APPENDIX

APPENDIX A

Main Research Aim, and Research Problem and Context

Table 1 To design, create and apply a knowledge management-based model to improve the work performance of Thai knowledge workers in a multinational software development firm

National Level	**Thailand:** - Need to develop business in knowledge economy and creative industries - Be attractive country for foreign direct investment (FDI) e.g. good infrastructure, friendly culture, availability of knowledge workers
Multinational Organization Level	- Recruited locally but work in an international multicultural environment
Individual Level	- Probation: technical and cultural capabilities improvement

APPENDIX B

Research Domain and Overall Framework

- Software process improvement
- Change management: human resource
- knowledge workers: software developer

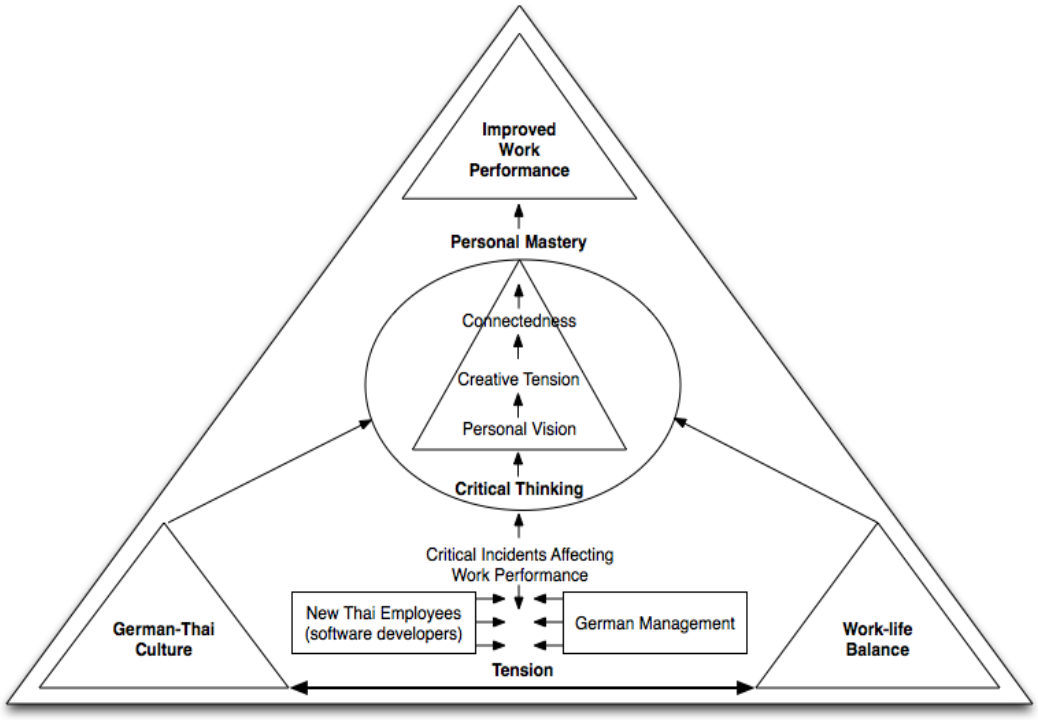

Figure 1 Research Domain and Overall Framework

APPENDIX C

Main Research Question and Research Methodology Steps

How can the process/method be designed to enhance the work performance of Thai knowledge workers?

- Software multinational company
- the critical period of probation
- Enhance cultural differences understanding and technological capability

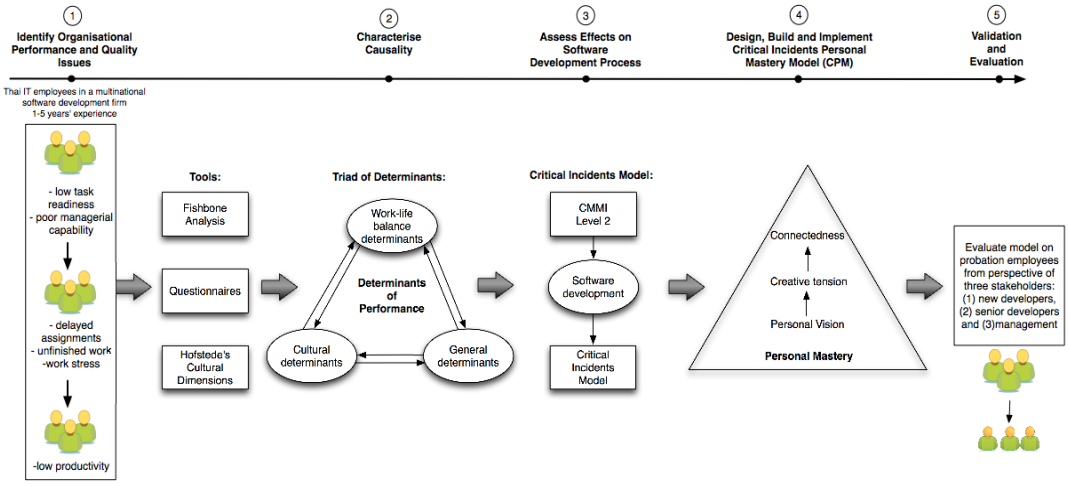

Figure 2 Main Research Question and Research Methodology Steps

APPENDIX D

Tools and Techniques Applying in Research Methodology

Step 1 Identifying Organizational Performance & Quality Issues

1.1. Informal Interviews with 3 German managers at headquarters in Berlin

Purpose : To understand the company's vision, how the managers are dealing with Thai employees and find out the problems.

