MODEL OF FACULTY MEMBERS' RESEARCH PERFORMANCE IN NATIONAL RESEARCH UNIVERSITIES

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ABSTRACT

Title of Dissertation	Model of Faculty Members' Research Performance in National Research Universities
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The objectives of this research were: 1) To explain faculty members' qualifications, their perceptions of transformational leadership, human resource management practices, learning organization and their research performance in National Research Universities; 2) To study the effects of faculty members' qualifications, their perceptions of transformational leadership, human resource management practices and learning organization on their research performance in National Research Universities; and 3) To develop the model of faculty members' research performance in National Research Universities.

The research methodology was the mixed methods between the quantitative and the qualitative methods. In the quantitative method, the population was 18,035 faculty members from National Research Universities. The researcher used simple sampling method and used Yamane's formula to calculate the sample size, which were 392 faculty members. Questionnaires were sent by mail and 390 of mail were received back, which were 99.49 percent from the sample size. The questionnaires, which were created from the concepts and the operational definitions, were tested by content validity method, reliability method and construct validity method. In the qualitative method, the interview outline was created from the statistics analysis results, and then used to interview nine faculty members in the National Research Universities to explain the quantitative research findings.

The research findings were: 1) Faculty members' qualifications, which consist of academic positions and income per month, were significantly related to their research performance; 2) Faculty members' perception of organizational

transformation and knowledge management has the most positive direct effect on their research performance, followed by their research experience, their perceptions of technology application, and creating continuous learning opportunities; 3) Faculty members' perception of transformational leadership has the most positive indirect effect on their research performance, followed by their perceptions of training and development, recruitment and performance management, and rewards; and 4) Faculty members' perception of transformational leadership has the most total effect on their research performance, followed by their perception of organizational transformation and knowledge management, their research experience, their perceptions of technology application, creating continuous leaning opportunities, training and development, recruitment and performance management and rewards.

The new theoretical findings were: 1) Faculty members' perception of transformational leadership has no the positive direct effect on their research performance. However, this research found that faculty members' perception of transformational leadership has the positive indirect effect on their research performance through their perceptions of human resource management practices and learning organization; and 2) Faculty members' perception of human resource management practices has no positive direct effect on their research performance. However, this research found that faculty members' perception of human resource management practices have a positive indirect effect on their research performance through their perception of learning organization.

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ABBREVIATIONS AND SYMBOLS

Abbreviations	Equivalence
CL	Creating Continuous Learning Opportunities
CM	Commitment to Learn
IPM	Recruitment and Performance Management
OKM	Organization Transformation and Knowledge Management
RC	Rewards
RE	Research Experience
RF	Research Performance
RP	Faculty Members' Research Performance
S.D.	Standard Deviation
TA	Technology Application
TD	Training and Development
TL	Transformational Leadership

Symbols	Equivalence
β	Standardized Coefficient
R^2	Coefficient of Determination
t	t-Statistic

CHAPTER 1

INTRODUCTION

1.1 Statement of the Problem

Research competency is an essential factor affecting the quality of human resources and research. Consequently, it will benefit a country to gain competitive advantages in this area (Office of the Higher Education Commission, 2009). In particular, Thailand will be more able to participate in the ASEAN community, and promote itself to be a center of education and training, research and development, and conferences in the Asian region. In the same way of national research policy and strategy 8th (2012 – 2015), it has emphasized in research such as the statement of national research vision "Thailand has and uses quality research for development sustainability" and the statement of the national research mission "To develop Thailand's research competency and create a valuable knowledge base, to develop and apply science widely, and to learn and further wisdom for public and business benefits as well as quality of life by using research resources and networks efficiently" (National Research Council of Thailand, 2012). In short, all of these reflect to the awareness and emphasis in developing the country by using research.

