questionnaires that “project success is insensitive to the level of project planning efforts but a significant correlation does exist between the use of monitoring and evaluation tools and project profile, a success criterion which is an early pointer of project long-term impact.” Also, implementation and adoption of collaboration tools and project framework is critical base on good project team communication and organization (Binder, 2009). Staples, Wong and Cameron (2004) identified the collaboration tools which used in project should “fit with the strategy, structure, culture processes and IS infrastructure (for example, training and support)”. Project framework should be deployed in a phased manner.

Researchers ((Ancona and Caldwell, 1992; Curtis et al., 1988; Pinto and Pinto, 1990; Wynn and Novick, 1995) used Actor-network Theory (ANT) which used special in social research to analysis effectiveness of collaborative and innovative under theoretical situation. They realize that both human actors and nonhuman participants act equally in the networks of practices and they are defined relationally and argument in the network. These definitions lead to a relational epistemology that actors or objects do not exist in themselves prior to any participation in social and semiotic networks interaction (Krista et al., 2011).

3.4.7 Summary of findings

Leadership has close connection with collaboration. It can be seen as the first and core aspect of collaboration. Leadership should handle relationship well among purpose, people, process and place. For purpose, manager should have the mind that nowadays the collaboration is not in single path, but multiple approaches to innovate and improve work. For people, leader and team member is not the relation as controller and follower, but equally sharing information and work together. For processes, optimum process is advocated obviously but balance process from conflict can also be used for mend relationship between supplier and customer. For place, collaboration will not just happens between customer and supplier but also internal of company.

Inter-organizational collaboration can help company reduce cost of inflexible collaboration, especially the relationship between companies and outsources. Multi-network, continually
demand and uniform purpose and transform are the three challenges for company to collaborate well in project.

Communication, Coordination, Mutual support, aligned efforts and cohesion are the five aspects of valuing project collaboration. Manager should make decision bases on those five aspects in order to arrange effective project. Manager should also consider about the collaboration tools. Even though it is not the most important factor of collaboration activity but it is indispensable.

Lack focus on internal collaboration limits the efficiency of market where service and production supplied. Internal employees are the very role that can release their interpersonal capacity to improve production quality. So the improvement of internal collaboration can also improve external market. In reverse, development of external market enables internal collaboration even better. Moreover, collaborated internal market can lead employee job design so they are aroused more motivation to focus on customer.

More than 60% of employees would like to improve usage level of collaboration tools. Collaboration tools can make work more effective and instant. Collaboration tools can be divided into two different types, one is synchronous and the other is asynchronous tool. It is hard to say which kind of collaboration tool is the most effective tool, but the common view is human participate and non-human participate are equal in collaboration network. From that it is easy to see that tool itself is as important as operator. Tool really can push project on progress but the communication cross culture and value difference is even more critical than modern technology.

3.5 Communication

3.5.1 Intercultural communication

Intercultural communication is also called cross-culture communication. Intercultural communication is a form of global communication which is used to describe communication obstacles. The issues of communication are from individuals who have different background of social, religious, and education (Lauring, Jakob, 2011). Intercultural communication also tries to bring two areas as cultural anthropology and communication together (Christina, A., Tatiana, Rayuskaya, Natalia, Kresova, 2010). In intercultural communication, language can be seen as a culturally mediate factor. How language can be used plays a significant role in communication. (Porter, 1972)

Many researchers have done experiments to get better solution of culture gap and improve intercultural communication. No matter in business area or learning process. Like Kitayama et al. (2004) did an investigation of cultural difference in self-presentation between American and Japanese. The result shows that Japanese tried to forestall criticism from other groups, but Americans did not notice the importance to get approval from others.

Hooghiemstra (2008) also mentioned that there is no reason to assume the opposite management results from the way they justified result. He also pointed out, rather than credit it to globalization, the trait should be a natural consequence of circumstance. From this, it can be seen that unique management mode is not necessary, specific way depending on cultural difference is approved.
Joanna (2011) also made an experiment about intercultural communication between Australia and Asia. She indicated that learning intercultural communication through intercultural communication is a powerful way to internationalize business and develop global citizenship.

Anne (2010) gets conclusion from a study between Dutch and Vietnam, which the former is a democratic society and the latter is more hierarchical and collectivistic. She found that after people abandon the prejudice and stereotype of culture, it should be the most important and embedded in global learning and teaching. Both trainer and trainee will learn from the international education, and to make everyone feel they are in the same intercultural community. Even though these case studies were not specific for this thesis, but still proved that there is a big culture gap between Asia and western countries.

Raju (2012) did an investigation about outsource. He indicated that international communication training should be the first vital element for closing culture gap, which should be arranged not only for outsource but also manager. He believes though training, outsources can improve sense of responsibility and collaboration.

### 3.5.2 Business communication

According to the theory of language and communication, non-verbal communication is the basic form of communication, it is especially important for convey feelings. Verbal communication is used for transmit detail information which cannot be express by gestures or cues. In business, both forms are important for communication with customers or other colleagues. Except these, business communication also includes listening, reading and writing (Rajeesh, 2010). Business communication needs to be clear, simple and meaningful. The quality of this kind of communication will influence the success of business directly. Good communication skill is one of the essential job requirements nowadays, it cannot only make the organization run good business, but can also decrease employee turnover rate and extra (Gopal, 2009).