Issues : company's vision, working problems of Thai employees, ideal software developer

Example of Questions:

1. What is the company's vision and goal to reach the excellence in producing IT services for your customers?
2. We know that employees are interacting for access to drive the company to reach its goal. To this point, how do you evaluate employees' work performance? And how do you sense that this person is the right one for the company's mission? And while you work out, what signal you to realize that they need improvements?
3. How do you deal with the employees who are not good at what they are doing?
4. Do you satisfy with your Thai IT workers at the moment?
5. Are there any further improvements that you wish Thai employees could be?
6. How is the employees' situation in your company? Do you plan to recruit more employees?

1.2. Informal Interview with 1 expatriate manager at the case study Chiang Mai, Thailand

Example of Questions:

1. Could you please tell how do you recruit the new employees and what is the process?
2. How often do you usually recruit the new employee for the software developer team?
3. How many of them do you recruit each time?
4. Where do you post the job offer?

5. What kind of people do you get?
6. What is your target group that you would like to get? Do you receive the newly graduates?
7. What criteria do you consider to recruit new employees? How do you set it up?
8. Does it happen that the ones you recruit do not work well as you expect them to be?
9. Could you please give me clear examples about the situations?
10. How about the successful Thai software developers? Do they have the different lifestyle or different way of life than others who are failed? What do you notice from them? What do they do that make them so good at working?
11. Overall from employees selections based on your experience. Do you think that it is difficult to find the most appropriate one to fit into the team?

APPENDIX E

Tools and Techniques Applying in Research Methodology

<u>Step 2</u> Characterising Causality

2.1 Questionnaires distributed to Thai software developers

Issues: Thai employees' work-life balance attitudes, causes to working problems, employees' decision-making

Questionnaires towards Work-Life Balance of Thai Employees in an International Software Developer, Chiang Mai, Thailand

Part 1 Personal Data

Sex: ☐Male ☐ Female

Age: ☐ 15-20 ☐ 21-25 ☐ 26-30

☐ 31-35 ☐ 36-40 ☐ 41-50

Education background ☐ High school ☐ Bachelor's degree

☐ Master degree ☐ Others (please specify) ……

Work position:

……

Job characteristics:

……

Work experience at the company: ……. Month (s) ……..Year (s)

Marriage status: ☐ single ☐ married ☐ other(s)…….

Part 2 Definition

1. How do you define "work-life balance"? What does it mean to you?

……

Part 3 Work Sphere

1. How do you feel when working with foreigners? Do you face any difficulties?

……

2. What are your family and friends' reflections about your work? Do they have positive feedback?

……

3. What is your ideal work place?

……

4. How is like at your organization? Is it the same or different from what you wish it should be?

……

6. Have you ever thought of changing a new job? Why?

……

Part 4 Life Sphere

1. Do you have enough time to do relaxing activities after work? What do you do?

……

2. Do you think working in this organization benefit your life?

……

The end

Thank you for your responses

2.2 Focus group with Thai software developers (about 3 hours)

Open-ended question in the group: What lead to poor performance of Thai software developers?

Issues:

- General work issues clarified by Fishbone diagram (See Chapter 4)
- Cultural Perspective categorized by Hofstede's cultural dimension (See Chapter 4)

APPENDIX F

Tools and Techniques Applying in Research Methodology

Step 3 Assessing Effects on the Software Development Process

Issue 3.1: Critical Incident Report Reflecting Fail Performers in IT Project at the Case Study Company

1. Project Planning

1.1 Objective

1. To have a good estimate of cost, schedule and risks of a project so that financial risks for company is mitigated

2. To reduce overlapping projects or phases where no projects take place

1.2 Critical incidents

1.2.1. Work preparation process

Definition: The time span that the team leaders and IT employees prepare the working process including job distribution and job specification

Keywords: response to supervision, inquiry to perplexity

At the start of an assignment, the work process is clarified for job distribution. However, it often occurs that employees are not ready to prepare and promote the projects. They do not understand correctly what the management requests in order to satisfy the customers. This means that employees do not fully comprehend the purposes of the products. To understand the nature of business, workers need to have a clear picture of the customer needs and the entrepreneurial nature of running a business. When the picture of work is not yet clear to their minds, they cannot create concepts and design small developments or parts of large development. This event repeats especially when more than one foreign superiors gives order to Thai employees. Unconformities of bosses' command bring about confusing job descriptions. Furthermore, the delay response from headquarter to the local subordinates obstruct a chance to give an immediate inquiry to employees' doubts. Unanswered questions left Thai employees with frustration and have no idea what to

do next and cannot involve themselves into the job. The process of assignments is operated slowly because employees leave ambiguous issues unattended. When the ambiguity is not clearly explained, the work preparation is prolonged. Hence, often the outcome is that work is neither finished as planned nor the employees deliver inappropriate results.