In Thailand, universities are the major producers of both research and researchers. The Scopus database reported that more than 90 percent of the research in the country is produced by universities (Office of the Higher Education Commission, 2009). Between 2005 – 2010, 75 percent of Thai research articles and reviews that were accepted for publication in national and international journals in the Scopus database were produced by academics in National Research Universities that included Chulalongkorn University, Kasetsart University, Khon Kaen University, Chiang Mai University, Thammasat University, Mahidol University, Prince of Songkla University, Suranaree University of Technology and King Mongkut's University of Technology Thonburi (Wanchai De-Eknamkul, 2011).

Suthiporn Jitmitraparp (2012) suggested that successful research will emerge if universities emphasize 10 issues:

1) The university should set their performance dimensions relate to the country's research goals.

2) It should increase research efficiency and effectiveness by improving discipline and workload systems.

3) Universities should organize their research financial management systems.

4) They should integrate internal research units with a center of excellence and external research units.

5) Each should develop career paths for faculty members and researchers.

6) There should be increased research cooperation between universities.

7) Secondary management should be organized with the communities and industrial sectors.

8) Universities should organize systems designating duty and responsibility.

9) They should organize the sharing of equipment and infrastructure.

10) Graduate study should integrate research processes with according to the country's research goals.

As indicated by Suthiporn Jitmitraparp (2012), it can be predicated that apart from faculty members' research competency, developing their research performance should start from a leader who practices transformational leadership. Transformational leadership is a leader's abilities to guide successful visions through important attributes which include idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Additionally, human resource management practices including faculty recruitment, performance management, rewards, and training and development may also be important factors that drive faculty members' research performance. Furthermore, developing an organization to be a learning organization through organizational transformation, knowledge management, commitment to learning, technology application, and creating continuous learning opportunities may be significant factors that also enhance faculty members' research performance.

From reviews of leadership literature, it can be observed that "leadership" is a concept that most academics accepted and defined more than 30 years ago. Major

academics such as Northouse (1997), Lussier and Achua (2001), Ricketts (2003) and Robbins and Judge (2013) accordingly defined leadership as a process in which the leader plays roles and behaves in ways that influence groups to perform and accomplish tasks according to an organization's objectives. Nowadays, the organizational environment is more chaotic and competitive. Leaders in this situation should have competencies including managing risk, visioning, understanding individual differences, keeping relationships with others, supporting employees in confronting with environmental transfer, and in learning new things with eagerness (Daft and Lane, 2005). It can be claimed that transformational leadership is a style of leadership that is suited to the present environment. Some academics including Bass and Avolio (1994), Yukl (2002), and McShane and Von Glinow (2010) described transformational leadership as a leader's behavior which includes building inspirational motivation and being a role model that establishes a vision and leads employees to understand, accept, and perform in a manner to achieve the organizational objectives and understand individual differences. Previous research reviews revealed that transformational leadership has a direct effect on organization performance (e.g., Judge and Piccolo, 2004; Jain, 2005; Piccolo and Colquitt, 2006; Garcia-Morales, Matias-Reche and Hurtado-Torres, 2008; Tsai, Chen and Cheng, 2009), and transformational leadership also has an indirect effect on organization performance through human resource management practices (e.g., Zhu, Chew and Spanger, 2005).

From literature reviews of human resource management practices, it can be observed that the term "human resource management" first appeared in the United State of America in the 1980s because of firms' specific responsibilities and challenges (Analoui, 2007). Major academics such as Dessler (2002), Mondy and Noe (2005), Armstrong (2006), and Noe, Hollenbeck, Gerhart and Wright (2007) accordingly described human resource management practices as human resource's policy determination and human resource activities management including recruitment, performance management, rewards, and training and development. A number of research reviews state that human resource management practices have effects on organization performance (e.g., Huselid and Becker, 1996; Becker, Huselid, Pickus and Spratt, 1997; Guest, Michie, Sheehan and Conway, 2000; Purcell, Kinnie,

Hutchinson, Rayton and Swart, 2003; Challis, Samson and Lawson, 2005; Vlachos, 2008; Baloch, Ali, Kiani, Ahsan and Mufty, 2010; Lee, Lee and Wu, 2010; Boohene and Asuinura, 2011; Sohail, Tanveer and Muneer, 2011; Santiago and Alcorta, 2012), and human resource management practices have effects on learning organization (e.g., Lopez, Peon and Ordas, 2005; Wang, Tseng, Yen and Huang, 2011).