As it is said, business communication focuses on effective communication in business activities. It includes both oral and writing. Employees need to be trained in skills to communicate in business. Through learning, employees will know “ethos, logos, and pathos” are the three rhetorical appeals in international business communication. During the communication, true facts, confidence, credibility with strong arguments is key points (Kankaanranta, Louhiala-Salminen, 2007). Most of the business communication happens in oral way. Around 40-90 percent of communication is oral communication. Good skills in oral communication means both in listening and speaking. Express mind in a clear and confident manner, make other people understand easily, is the basic request (Gopal, 2009).

Lots of literatures try to find the challenges for new realities of business communication behavior. With global economy rising, the development of computer-mediated communication (CMC), new approach of business communication contains political correctness, inclusion rather than marginalization and negative of stereotype. When people mention business communication, the first word emerge in mind must “different culture background”, but Scollon and Scollon (1995) stressed that the dominant fact is not culture but individuals. Henry (2000) argued that “we must refrain from attempting a definitive depiction of cultural practices if we are to understand how workplace writing creates cultural realities” (Goby, 2007).
However, no matter how researchers try to define the role of culture in business communication, it is impossible to deny the elemental and great position culture plays in all kinds of communication (Goby, 2007). Except culture, there is another fact that influence business communication—identity. Goby (1999) indicated that identity is substantial if cross-cultural business communication. These two constitute basic business communication needs.

3.5.3 Summary of findings

Culture is an important impact factor of communication. Especially in business activities, people have various culture backgrounds, communication and thinking in different ways. Close culture gap should be the first step to improve communication. In this aspect, training is put on agenda. The learning is not only for understanding cultural background, but also oral and writing skills. It is necessary to use the suitable and polite wording to communicate with business partners.

Moreover, understanding does not mean change each other, but to adopt the difference, no matter the manner or thinking angel. Good communication can increase profit of business. It can also reduce the turnover rate of employee. During the business process and before, leader and participants need to spend some time to do some study of communication preparation.

3.6 Knowledge Management

3.6.1 Knowledge transfer

Alavi and Leidner (2001) define knowledge as “information possessed in the mind of individuals: it is personalized information (which may or may not be new, unique, useful, or accurate) related to facts, procedures, concepts, interpretations, ideas, observations and judgments”.

The term “knowledge management” was created early 1980s in order to keep resources. (Austin, Ciaassen, Vu, Mizrahi, 2008) The development of this research area stimulates scientists to continue discovering how knowledge exists in business and how it be used (Hansen, Tierney, 1999). Knowledge management is a more concrete mechanism than the previous abstract research. It efforts typically focus on organizational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration and continuous improvement of the organization. Knowledge management efforts overlap with organizational learning, and may be distinguished from that by a greater focus on the management of knowledge as a strategic asset and a focus on encouraging the sharing of knowledge (Addicott, McGivern, Ferlie, 2006).

As mentioned before, knowledge transfer is a narrow scope in knowledge management. There are three aspects needs to be consider according to knowledge transfer: the property of knowledge, the relation between provider and receiver and recipients themselves (Argote, McEvily, Reagans, 2003). To make knowledge easy to teach, the unblocked connection between knowledge provider and receiver, and mobilize positive attitude of recipient are the first considered elements when people organize knowledge transfer.
The property of knowledge should be operated locally (Martins, Nelson, 2010). It means that demand-driven motives which require transferred knowledge adapt local employee and production market situation is more valuable and considerable than supply-driven motives. Demand-drive motives is the kind of motion that try to fix transferred knowledge to local employee and market situation. It is more valuable and considerable when compare with supply-driven motives. The latter are the activities which follow motivation of knowledge provider (Lööf., 2008).

This also connects to the relation between knowledge provider and receiver. The more provider understand local environment, the easier they can change the way to transfer knowledge. And also, passion of knowledge provider is important. The more passionate a provider is, the more intent they will on seeing thrive and diffuse to others. If we see teacher is a dialogical, the process of transferring at the same requires interaction. The two processes are integrated (Laurent, Ali, 2009). That is to say, in order to urge the interaction between provider and receiver, a move towards broadly constituted community of practice is proposed (Benson, Blackman, 2010). For the receiver, also needs to make sure they believe the transferred knowledge (Martins, Nelson, 2010). From above, it shows that all activities actually conflate both the transmitter and receiver.

Anthony (2004) pointed out two obstacles hinder knowledge transferring success. Applicable knowledge has value, but the applicable part hinds inside of system or database where is hard to find out. The explore process is even more complicit than the skill of system itself. Actually the knowledge itself is not difficult to understand and use, but consider the problem with notion of completeness.

Chen, Sun, McQueen (2010) did a case study about onshore technical support center transfer knowledge to offshore site in China. They want to find out the impact of national culture to structured knowledge transfer. They indicated that knowledge tacitness, gap, culture and communication difficulties, weak relationship were the critical obstacles of knowledge transfer. Especially when the two parties locate in distance, “uncertainty avoidance culture dimension” will reduce the power of knowledge transfer and slow its processes. However, internal collaboration among colleagues and proactive leadership may alleviate conflicts.