1.2.2. Time management

Definition: The estimation of the time expected to spend according to individual working plan.

Key word: goal settings

To accomplish the organizational commitment depends on punctuality of work delivery to the customers. Establish a timeline is important to assist employees to recognize their goal setting. Nevertheless, employees cannot deliver accurate work to meet deadlines because they do not inform certain buffer for the delay; for instances, additional period for studying the technical themes, forwarding feedback duration from team leaders, problems with pair-working collaboration. They also cannot write a complete roadmap identifying when to finish the job. Since the time estimation is project risks, time management is crucial.

1.2.3. Initiative and expressive in English communication

Definition: an ability to express an understandable and accurate English speaking and writing communication between Thai employees and German team leader for daily life at work and working report

Key word: work out loud

The interaction between team members is the lifeblood of organization. The failure of working in a multinational teamwork is to establish a cooperative conversation between foreign superior and Thai subordinates or Thai employees and foreign co-workers using English as the medium language. The problem does not occur at the proficiency in English speaking as the native speaker including perfect accent, intonation and use correct grammars but the ability to communicate understandable English messages which is considered good enough for communication at the workplace. It appears that ineffective Thai employees work in

silence. They are not alert to discuss with people about new technique, do not inform team leader about risks and problems found. In addition, employees are not able to express and generate creative ideas in English. They think but they cannot express it to out loud messages. In other words, they are not a type of communication initiator. That is the reason why they cannot explain and breakdown functional specifications and requirements to developers.

2. Project monitoring and control

2.1 Objective

1. To share the same information on the status of the project to suppliers and customers
2. To mitigate risks of project failure or budget overdrawing

2.2 Critical incidents

2.2.1. Reporting current reality and forthcomings

Definition: the sense to realize the current situations obstructing the working process and foresee the risks that may cause the delay of work result.

Keywords: realize the present problem, foresee the future risks

In order to monitor the work progress, it is helpful when employees know what is currently happening and can assume what will happen in the near future by writing a weekly report. The bosses cannot follow up with series of activities done because employees do not produce well- documented deliverables. The missing content is information signifying risks and time spent against the time estimated. Employees who do not realize the present situations and future prediction; cannot identify risks in a timely way, and manage its mitigation with team leaders.

3. Requirement management

3.1 Objectives

1. To understand the customers' needs and desires regarding the product
2. To review assesses requirement whether it is completed
3. To identify ideal qualification of IT employees
4. To distinguish team structures' performance

3.2 Critical incidents

3.2.1. Developing and influencing others

Definition: an employee who performs the job well and can be taken as a role model for others in the teamwork

Keywords: willingness to help, inspiring others

In organization, employees perform their competencies differently. Some people have a high performance whereas others have a lower ability. Despite of the existence of crop of the cream performers, junior workers do not have much improvement. Senior employees do not successfully teach other to work well because they feel that the new delegates do not have the same background knowledge. It also interrupts with their present job responsibilities. When seniors give up coaching, junior employees are left alone without guidance and gaining not sufficient guidance e.g. how to set-up and finish the project. Employees develop themselves slowly when they do not have anybody to inspire as a good role model. When they feel inferior and regarded themselves as the burden of others, it weakens their personal mastery.

3.2.2. Technical performance

Definition: qualifications and skills required in IT positions which supports the team to accomplish a product that meets the demand of customers

Keywords: knowledge application, knowledge accumulation, work achievement

Knowledge is important for accomplish the job. Due to the different level of learning capability, each employee requires different period of information search. The self-development process of employees takes long time during the time of research about the right method to work until the job is accomplished. Some employees cannot extend abilities and supply specific skills to match technologies used in the project within a short time. As a result, they have insufficient knowledge of application architecture and development methodology causing the delay of job accomplishment. Based on the personal knowledge of IT workers, they are specialized in technique applied in job responsibilities. Without the background knowledge, they cannot perform well. Each person has strength that can refurbish the other team members until one product is completed. It is also a kind of psychological contract between an employee and employer that employees help organization to attain the

goal. Their concern for orders, quality, accuracy and self-recognition based on personal achievement are created by individuals' technical performance. As work is life-fulfillment, mostly employees expect that they will be recognized for their good deeds. However, it happens that employees feel alienated from their products when they get no comments on the quality of the job done and do not hear the knowledge about future use of their work. The inspiration and enthusiasm to work is decreasing because their work is not recognized after they have put all the energy and effort into it. Nevertheless, when the completed work is not to the standard, the comments with explanations and recommendations are required by them as well. The technical performance for IT job positions in the company are for instances. Employees must at least have basic knowledge to perform well in their duty.