From learning organization literature reviews, it can be observed that during the past decades, a large number of organizations have established learning as a core competency. A learning organization will develop its resource skills such as information, technology, human capital and knowledge application to satisfy the needs of customers or stakeholders. In fact, learning organization has changed gradually and rapidly overtime (Jackson, Schuler and Werner, 2009: 77). Major academics such as Senge (1990), Pedler, Burgoyne and Boydell (1991), Marquardt and Reynold (1994), Watkins and Golembiewski (1995), Yukl (2002) and Daft (2007) described learning organizations in the same way: as organizations that emphasized the enhancement of employees' competency by supporting them to have continuous learning opportunities, transforming the organizational atmosphere to promote employees' learning, encouraging employees' learning commitments, managing organizational knowledge, and applying technology to employees' learning.

Many research reviews, have pointed out that learning organizations have a direct effect on organization performance (e.g., Ellinger, Ellinger, Young and Howton, 2002; Kontoghiorghes, Awbrey and Feurig, 2005; Yeung, Lai and Yee, 2007; Yang, Wang and Niu, 2007; Davis and Daley, 2008; Walumbwa, Cropanzano and Hartnell, 2009; Som et al., 2010).

Surprisingly, it can be observed that a large number of research reviews generally paid attention to studying overall performance, whereas a small number of researchers were interested in studying specifics in research performance. In addition, most of the previous research attended to study in organization levels which neglected studying employees' perception, although studying employees' perceptions is equally important as studying organization level. Nord (1976 quoted in Wichian Wittaya-Udom, 2004: 98) strongly believed that human perception was a fundamental action between human and organization. If employees perceive in the same way as the organization expects, they will behave correctly and perform efficiency. In contrast, if

employees' perceptions are oblique to the organization's expectations, of course, they will behave incorrectly and perform inefficiency. As a result, variables in this study were formed by integrating the perception concept with the transformational leadership concept, the human resource management practices concept, and the learning organization concept, to be referred to as follows: faculty members' perceptions of transformational leadership, human resource management practices, and learning organization. All of these variables were used for an individual level study that was different than a great deal of the previous research.

Apart from these variables, a faculty member's qualifications that reflect their academic competency include education, research experience, academic position, and income may also have effects on their research performance in National Research Universities. Therefore, this research will study the effects of a faculty member's qualifications and their perceptions of transformational leadership, human resource management practices, and learning organization on their research performance in National Research Universities. This research can contribute the development of a model of faculty members' research performance in National Research Universities, and the recommendation of approaches to research performance development for faculty members in research universities and other universities that interested in improving their faculty members' research performance.

1.2 Research Questions

1) What are the qualifications, research performance, and perceptions of transformational leadership, human resource management practices, and learning organization, for faculty members in National Research Universities?

2) Do faculty members' qualifications and their perceptions of transformational leadership, human resource management practices and learning organization have an effect on faculty members' research performance in National Research Universities?

3) Can a model be developed of factors affecting research performance in National Research Universities?

1.3 Research Objectives

1) To explain faculty members' qualifications, their perceptions of transformational leadership, human resource management practices and learning organization and faculty members' research performance in National Research Universities.

2) To examine the effects of faculty members' qualifications and their perceptions of transformational leadership, human resource management practices and learning organization on their research performance in National Research Universities.

3) To develop a model of faculty members' research performance in National Research Universities.