Many literatures identified factors that have negative influence of knowledge transfer. Firstly language is the essential tools for knowledge transfer and collaboration. The ability to speak same language is necessary (Davenport and Prusak, 2000; Simonin, 1999), shared language can also lead to high productively knowledge transfer (Davenport and Prusak, 2000). It can be seen obviously that in multinational corporations, language barrier will hamper the progress of knowledge transfer (Grant, 1996).

3.6.2 Summary of findings

According to above literatures, attitude of trainer, relationship between provider and receiver, language barrier and culture influence are the four aspects should be consider when arranging knowledge transfer project. To break the stalemate between provider and receiver and ensure knowledge can be transferred successfully from one person or a group based on own culture background to another person or group, positive attitude and optimum mood is necessary to keep energy in transfer process. When the atmosphere is created relax and active, the relationship between two parties will be closer, and the transfer effort will be increased also.
In addition, the bad performance of knowledge transfer result may not because of process itself, or not because of the people who join the activity. Problems may happen in the assistant environment. So knowledge transfer is not an activity that simply teach knowledge to others but a set of arrangement, plan and implementation including people, process and environment.

3.7 Project Management

3.7.1 IT project management

Joakim (2009) identified three problems when company arrange global project: Geographical problems, which is common in global project; Organizational problems, sometimes the steering organization does not work as intended; Cultural problems, which is less visible but hard to manage. The management of culture has become increasingly important to many companies, particularly multicultural and international project management. Cultural differences often result in varying degrees of conflict and require careful consideration (Umar, Gareth, Guru, 2008). Especially when the focus moves to international collaboration, scientific, technological and managerial levels determine the position of participations.

Three kinds of culture practice emerged in project group: use individual tolerance and self-control, develop relationship with a trail-and-error process and draw upon international collaboration and culture (Sylvie, 2003). She also indicated that if project leader can set up strategy to use cultural diversity, it may lead international project group runs well. Normally global project group gains from various forms of cooperation such as strategic alliances, partnership, joint-ventures and consortiums (Hamel, Doz, Prahalad, 1989).

Special in IT project, nowadays project managers have improved practical cooperation without a systemic understanding of theoretical project standard and normative conclusion (Williams, 2005). According to Potatilu (2007) article, the six aspects of metrics categories are: productivity, quality, deliverables, cost, resource and risk. Lacerda et al. (2007) also proved that criteria used by framework needs to be take into account according to decider’s value.

3.7.2 Summary of findings

Geography, organization and culture are three problems of global project management. Since the unchanged fact is teams members locate in different place obviously have culture difference, organization becomes the important point to connect remote people and solve culture gap. Project leader needs to well use individual capacity contribution and also utilize culture difference. Make use of various communication approaches and improve understanding of management theory such as the fix of position and capacity.

3.8 System Analysis and Information System

3.8.1 Evaluation of system analysis and information system

Telecommunication and information technologies bring convenience and essential base for global team development. The advent of worldwide connectivity enables multi-site team to achieve round-the-clock business operation (Krista et al., 2011). In a large extent, whole and
well-operated system analysis and design (SA&D) decides successful implementation of information system effort. In competitive environment, most of the industries are operating information system in order to solve problems, manage huge amount of information, and maintenance advantages (Ericson, Siau, 2010).

The field of system analysis and design is still more like an art than a practical science. Even though scholars stress the importance of it, the failure rate of SA&D is still high. According to Rubinstein (2007) report, between 1996 and 2006 the success rate of SA&D cases stand at about 35%. The really high failure rate in system development project highlight the need for improves quality research in SA&D.

SA&D is not a pure technical work, it also include social part. System is designed by people and will use by people. The management of information system is the core process of success SA&D. There are three aspects contribute the whole SA&D system itself: people, processes and projects. People are the main focus of social manner; process means the connection between operator and operated system; project is the real part of technical theory. A good designed system should combine and integrate these three aspects together (Siau, Chiang, Hardgrave, 2010).

3.8.2 Summary of findings

System analysis is not a theoretical work but a practical operation. Manage information system is the main job outside of theoretical analysis. People, process and project are the three valuable considerable points for SA&D. A good analysis and design of system can affect directly to subsequent implementation of information system.

3.9 Summary of theoretical findings

The summary of theoretical findings will be shown here according to research questions.

- **How to improve communication and cooperation during knowledge transfer period and sequent daily work with culture and value difference?**

From leadership collaboration research, it can be seen that modern leadership is not a follow-order relationship, but have equal position in project. When the focus moves to knowledge transfer period and sequent daily work, experienced person needs to integrate new employee into one harmonious environment but not stand in a higher position. Purpose, people, process and place constitute into a whole effective collaboration net. Base on that, multi-network, continually demand and unique goal are the most important three aspects when the collaboration is organized inside of one organization. Such kind of internal collaboration can indirectly improve the whole business situation of one organization. Effective internal collaboration is the base of prosperous external business.