Java/J2EE Programmer

- Java in general
- J2EE technologies (including Servlets etc.)
- J2EE application servers
- SOAP and REST Webservices
- SWT
- Google Web Toolkit (GWT)
- Solid experiences in design of Relational Database Schemas
- Working knowledge of and corresponding experience with SQL

PHP Programmer

- Sound knowledge of fundamental web design technologies, including XHTML, DHTML, CSS.
- Excellent grasp of client-side web programming, especially JavaScript.
- Sound understanding and command of techniques used for rich-application development, including AJAX.
- High proficiency in server-side scripting language (PHP)
- Solid database administration experience desirable, with experience on MySQL
- A good eye for aesthetics and usability of web interfaces.

Flash Designer

- Photoshop, Illustrator
- Flash (including Actionscript)

Mobile Application Developer

- Knowledge of and solid experience in developing mobile applications.
- Solid OO programming skills

3.2.3 Diversity adaptation to organization culture

Definition: realization of multinational environment in the workplace, an adjustment to working style and getting along well with superiors and colleagues

Keywords: realize German national culture, realize Thai national culture, and comprehend German- Thai organization culture

Culture affects human behaviour in some ways. Thai employees carry the national culture of being indirect in expression, cool-hearted and easygoing while German is stereotyped as strict, straightforward and disciplined. Even though the national characteristics are positive reflection of one culture, it can influence the negative effects towards working result. Under German management, managers give freedom in working styles and expressing ideas. They don't have to wear uniform. It does not matter how they look but how they perform is the organizational culture. However, the freedom in terms of working and thinking with creativity is not successful. Thai workers are accustomed to receiving directions and strict time line. They are not used to making independent decisions, in other words, to provide too much freedom without measurable control is useless and time – consuming because it prolongs the process of assignments. Thai employees work slowly due to their easygoing style. They also like to avoid confrontation and disputes. This causes a problem in the time of work discussion and forwarding feedback. German managers are direct in expressions about work result while Thai employees see it as insulting words. They often feel disappointed and discouraged when they receive straightforward feedback. The organizational culture is to direct and to the point discussion. In addition, Thai employees have been instilled with the tradition of respecting elders. As a result, the organizational culture of flat hierarchy in German

company is not practical. It affects Thai employees' behaviour not to be brave to share opinions that are opposite to managers even though their ideas can work out in the advantage of project accomplishment.

4. Process and product quality management

4.1 Objectives

1. To stimulate an awareness towards process and quality guidelines of all software developers

2. To identify and discuss breach of these guidelines to newcomers

3. To provide reasons how employees can improve their mistakes

4.2 Critical incidents

4.2.1. Customers involvement

Definition: an attention to keep in touch with customers to fulfil their demand

Keyword: customer interest

Typically, the products acquired by the project are determined during the early stages of the planning and development of the product. However, the quality of the product will not reach customers' satisfaction when they are not directly taken as part of the team and continuously provide feedback e.g. design improvement. It also happen that programmers and customers have different understandings of a feature in case that requirements are not sent to customers for reviewing and employees do not understand truly about customer's demand.

5. Measurement and analysis

5.1 Objectives

1. To define project milestones

2. To review all milestones and analyze deviation

3. To learn from the past experience in the previous projects to be the foundation of the future ones

5.2 Critical incidents

5.2.1. Prioritizing product backlogs

Definitions: setting the priority of product backlogs in order to know which parts of has to be done first.

Keyword: sprints backlogs presentation

To measure the progress of assignments Scrum method in Agile software development is applied. The job is distributed according to the expertise of each employee. After each one finishes tasks, all sprint backlogs are gathered and test to accomplish one product. Nevertheless, it is found that each sprint is completed at different time. The part that contain sophisticated module will be taken longer time than the simple cases. The employees who get their parts done are supposed to help the rest to push the work done quicker. Unfortunately, each person has different style of writing code, it is difficult to follow and to correct the work of others. Furthermore, in the meeting plan, requirement of the sprint is not clarified and prioritized clearly so that employees know their tasks precisely. They do not list the test case before wring a code. Test items are adopted to be the standard of backlog requirements. As a result, the worst thing is that employees cannot finish the product backlog according to the plan.

6. Configuration management

6.1 Objectives

1. To collect information regarding performance, usability and functional attributes required by users and store in product management system

2. To identify planning of versions

6.2 Critical incidents

6.2.1. Capability of change management

Definition: an ability to cope with a sudden changed requirement

Keyword: readiness for change requirement, setting new job requirement

In software development programs, customers unexpectedly communicate change request. The possible changes during the course of program bring about extra work to the previous orders. Though the programmers know the solution to the change request, they do not think additionally about the impact of change to the source code as well as the design. Due to the change of job requirement, employees have a role ambiguity to deploy teamwork to track change status; for examples, who is fixing the product?; who is testing the product? It is noticeable that implementing change requires employees who can handle multiple, changing priorities simultaneously.