1.4 Scope of the Study

1) Scope of Area: This research collected data from faculty members in nine National Research Universities including Chulalongkorn University, Kasetsart University, Khon Kaen University, Chiang Mai University, Thammasat University, Mahidol University, Prince of Songkla University, Suranaree University of Technology, and King Mongkut's University of Technology Thonburi.

2) Scope of Variables: This research is composed of two types of variables. First, independent variables include faculty member's qualifications and perceptions of transformational leadership, human resource management practices and learning organization. Second, the dependent variable is the faculty member's research performance in National Research Universities.

3) Scope of Time: The total duration of this study was a year. Data was collected between December 2012 and April 2013.

1.5 Benefits of the Study

The benefits of this research can be explained in terms of its theoretical, policy, and practical contributions as follows:

1) Theoretical Contributions: This research expands the effects of faculty members' research performance, perceptions of transformational leadership, human resource management practices and learning organization on in contrast to previous research that has paid attention to overall performance and other performance dimensions.

2) Policy Contributions: These research results reflect faculty members' perceptions. University leaders could benefit in determining an appropriate university policy by considering of faculty members' needs based on our results.

3) Practical Contributions: The research results lead to some essential advice toward continuous development of faculty members' research performance in National Research Universities and being a role model for other universities that desire to improve their faculty members' research performance.

1.6 Definition of Terms

Faculty member's qualifications refers to the individual data related to gender, age, educational background, academic position, work experience, research experience, and salary.

Leader refers to the respondent's direct supervisor.

Perception of human resource management practices refers to a faculty member's perceptions of human resource activities that concern recruitment, performance management, rewards, training, and development.

Perception of learning organization refers to a faculty member's perceptions of the organization developing into a learning organization that is concerned with creating continuous learning opportunities, organizational transformation, commitment to learning, knowledge management and application of technology.

Perception of transformational leadership refers to the faculty member's perception of the role of transformational leadership on building inspiration, being a

role model, and leading ones' visions to inspire faculty members to recognize and act within that vision to achieve organization objectives.

Research behavior refers to faculty member's research behavior consisting of developing his or her research competency, suggesting research for others, collaborating on research with outsiders, and publishing his or her research in the academic communities or other acceptable sources.

Research outcomes refers to the faculty member's research outcomes in both qualitative and quantitative measures. The faculty member's research outcomes are judged based on measures that are accepted by the academic community, and consider the of number of research publications, position as major or co-researcher, research awards, and number of research citations and received patents.

Research performance refers to a faculty member's research performance particularly concerning the faculty member's research behavior and research outcomes.

Research universities refers to the universities that generate knowledge by using research in processes of teaching and producing graduates.

1.7 Organization of the Study

This study is organized in the following way:

Chapter 1 presents the statement of the problem, research questions, research objectives, the scope of this research, benefits of the study, definition of terms, and organization of the study.

Chapter 2 describes the concept and theory of research performance, perception, transformational leadership, human resource management practices, learning organization, related research, conceptual framework, and hypothesis.

Chapter 3 contains the research design, population and sample, operational definitions, indices and measurement levels, research tools, data collection, and method of analysis.

Chapter 4 reports the result of data analysis that relate to research objectives.

Chapter 5 contains the research summary, discussion, recommendation and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

For this study, a literature review was conducted which covered the following topics:

2.1 Research Performance

2.2 Perception

2.3 Transformational Leadership

2.4 Human Resource Management Practices

2.5 Learning Organization

2.6 Related Research

2.7 Conceptual Framework

2.1 Research Performance

The term “performance” can be defined in various ways: as something which can be measured numerically or subjectively; success achieved through hard work; outcome of an action; ability to succeed; comparison of outcome versus certain indicators; outcome compared to expectation; and comparative evaluation. The term “appraisal” usually refers to comparison of numbers, magnitude or scope which may include target, objectives, methodology, reporting, data analysis, and/or data presentation. So, performance appraisal is the use of quantitative indicators to assist in the measurement of organizational performance and see whether an organization has achieved the objectives or not. This type of evaluation can be done through internal indicators or final outcomes (Nopadol Rompho and Monwika Padungsit 2009: 11-12). In addition, Cardy (2004) emphasized that the organization should pre-determine whether performance evaluation should be focused on individual employees or the system by which will help the evaluation to be more transparent and less biased. The evaluation should be informative of the capabilities and competencies of the