Either knowledge transfer or daily communication, culture background as a key obstacle sometimes wastes lots of time and money. But the essential point is not culture itself but individual behavior. In another way to say, individual cultural practice needs to be put more attention than culture realities itself. People cannot understand another culture performance naturally, that needs professional learning, especially when participants come from far way places.
Suppose the bridge of communication is built well, except culture influence, it is still necessary to consider attitude of trainer, relationship between provider and receiver and language barrier. The more positive trainer is, the more interested trainee will be. All of these implementations are easy to design but not easy to practice in real work.

- **How important is collaboration tools performance in long-distance collaboration?**

  Most of the inquirers would like to investigate new collaboration tools which need to be stable and performable. Modern collaboration tools can really improve collaboration level. It makes communication faster and safer. Especially for long-distance cooperation, collaboration tools can fix the different time zone issue, keep communication continually.

  It is hard to say which kind of tool is the most effective because most of them have similar functions. Modern tools add new function from old fashion. People choose tools depend on their demand and character of work. Even though collaboration tools can push progress of project, but it is still not the most important premise for collaboration. Communication builds on understanding of culture and thinking difference is the key aspect that people need to consider.

- **Explore the value of modern Informatics in remote collaboration.**

  Nowadays, IT is used everywhere in business. Not only collaboration tools and platform, but also information system which is implemented based on SA&D are using widely. Special in long-distance collaboration aspect, without modern technology improve communication, all of these projects cannot be on going successfully.

  The transfer of project from one country to other bases on the two parties still can communicate immediately without face to face. Without modern IT tools, no company can keep technical support runs the whole day. Even seriously, the concept of “global” would dismiss without the development of Informatics.

### 3.10 Arguments for an empirical study

From above it can be seen that part of the research questions can be answered by theoretical conclusion. But most of the findings are described in macroscopic view for the first question. Also, there is no current article can provide enough information of how well video collaboration tool is used, relative detail reference is not rich enough. From the case study, it may get more valuable usage of IT in global collaboration.
4 EMPIRICAL SURVEYS

4.1 Purpose

As it mentioned above, the case study chooses Volvo IT as research object. Gothenburg and Bangalore sites are chosen for research. Since Volvo IT is a typical European multinational enterprise, the conclusion from this survey can be partly used for general situation.

The purpose of empirical survey is to find out the situation of collaboration in this company and expand to general application. Also, the empirical survey will investigate how well multiple collaboration tools performance in daily remote communication. Except that, the reason for doing case study is also present an example for academic reader that how collaboration is done and will be done in real situation.

4.2 Sampling

45 people are selected as respondents for this survey. 22 of them come from Gothenburg, where the head quarter of Volvo IT is. And 23 come from Bangalore, where the new site of Volvo IT in India is. The positions of informants from Gothenburg are managers of departments, global team leader or technicians from selected teams in 6 different departments. All selected teams have frequently connection with Bangalore site. They have experience of cooperate with colleagues abroad. The reason of choosing different position is trying to get understanding of collaboration from different angels. And also the target people have experience which can cover the leadership research area. Name list is given by one experienced manager in Volvo IT who knows well of internal structure of organization.

Indian informants are technicians and local team leader who are working in Volvo IT Bangalore, including outsource employed by consulting company but do project in Volvo IT Bangalore. They also come from the corresponding departments. All of informants communicate with Gothenburg site frequently. Most of the informants went to Gothenburg for knowledge transfer or global meeting. We also select someone who never been to Gothenburg before to compare the result. Name list of Indian technicians are given by correspond manager in Sweden. The reason for getting informants from Swedish managers is they are the only one person who knows well about the operation. And according to Indian culture, employees should be empowered by manager to join such investigation.

4.3 The interviews

This survey chooses to use the pattern of one-by-one and face-to-face open question interview. It means all of the answers can be given as no limited words, further questions will be asked depending on the response of respondent. Each interview will last around one hour, during the interview, both voice record and notes will be used to collect data in case accident happens. The whole survey was done from a full-cover preparation to final implementation cost one month. Interviewer travelled from Gothenburg to Bangalore for face-to-face interviews.

- Reasons for choosing face-to-face interview

In general understanding, this kind of survey which has many people to investigate and locate separately can be done easily with sending questionnaire. But when
consider culture difference from Sweden to India, the better way to make respondent feel relax and say true mind is face-to-face talking. In addition, experience of respondent may not be possible to classify into distinct level, so quantitate questionnaire is not suitable for this case. Moreover, face-to-face meeting can make understanding clearly for each other and also it is easier for interviewer to observe non-verbal language performance. Proof by facts, face to face is a good way to relax respondents before the formal communication and can know more about their feedback of management and culture thinking.

➢ Preparation

Because of different work situation, interview questions are put into two versions. One is used for respondents in Gothenburg and the other is used for Bangalore. The content of survey is divided into three parts. One is about knowledge transfer and training, and another is about daily communication. The last part is multiple about management and employee job satisfaction. The first two parts are the main questions about this survey; the third part is used for collecting extra information in order to find out extra clew of collaboration. The total numbers of questions were around 20.