6.2.2. Versioning plan creation

Definition: to identify version of technology used to create a mutual understanding between the workers and testers, to distinguish the new and old version of work done

Keyword: version identification

In configuration method, each artifacts is articulated by version e.g. files, requirement, bug, source code. When versioning plans are not created. Thai employees cannot design company's products adhering to coding and standards as well as test product release and unit tests as part of Quality Assurance procedures. Errors during compiling source code from all programmers. They have to be careful not to let the corrected code to be overwritten by others as well as identifying who had corrected those files and which parts that has been renewed. Comparing code and the reminder of old and new version has to be recognized carefully unless when users inform the bug report, they cannot identify which version affected by bugs. Importantly, employees do not realize the reason why this algorithm has to be changed because it can cause bugs later on. Furthermore, employees cannot build binary of the old version; for example, to degrade the version 2.0 to version1.0 in order to create another product. But when code is developed with mostly of newer version, it is time consuming to unlock those written codes which are interrupted with a lot of bugs. It also can happen that latest version of correction is lost. Employees do not use similar coding standards in team e.g. file separation, symbols usage to recognize the latest version of file saving.

7. Supplier agreement management

7.1 Objectives

1. To create a mutual agreement between the supplier (the affiliating company in Chiang Mai, Thailand and internal customers (the headquarter in Berlin, Germany)

7.2 Critical incidents

7.2.1. Feedback utilization

Definition: understand the feedback given and correct the work according to the requirement

Keywords: feedback understanding, work correction

The affiliating company in Chiang Mai, Thailand is the supplier that generates the product to the headquarter in Berlin, Germany. Experiences from past projects are not always taken into account when working on new projects e.g the feedback from customers, how well we estimate the time, how many project finish on time e.g. estimate burn-down chart. When Thai employees cannot catch up with comments and put ideas into project correctly, the supplier or the outsourcing company cannot determine necessary outputs for the internal customers.

7.2.2 product deployment

Definition: the usage of product after delivery

Keyword: product's usage ability

After the product is accomplished and delivered to the test team at the headquarter. The difficulty arises when the German colleagues do not successfully test the new product due to the different environment of deployment; for in stances, unmatched set up server. Moreover, the time span difference between Germany and Thailand causes the delay of responses to discuss about the problem.

Issue 3.2: Focus group review with 8 Thai experienced Software Developers and Questionnaire distributed to them to prioritize the 13 critical incidents

The 13 critical incidents are reviewed and discussed by Thai experienced software developers before handing out questionnaires to rank the critical incidents.

Questionnaire towards Critical Incidents Influencing Fail Performers in IT Project based on Key Process Areas of CMMI Level 2 at the Case Study

Purpose: To prioritize the frequency of critical incidents influencing fail performers working in IT project so that the newcomers can learn from the past experience of current employees

Part 1 Critical incidents based on CMMI keys process areas (Level 2)

These are critical incidents influencing fail performers who work in IT projects based on the key process areas of CMMI level two. Please put these defect issues according to its frequency.

Note: 5= always, 4=very often, 3=often, 2=sometimes, 1= rarely

Key Process Areas	**Critical Incidents**	**Rating Scales**				
		5	**4**	**3**	**2**	**1**
1. Project Planning	1. slow work preparation process					
	2. poor time management					
	3. poor initiative and expression in English communication					
2. Project monitoring and control	1. unable to identify current reality and forthcomings					
3.Requirement management	1. unable to develop & and influence others					
	2. poor technical performance					
	3. unable to adapt to diversity & organizational culture					
4. Process and product quality management	1. no customer involvement					
5. Measurement and analysis	1. unable to prioritizing product backlogs					
6.Configuration management	1. no capability of change management					
	2. no creation of versioning plan					
7. Supplier agreement management	1. low level of feedback utilization					
	2. product deployment					

APPENDIX G

Tools and Techniques Applying in Research Methodology

Step 4. Design, Build and Implementation of the Critical Incidents Personal Mastery Model