employees and can be linked with another process or processes so that it promotes efficiency. There should be a consensus between the administrator and the staff on the priority area for evaluation and the evaluator should receive training in order to promote understanding of the standards for evaluation so that the evaluation process can be fair and acceptable to all parties.

There are a number of popular ways to conduct performance evaluations including:

1) **Individual Task Outcome** This is a type of evaluation looking at the final outcome of the tasks assigned to the employees which can be assessed from productivity, unit cost saving, an increase in sales, territory sales, etc.

2) **Behavior** In cases where performance was achieved as a team, it would be difficult to evaluate based on individual task outcomes. Because of this, evaluation based on individual behavior can be conducted, such as assessment of a monthly report and leadership of the manager or assessment of the pattern of employees' leave requests.

3) **Traits** This type of evaluation is considered to be weak but is still extensively used. It focuses on the assessment of attitude, self-esteem, obedience, and work experience which may not be positively correlated with individual task outcome (Robbins and Judge, 2009: 629 – 630).

Similarly, Aguinis (2009) classified the types of performance evaluation into three approaches which are the trait approach, behavior approach, and result approach. Alongkorn Meesutha and Smith Sachukorn (2008) who reviewed the evolution of performance evaluation added a fourth approach which is the 'hybrid approach' or 'hybrid system' as illustrated in Figure 2.1

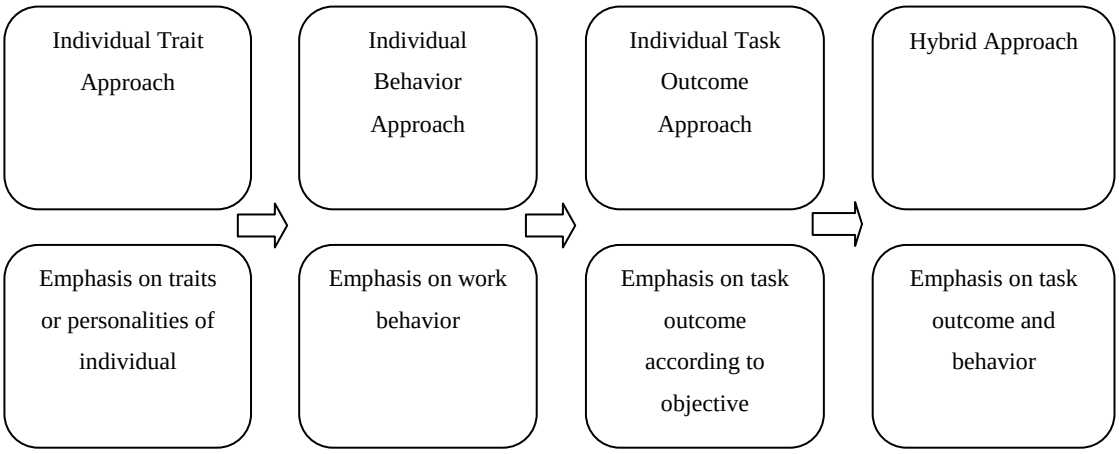

Figure 2.1 Evolution of Performance Evaluation

Source: Alongkorn Meesutha and Smith Sachukorn, 2008: 22.

From Figure 2.1, the following can be deduced

1) The trait rating based approach focuses on traits and personalities of an individual which can be evaluated by using several methods including Graphic Rating Scales, the Checklists Method, the Employee Comparison System, Grading, and Point Rating.