The difference between versions of Gothenburg and Bangalore is just asking angel. From Gothenburg site, the trend of questions is more about leadership and respondent stand in the side as manager of the global team. More focus will be put on how Indian colleagues perform. From Bangalore site, emphasis moves to how well they use collaboration tool to get support and suggestion about collaboration and management as a team member. The reason to select those questions is because managers in Gothenburg site have less change to know the satisfaction of remote team member. In some way to say, this survey set Gothenburg site as management level but Bangalore site as member.

➢ Test questionnaire

Interviews to Gothenburg were held first, during the interviews, respondents in Bangalore were collected from Swedish informants by relative teams. Before the real interviews, questions to Gothenburg respondents were tested and made modification. For incident, test was done in order to make the word suitable and proper, cover supposed area totally, and also practice to control time.

Questions to Bangalore were also modified by Swedish colleagues’ suggestion, because of followed collection person list and long geography distance, face-to-face test to Bangalore technicians was not applicable.

➢ Booking interviews

Booking emails in Gothenburg site were sent to respondents with purpose description. Recommendation letter was written by Ramon Nurman (supervisor and coordinator in Volvo IT) as attachment.

Booking emails which sent to Bangalore site were also done in similar way. In case of successful meeting, emails also copy to respondents’ manager and coordinator in Bangalore.
Process of interviews

Interviews adopted the form of meeting. Every interview was done in meeting room with organizer and one participant. Each interview held around one hour, most of them were face to face meeting, but 3 left were phone called because they didn’t locate in Gothenburg at that time.

After getting agreement from informant, both notes and voice record were used during interview. Emails were also used for undetailed answer after as complement. The same processes were held in Bangalore. Interviewer went to Bangalore for face to face meeting after finish the Gothenburg survey.

Additional explanation

Since interview is a kind of non-data survey and because of respondents came from different countries, where have multiple culture, it can include many factors that cannot be described into exactly word or data. In this survey also exists the situations, like informant hesitated answer and hided honest feeling. The determination of informant also depends on their personal character and experience. Before the formal interview starts, interviewer emphasized the importance of honest answer and created relax atmosphere, the most important is declaring the protection of privacy to build trust between interviewer and informant.

4.4 Empirical research result

As it mentioned above, interview answers will be presented in the type of table. All of the word answers will be simplified into key words or numbers.

For answers from participants in Gothenburg, four types of symbols are chosen to show their attitude. Confirmative answer uses “O”, negative answer uses “X” and multiple answer uses “#”. Multiple answers mean the respondent cannot give clear unique answer such as “depends on different situation” (Figure 4.1).

There are two ways to evaluate information according to the character of two kind questions. One is judgment type and the other is suggestion type. For the judgment type question, interviewer wanted to get answer of their clear attitude of judgment. Most of the respondents did but few did not show definite mind, either refuse to answer or give ambiguous expression with obviously abnormal face. In that case, not all respondents can be counted as the true answers.

For the answers from Indian technicians, most of the questions were asked openly about their own viewpoints. It is harder to mark them into specific judgment. In addition, their word answers are valuable for doing research of culture difference and remotely collaboration. So the text type of answers was kept in the table. But they can also be changed into judgment if necessary to do comparison. In the Indian technicians answering table, same meaning of “X” and “O” were used here. Especially for the respondents who just show attitude but no more explanation.
In both tables, questions were shown in the form of question area. Detailed questions were asked depending on the response from respondents. Capital letters under each department’s code just use for distinguishing person. One department has one capital letter, which is the abbreviation of each department. For example, “N” means network, “S” means storage. The reason for not making department name secret is that different answers from each department can also reflect the collaboration result from departments.

Below are the two tables of both answers from Gothenburg and Bangalore. Because the table for Bangalore site is large, so here just pick two departments as example (Figure 4.2).
<table>
<thead>
<tr>
<th>Department</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question/ Person</td>
<td>N1</td>
<td>N2</td>
<td>N3</td>
<td>N4</td>
<td>N5</td>
<td>N6</td>
<td>S1</td>
<td>S2</td>
</tr>
<tr>
<td>1. Come to GOT for training is better than go to BLR (further)</td>
<td>#</td>
<td>X</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>X</td>
<td>#</td>
<td>X</td>
</tr>
<tr>
<td>2. Indian technicians don't like ask questions</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>3. BLR site would like to follow instruction</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. Their work is better than before</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. HQ has the responsibility to improve communication</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>#</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. Mention the clear hierarchy level of technician</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>0</td>
</tr>
<tr>
<td>7. Realize different culture affects global cooperation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8. Have problems of communication</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9. Would like to use email</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>#</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. Would like to use telephone call</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>11. More often use communicator and live meeting</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12. Would like to use video meeting frequently</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>13. Suggest to have global face to face meeting</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