4.1 The Critical Incident Personal Mastery Model (CPM)

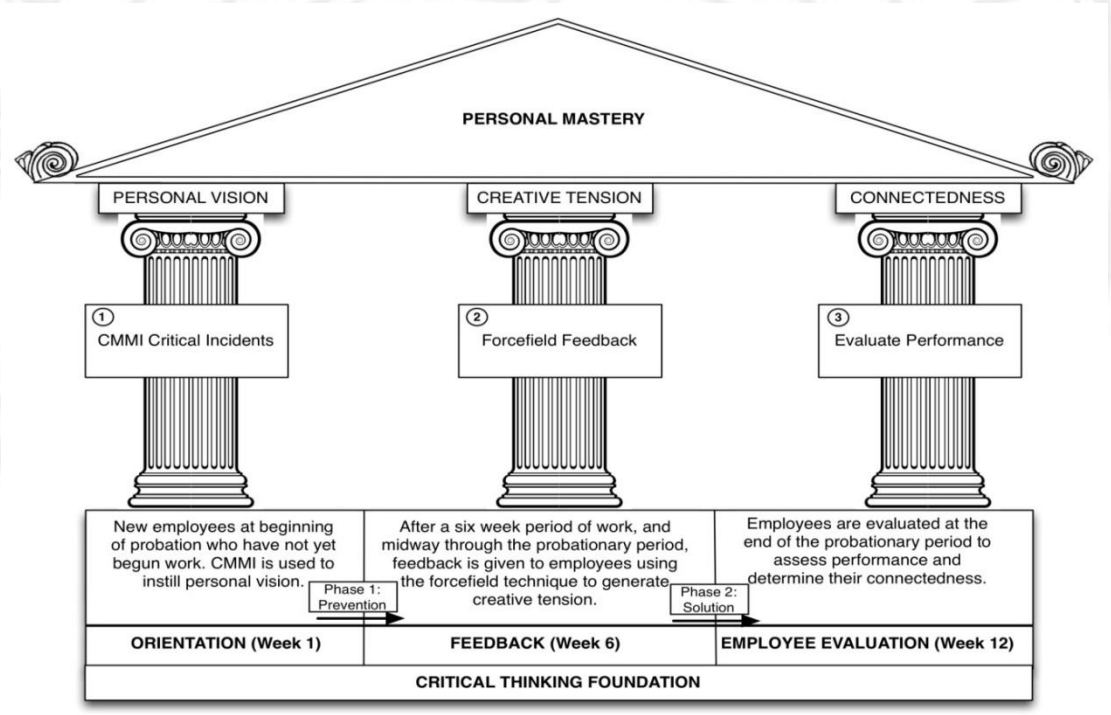

Figure 3 The Critical Incident Personal Mastery Model (CPM)

4.2 Initial Plan to Conduct Research Steps

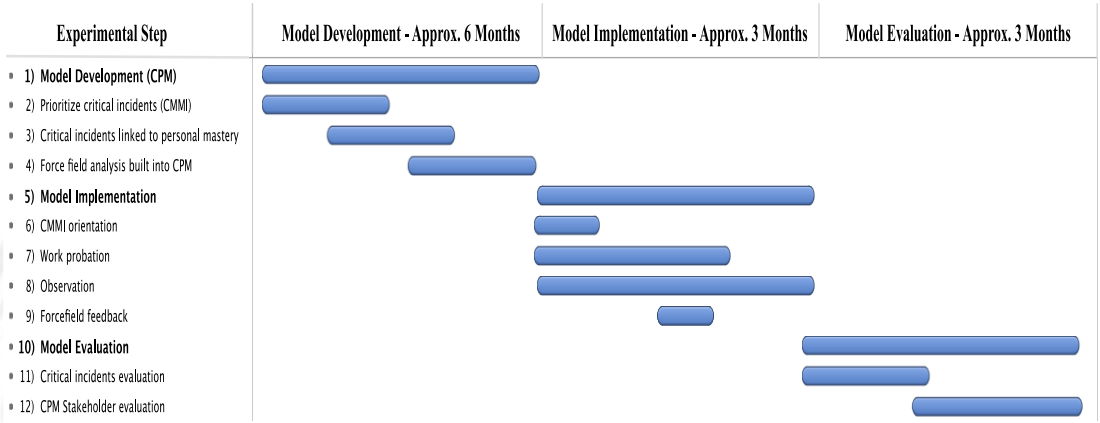

Figure 4 Initial Plan to Conduct Research Steps

4.3 Concept Overview of the Implementation

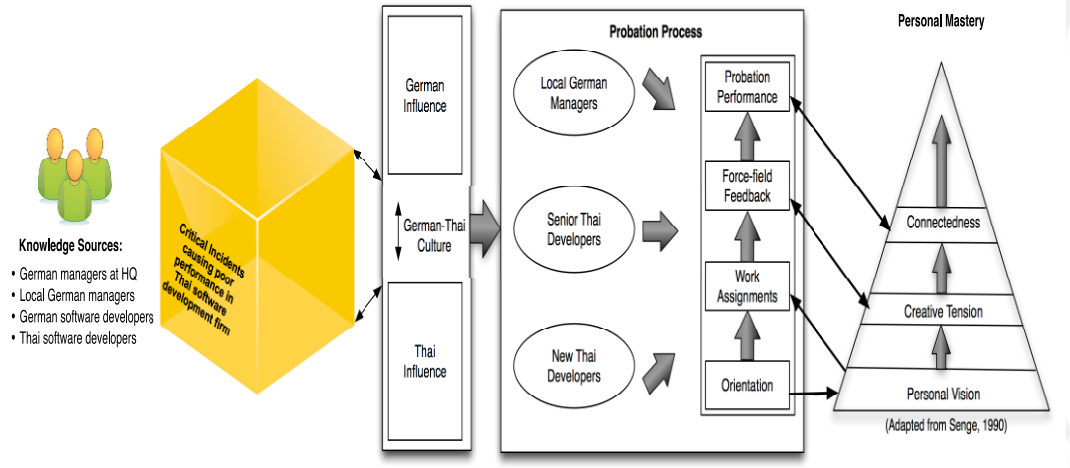

Figure 5 Concept Overview of the Implementation

4.4 Qualifying Examples for Data Collection of Experimental Group and How to Select the Experimental Group

The interview is held in order to select the 3 most appropriate ones for the job positions including software developer, mobile application developer. They must be:

- Newly recruited employees
- University level graduation
- Grade average between 2.5-3 GPA (not low not high)
- Probation experience

The interview protocol includes:

- What were the reasons you like IT?
- Why would you like to work for us?
- Do you have experiences working developing for mobile devices?
- What experiences do you have with Java?
- What do you see yourself in 5 years?