2) The job performance or behavior based approach focuses on behavior relevant to job performance which can be evaluated using methods such as Critical incidents, the narrative method, the Probst Rating Plan, multiple rating, mutual rating, peer rating, self-rating, progress interviews, the field interview method, assessment centers, Behaviorally Anchored Rating Scales (BARS), Behavioral Observation Scales (BOS), and competency assessment.

3) The Result or Objective Based Approach focused on the success of work according to previously set targets or objectives. The following methods can be used: Appraisal by Result, The Direct Index, Standards of Performance, Production Records, Periodic Test, Performance Test, Analysis of Position Functions and Responsibilities, and Key Performance Indicators (KPI).

4) Hybrid Approach or Hybrid Systems focuses on successful outcomes and performance-related behavior or work competency which may use methods such as 360 degree evaluation, new evaluation method emphasizing on Input, Process, Output, and Outcome, Management by Objectives (MBO), Behaviorally

Anchored Rating Scales (BARS), Key Performance Indicators (KPI), Competency Assessment, and Leadership Competencies.

Currently, the method for performance evaluation which is extensively used is the method using Key Performance Indicators (KPI) which was developed from The Result or Objective Based Approach. KPI has become a tool used in performance evaluation of important processes within the organization (Alongkorn Meesutha and Smith Sachukorn, 2008).

Achara Chandrachai (2004) mentioned that KPI was part of a Balanced Scorecard which was part of the management tool linked with the vision and strategy of the organization as developed by Kaplan and Norton (1996). This method measures and evaluates the organization from four perspectives as follows.

1) Financial Perspective: From this perspective, the main objective is to maximize profit which will be different from one organization to another depending on the phase of the business cycle. These are the developing, steady, and benefit-capture phases.

2) Customer Perspective: The majority of organizations would be interested in many areas from this perspective, including market share, acquisition of new customers, retention of existing customers, customer satisfaction, key accounts, and value creation to customers

3) Internal Process Perspective: Every organization has processes for creating goods or services which also known as a value chain. This consists of product (or service) creation processes, implementation processes, and after-sales service

4) Learning and Growth Perspective: This perspective is incorporated into the long-term vision of the organization and focuses on employee capacity, information systems, incentives, empowerment, and employee support.

The KPIs used in the evaluation must be balanced and indicators in each aspect must be relevant to each other. The Balanced Scorecard concept was originally used in for-profit organizations. However, for non-profit organization, such as public universities, Olve et al. (1999 quoted in Nopadol Rompho and Monwika Padungsit, 2009) proposed that Balanced Scorecard should be modified for non-profit organization as follows:

1) Performance: As profit maximization is not the objective of non-profit organization, the evaluation will be based on other non-financial benefits such as performance of teaching, research, academic services and cultural protection.

2) Relationship: For non-profit organization, customers are people who come to use the service but do not pay the full costs of service as in the private sector.

3) Activities: For non-profit organizations, activities are very important as they can lead to success in achieving the organizational objectives.

4) Future: The questions frequently asked regard what the infrastructure should look like in the future. This can lead to organization long-term preparedness.

As a result, the four aspects of balance scorecards can be summarized and compared for-profit and non-profit organizations as shown in Table 2.1.

Table 2.1 Comparison of Four Aspects of Balance Scorecards between For-Profit and Non-Profit Organizations

For-Profit Organization	Non-Profit Organization
1) Financial - Main objective is to maximize profit.	**1) Performance** - Main objective is to achieve the set target
2) Customer - Interested in market share, finding new customers, customer retention, customer satisfaction, key accounts, and value creation for customers.	**2) Relationship** - Customers are everyone who comes to use the service and may not pay the full cost of service like in the private sector.
3) Internal Process - Process for creating goods or service called the value chain.	**3) Activities** - Important components which allow the organization to achieve its target.
4) Learning and Growth - Long-term goal of the organization including staff capacity, incentives, empowerment and support.	**4) Future** - Focus on how the basic infrastructure should be in the future to prepare for long-term operation.