"O" means confirmation, "X" means negative, "#" means cannot give single answer

Figure 4.1 Answers from Gothenburg participants
<table>
<thead>
<tr>
<th>Question/Personal Information</th>
<th>Department</th>
<th>Department</th>
<th>Department</th>
<th>Department</th>
<th>Department</th>
<th>Department</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How long have you worked in VIT?</td>
<td>N1</td>
<td>N2</td>
<td>N3</td>
<td>N4</td>
<td>S1</td>
<td>S2</td>
<td>S3</td>
</tr>
<tr>
<td>2. How do you feel about the training result?</td>
<td>O</td>
<td>O</td>
<td>long time to know</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>3. How do you feel about working in VIT?</td>
<td>Equal, Good work atmosphere, interesting work</td>
<td>Can learn more</td>
<td>Good enterprise culture</td>
<td>Good process, enterprise culture, Interesting work, global support, more time for learning, less pressure</td>
<td>Less pressure, effective feedback</td>
<td>General</td>
<td>Freedom, no force</td>
</tr>
<tr>
<td>4. How you evaluate the collaboration with GOT?</td>
<td>O</td>
<td>O</td>
<td>General</td>
<td>O</td>
<td>O</td>
<td>Age gap</td>
<td>O</td>
</tr>
<tr>
<td>6. What is the most important thing in your career life?</td>
<td>Learning, salary</td>
<td>Growth, salary</td>
<td>Growth, Communicate with HR</td>
<td>Technical level, chance to improve</td>
<td>Growth, good work atmosphere</td>
<td>Technical level, Growth, Confidence</td>
<td>Balance of life and work</td>
</tr>
</tbody>
</table>
7. Would you like to continue working in VIT?

8. What do you want to improve of current work status?

9. Would you like to get more detail documentation?

10. Which way is better, get training in GOT or BLR?

11. Do you agree that Indian people are more silence?

12. What will cause your leaving if not improved?

"C" means Microsoft Communicator (a kind of office instant chatting and call tool).
“LM” means Microsoft Live Meeting (which can be used for remotely meeting, can call and share screen).
“E” means email, special for Microsoft Outlook.

As it mentioned above, for the information which can be used for statistic, it will be presented as trend figure and statistical index number below. The left part will be shown as text analysis or quote from participants.

- **Current situation of collaboration**
  Below are a set of figures which calculated from the information above. From those figures it obviously can get main understanding of how well the collaboration performance during knowledge transfer and daily work.
The image aspects do not mean all good aspects. 19% of the Indian employees complained long work time. They felt unfair of longer work time comparing with other IT companies. The positive percent of number are all active answers.

Compare with Indian technicians’ feedback, below is how Swedish employees think about colleagues in Bangalore site (Figure 4.4). The first needs to be confirmed is no matter what kind of evaluation they give, Bangalore site has already improve their work and get satisfaction from Gothenburg. The second largest proportion belongs to not strong basic knowledge and experience. Combine with Figure 1 we already know that quick promotion is the most important for their career. Promotion connects with technical level; the quicker technician can have skills, the less time they will use for higher technical level. The quickest way to get more experience and knowledge is ask people who can give quick answer. That is why they choose Gothenburg colleagues not their local partner to solve problems.

One technician who was doing assignment in Bangalore for six months describe how Indian people work:

*I think they work better than before, and I don’t think they just work following with documentation, they have their own experience to solve problems...They prefer to ask me questions not local colleagues, because they want to get answer quickly. But the problem is, several people ask the same question and I have to answer it ten times. That also happens in Gothenburg...I encourage them to discuss issues locally, if they cannot solve then they can come to me or Gothenburg team...Sometimes they do not say true word just simply because they want to keep work opportunity...Everything here has quite slow process, I have to push them finish task in time...*
Since I&O in VIT Bangalore just set two years ago, there is a big program launched for knowledge transfer and further training. During that time, all employees in I&O Bangalore were new coming, no professional person familiar with Volvo way of working even though most of the new employees have work experience in other IT companies before. Information got from interviews show that almost all new Indian employees were got knowledge transfer both from Bangalore and Gothenburg. Because that is a special time for new setting, the way for training is not applicable to generalize in further but can get some valuable points to learn.

Below diagram shows what is the suggestion for training. The diagram shows that Indian technicians prefer to get more chance for training and wish to have longer time working with experienced colleagues. Ranked second is “share information”. Informants express that they would like to have more detail documentation. In that way, they think they can handle more work without asking help. Another kind documentation is the one which used before or during training. Most informants indicate that they do not know the detail training content before. They wish to get them earlier to do preparation. What put in “Other” are the suggestions just mentioned by one person. It is not applicable to show trend of informants.
Nowadays, new coming employees all get initial training located in Bangalore and also knowledge transfer by their colleagues. What Gothenburg site do for them mostly are further training for special programs or new tools. Normally if there is a long time for training, one or two trainees go to Gothenburg for three weeks to six months, depending on different projects. Also Gothenburg technicians go to Bangalore for short business trips, connecting people in Bangalore and do some assistance for current projects.

More than half Informants from Gothenburg also suggest give new subsidiary more interesting and developed work to keep their passion of work. That is also wished by Indian technicians. They mention if they can handle more advanced work, they can learn new knowledge.

**Collaboration tool**
Another situation is global face to face meeting each year. It is launched in different location for all team members globally to sit together and discussion. Around 80% person in Gothenburg and 70% Indian technicians think it is better to arrange work after having face image. Leader in Gothenburg think through global face to face meeting, colleagues can build relationship and trust; Indian employee think it is easy and relax to work after they know people in other sites. One of the Indian technicians said followed words:

*Before I meet Swedish, I have no idea of them, just communicate on Internet. Sometimes I was afraid of the words I enter on Communicator or mail, if it is suitable...I was afraid I could not understand the answer of technical problems...But after I have face image, I know deeply that they are nice and friendly...I am totally relax to communicate now, I am not afraid to ask questions any more...*
From the figure it is clearly shows that instant communication tool such as Communicator and Live Meeting are the most popular tools, next highest tool is email. Brightly compare with video tool, just around 10% of people would like to use.