4.4 Implementation of the Critical Incidents Personal Mastery Model: Learning Activities and Time Period

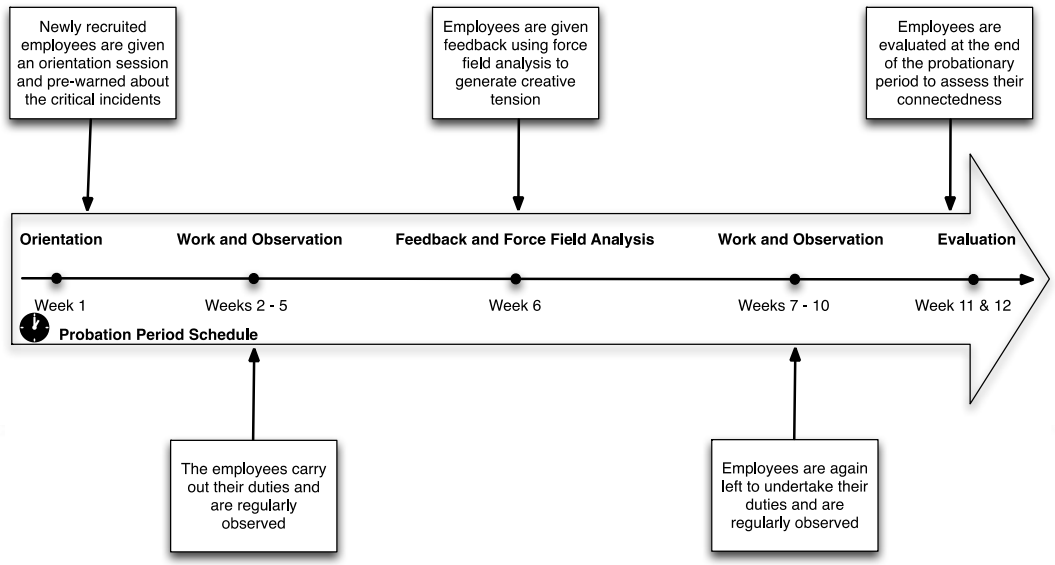

Figure 6 Implementation of the Critical Incidents Personal Mastery Model: Learning Activities and Time Period

4.5 Phase 1 of CPM Model Implementation: Building Personal Vision through Orientation

Learning activity 1 Field trip around the company

Learning activity 2 Informal Interview with newly recruited employees

2.1 What would you like to be when you were young?

2.2 Is your dream changed when you are grown up/And now what are you going to be?

2.3 What/Who influence you to be interested in IT?

2.4 Since when you are seriously go deep into IT field?

2.5 Why do you like to work in IT field?

2.6 What kinds of job descriptions you would like to do?

2.7 What are your strengths that can help you accomplish the job responsibility?

2.8 What do you think that are your weaknesses?

Learning Activity 3 Reflect and Review towards CMMI critical incidents (Adapted from Gibb (1988)

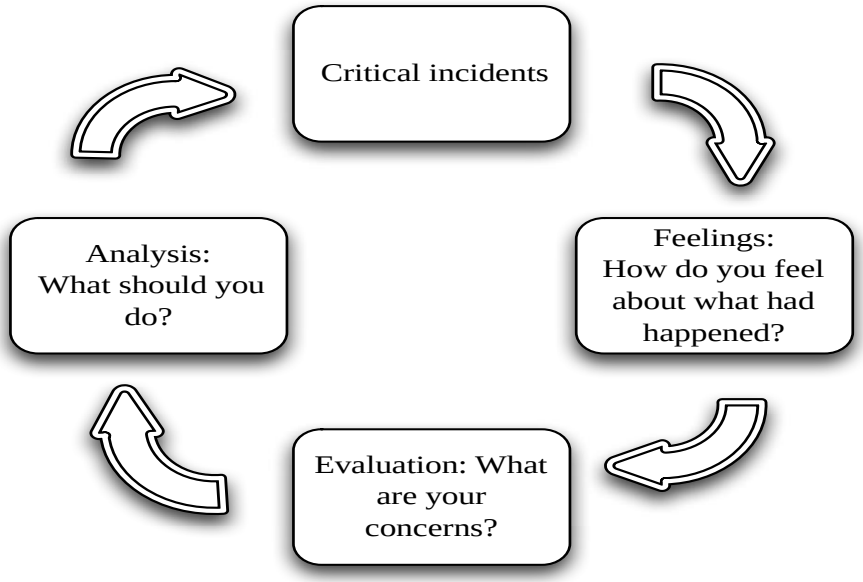

Figure 7 CMMI critical incidents

Reflection Questions:

- How do you feel about these critical incidents that had happened through the tacit experience of seniors?

- What are the most concerning critical incidents in the orders of its priority?
- Do you think which are the critical incidents that may trouble you while working here?
- How are you going to solve the problem?
- Do you think which are the critical incidents that may not be the obstacles during your work?
- How can you handle the situations?

4.6 Phase 2 of Implementation: Feedback and Force-Field Analysis to Foster Creative Tension

Learning Activity 1: Management team give work observation report based on CMMI critical incidents

Learning Activity 2: Management team identify driving force and employees identify restraining force

4.7 Phase 3 of Implementation: Connectedness

German Management:

- Foster the learning atmosphere by considering what employees need to deal with employees' restraining forces and finally improve their work performance

Employees:

- They feel that they are part of the company and work happily
- Work-life balance is ensured by achieving true personal mastery rather than generating tension through work and fear

APPENDIX H

Tools and Techniques Applying in Research Methodology

Step 5. Validation/Evaluation of the Model: Stakeholder evaluation

Stakeholder analysis: 3 stakeholders:

- new employees,
- senior software developers,
- German management

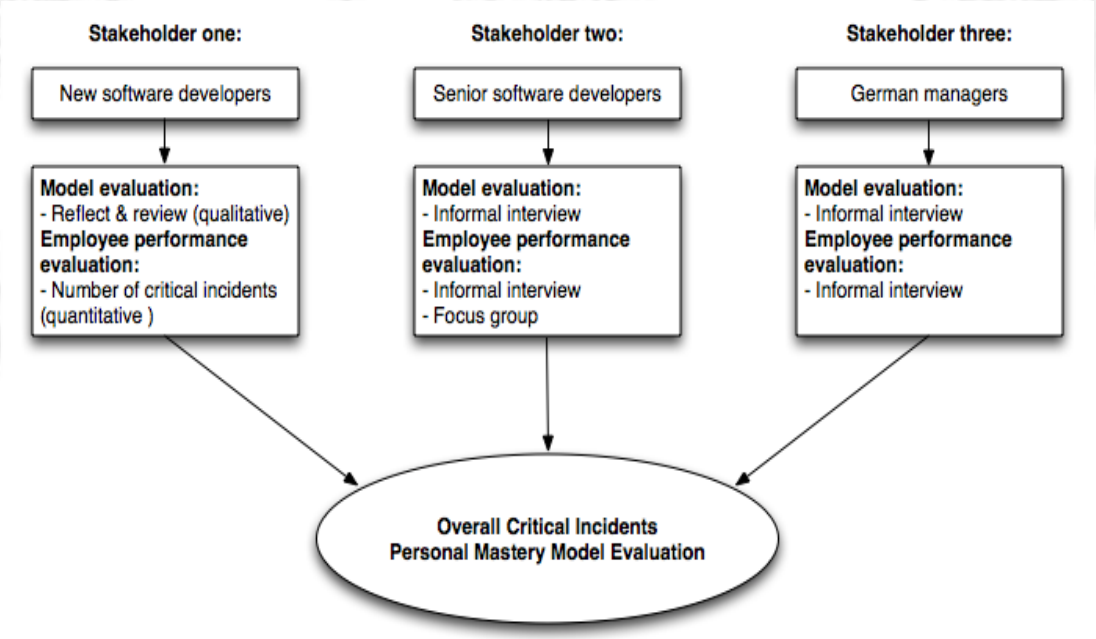

Figure 8 Stakeholder evaluation

CURRICULUM VITAE

Name Ms.Nipawan Mantalay

Date of Birth 9th October, 1983

Educational Background

2005-2007	M.A. English, Faculty of Humanities Chiang Mai University, Chiang Mai, Thailand
2001-2004	B.A. (hones) English, Faculty of Humanities Chiang Mai University, Chiang Mai, Thailand
1999-2001	High School: Wattanothaipayap School, Chiang Mai, Thailand

Publications

International Journal

Mantalay, N., Chakpitak, N., "Improving the Performance of Locally Recruited Thai Employees in a German Software Company", Asia Pacific Management Review. (Accepted – 13th May, 2013)

International Conferences

Mantalay, N., Chakpitak, N., Janchai, W., Sureepong, P., "Using Knowledge Management and Critical Thinking to Understand Thai Perceptions and Decisions towards Work-Life Balance in a Multinational Software Development Firm", International Conference on Knowledge Management and Knowledge Economy (ICKMKE 2012), Venice Italy, Apirl 11-13, 2012.

Mantalay, N., Chakpitak, N., Janchai, W., Sureepong, P., "Investigation of Organizational Work-Life Imbalance of Thai Software Developers in a Multinational Software Development Firm Using Fishbone Diagram for Knowledge Management", International Conference on Information and Knowledge Management (ICIKM 2012), Paris, France, Apirl 25-27, 2012.