Indian respondents said that video meeting is “too formal”, not useful in daily work after they know each other’s face. Communicator is well used for get instant feedback, suitable for asking simple question. Live meeting can share screen, “if the issue cannot be solved in several lines of chatting, we would like to choose live meeting”. “Experience colleagues can share their screen or they can control my screen to give me correct and quick answer”. “Email” is slower but “it does not need to occupy special time”. According to phone call, they said “we use that for local colleagues, just in case use phone to call colleagues outside of India”. “I never use phone for meeting but I would like to be called in meeting if it is necessary”.

The answers from Gothenburg participants are similar, but the different point is when they mention the use of communicator, they really use that frequently but some respondents said “pop out windows sometimes may disrupt my work”. The view they shared with interviewer about video meeting is ”unnecessary”. Pure phone call is also not frequently used in daily work.

Questions of other collaboration tools were also asked in interviews, most of the participants express that they browse formal webpage to find valuable published information. For company news or other information, just around half of person notice.

- **Value of IT in collaboration**
  All participants in this survey feel that after Volvo IT import those tools which can be used for remotely working, the efficiency improves a lot.

  *I use Live Meeting every day for meeting even though we sit together. If the meeting does not have projection, it is convenient to share screen through that software. I cannot image if I don’t have that tool, how I can manage my work.*
5 ANALYSES AND RESULT

5.1 Analysis

Here the analysis will follow the description on Chapter 2. The sequence of analysis will follow the same order with research questions.

- **How to improve communication and cooperation during knowledge transfer period and sequent daily work with culture and value difference?**
  From theoretical research result, equal position, well internal collaboration, multi-network, common goal and other theoretical standards should follow. Attention should not focus on general culture difference, but on personal behavior. According to knowledge transfer itself, passion of trainer and acceptable attitude of trainees who have different culture background are the most important. In summarize, current article provide result in macroscopic view. Attitude, culture, individual performance and well management are the focus from previous references.

Through empirical survey, from the first three figures it can be found that, in order to get good collaboration result, the main working environment should become fixable and active. The second and third figures show that effective collaboration means more frequently communication with huge amount of valuable information. In another way to say, collaboration means share more. The purpose of collaboration is not to finish current project, but also a period to help new rising partner to grow up. In that view, collaboration is used for becoming more independence in future. No matter which purpose the specific kind of collaboration is, it does not obey theoretical criteria of having common goal and work together.

- **How important is collaboration tools performance in long-distance collaboration?**
  From theoretical research result, it can be found that collaboration tools can push project progress, which is also mentioned by participants in empirical survey. Previous researcher did investigation and show that no special tool can be seen as the most effective one, all of the tools can be chosen depending on situations. But here in empirical study, from figure 4.6, we can see that at least video meeting is not popular in multinational’s daily work. It is used widely in quite formal or annual meetings. It is hard to say video meeting is not effective, but it is more frequently used in specific occasions.

Figure 3.4 shows the current usage situation of collaboration tools. The figure presents many tools type which are using daily. Compare figure 3.4 and figure 4.6, strongly comparison is, not all modern tools are used more frequently than older ones. Instant message, web meeting with secluding are add to old meeting types. That evolves into modern popular collaboration medium. But just as it said above, video conference and blog are not that frequently used nowadays. That does not means querying usability of those tools, but just they are developed into specific tools using in particular areas.

- **Explore the value of modern Informatics in long-distance collaboration.**
  As it mentioned above, without the development of modern Informatics, collaboration cannot become reality. In the case of Volvo IT, without the collaboration tools which is built base on technology, Gothenburg site cannot transfer part of their project to
Bangalore; experienced technicians cannot provide sequent support to new employee remotely; serious issues cannot be solved immediately. That double proves previous theory of the importance of modern Informatics.

5.2 Result summary

- *How to improve communication and cooperation during knowledge transfer period and sequent daily work with culture and value difference?* Participants should have equal attitude, use passion to teach. Participants should also pay attention to individual behavior, through cultural learning understand the meaning behind practice. Good basic environment is the premise of keeping resource, which is also the premise of collaboration. The more frequent to communicate with information, the more effective it may be.

- *How important is collaboration tools performance in long-distance collaboration?* Collaboration tool can push project progress. It is not the most important aspect of collaboration but it connects two remote parties. It is hard to say that which type of collaboration tool is the most effective, but some tools are used just in special situations, not suitable for daily use. Most of the old tools are still in use. Network is the basic of remote collaboration tool, and the tool builds the premise of long-distance collaboration.

- *Explore the value of modern Informatics in long-distance collaboration.* The rising of modern Informatics can be seen as the background of collaboration development.
6 DISCUSSIONS

6.1 Conclusions

This thesis through theoretical and empirical survey archives original goal of finding global collaboration improvement. Three sub-level research questions all get fulfill answers from integrating theoretical and empirical research result. Good fundamental work environment with equal attitude, attention on individual behavior bases on different culture understanding, frequently communication with rich information construct the most important fact of effective collaboration. Correct choosing and renewing of collaboration tools can push work faster and safer. Modern Informatics as the main power of current society, also improve the development of remote collaboration work. Empirical survey conclusion as a kind of supplement completes current theory.

6.2 Implications for Informatics

This thesis investigates the value of collaboration tool in remote work. It points out that technology should be put in the same important level as human activity, but it is not the first should be considered. Technology is always used for servicing human social activities. In this thesis, only when culture and behavior understanding is improved, the choice and usage of technology can be improved after. In another view, this thesis fulfill the content of business communication and relative fields.

6.3 Evaluations

6.3.1 Method evaluation

According to Chapter 2.1, mixed-method is used for analysis. Theoretical part chooses relative subject areas as research target, through the analysis of previous reference, answered part of research questions.

Interview is suitable for this kind of topic. It is not inflexible into fix questionnaire or huge amount of calculation. Even though the step of data collection costs lots of time, and also the first step of data analysis is tough of concluding, it is still valuable for this investigation. From the quantitative analysis, clearly statistical indexes and figures were shown above. Through that way, huge amount of data become simple and easy to read after mathematical calculation. The qualitative research part was used for text type of analysis. Powerful quote from respondents can be used as vivid evidence.

6.3.2 Result evaluation

a) Confirmation
   The whole investigate follows clear strategy and procedures which were described clearly before.

b) Dependability
   The conclusion not only gets from one case study but it builds on lots of authoritative theoretical reference.
c) **Credibility**
   The whole structure of the thesis totally follows the sequence of research question.

d) **Transferability**
   Except authoritative theoretical reference, the subject for empirical survey is also a typical multinational enterprise. All of the conclusions are not only usable for one case but can be expanded to common situation.

e) **Ethics**
   The research of this topic is valuable and positive for global project management and pushes it on progress.

6.4 **Generalizability**

The conclusion of this thesis bases on huge amount of theoretical reading and selection. It not only gets from one case study. The subject for empirical survey is also a typical multinational enterprise. So the result from that investigation can also be used widely for other multinationals. Academic readers can also add the conclusion of this thesis as a completion of current theory, like business communication, project management and others.

6.5 **Ideas on future research**

This thesis paper focus on research between Sweden and India, since people in different continent may have similar life culture, it will be quite interesting to continue research widely, focus on how European company transform business mode in order to fix Asian market. And also culture research of difference between European and Asian will also be valuable.
References


Austin, Michael J; Ciaassen, Jennette; Vu, Catherine M; Mizrahi, Paola, (2008) Knowledge Management: Implications for Human Service Organizations Journal of Evidence-Based Social Work,5(1-2), 361 - 389


Binder, Jean (2007) Global project management: communication, collaboration and management across borders.


Delinchant, B; Riboulet, V; Gerbaud, L; Marin, P; Noel, F; Wurtz, F (2002) E-cooperative design among mechanical and electrical engineers: implications for communication between professional cultures. IEEE Transactions on Professional Communication, Volume 45, Issue 4, pp. 231 - 249


G. Thomas (2011) A typology for the case study in social science following a review of definition, discourse and structure. Qualitative Inquiry, 17,(6), 511-521


Gopal, Namita (2009), Business Communication.


Jihong Chen, Peter Y.T. Sun, Robert J. McQueen, (2010),"The impact of national cultures on structured knowledge transfer", Journal of Knowledge Management, 14(2). 228 - 242


Lings, Ian N. (2004), "Internal Market Orientation Construct and Consequences", Journal of Business Research, 57, 405-413


Pinto MB, Pinto JK. (1990) Project team communication and cross-functional cooperation in new program development. J Prod Innov Manage. 7. 200–12.


Yin, Robert K. (1994) Case study research: design and methods

University of Borås is a modern university in the city center. We give courses in business administration and informatics, library and information science, fashion and textiles, behavioral sciences and teacher education, engineering and health sciences.

In the School of Business and IT (HIT), we have focused on the students’ future needs. Therefore we have created programs in which employability is a key word. Subject integration and contextualization are other important concepts. The department has a closeness, both between students and teachers as well as between industry and education.

Our courses in business administration give students the opportunity to learn more about different businesses and governments and how governance and organization of these activities take place. They may also learn about society development and organizations’ adaptation to the outside world. They have the opportunity to improve their ability to analyze, develop and control activities, whether they want to engage in auditing, management or marketing.

Among our IT courses, there’s always something for those who want to design the future of IT-based communications, analyze the needs and demands on organizations’ information to design their content structures, integrating IT and business development, developing their ability to analyze and design business processes or focus on programming and development of good use of IT in enterprises and organizations.

The research in the school is well recognized and oriented towards professionalism as well as design and development. The overall research profile is Business-IT-Services which combine knowledge and skills in informatics as well as in business administration. The research is profession-oriented, which is reflected in the research, in many cases conducted on action research-based grounds, with businesses and government organizations at local, national and international arenas. The research design and professional orientation is manifested also in InnovationLab, which is the department’s and university's unit for research-supporting system development.