From Table 2.1, it can be seen that as these two types of organizations have different primary objectives the aspects considered in Balance Scorecards need to be modified to make it relevant to the function. The nine National Research Universities, including Chulalongkorn University, Kasetsart University, Khon Kaen University, Chiang Mai University, Thammasat University, Mahidol University, Prince of Songkla University, Suranaree University of Technology, and King Mongkut's University of Technology are classified as non-profit organizations and . Because of this, the main objectives of these universities should be research excellence, satisfaction of students and other stakeholders, implementation of appropriate activities to achieve the organizational objectives in both the short and long term in order to provide good foundation as National Research Universities.

Research Performance refers to performance evaluation at individual level by considering research output, research supervision, research partnerships with researchers from other organizations, and research publication/dissemination (Kewali Duangkamnerd, 2008). Creswell (1985: 23) mentioned that there were three indicators which could be used to assess faculty research performance. These were:

1) Publication Frequency: This outcome can be measured quantitatively and can consist of the number of presentation in academic conferences, the number of journal publications, the number of books or book chapters published.

2) Citation Frequency: This can measure the quality of the publication and the influence it has in a particular field of study which will be reflected in the Science Citation Index.

3) Assessment by peers, coworkers and other stakeholders: This should measure the reputation of the academics and researchers within the academic community which can evaluate the value of these individuals to the development of knowledge in their area of expertise.

As for the evaluation of faculty in Thailand universities, the office of the Higher Education Commission has developed the following research indicators (Watcharapong Intrawong, 2009)

1) Research Planning: Research proposals have been submitted to the faculty or other funders

2) Research Implementation consists of:

(1) Acceptance of research proposal(s)

(2) Progress report(s) and final report(s) have been developed

3) Research Dissemination: Research has been disseminated to and published in domestic and/or international journals, or by congresses.

4) Research Relevance considers whether

(1) Research was referred to in lectures or textbooks;

(2) Research was used by society or an agency;

(3) Research contributed to a better understanding of the field

(4) Research led to patent acquisition

Internationally, indicators used for measuring Research Quality in leading universities were from the Times Higher Education (THE-QS) in 2008. So for

Thailand, to measure quality of research, THE-QS was used along with other indicators to match the Thai context. These were: (Office of Higher Education Commission, 2009)

1) Number of international publications;
2) Number of publication per faculty member;
3) Number of research projects which faculty member were the corresponding authors per total research output;
4) Number of citations per total research output;
5) Number of patents approved domestically and abroad;
6) Peer opinion;
7) Targeted niche (e.g. identity)

From the review of concepts on research performance, it can be concluded that research performance can be evaluated in two ways: 1) Research Behavior which refers to faculty members' behaviors in developing their own research capabilities, providing research supervision, research collaboration with others, and research dissemination; and 2) Research Output which refers to research performance of faculty members achieving acceptance in the academic community in both quantitative and qualitative terms. This can be measured in terms of the number of publications, the number of research awards, the number of citations and the number of patents approved.

2.2 Perception

Perception occurs as a result of stimuli or situation which stimulate the 5 senses (visual, auditory, olfactory, tastes and touch) creating perception. This can vary from person to person depending on previous experience and background. Apart from the external stimuli, personal factors can also influence the perceptions and the translation of these stimuli will depend on the awareness and understanding (Wichian Wittaya-Udom, 2004: 97). Perception has been defined differently by academics as followed:

Schermerhorn et al. (2005: 100) defined perception as a process in which an individual received, sorted and interpreted the information from the environment.

Wagner and Hollenbeck (2005: 72) defined the term as a process, in which an individual selected, sorted, retained, and recalled the information.

Ivancevich et al. (2008: 86) gave the definition of the term as a process in which an individual gives his/her surrounding a meaning which covers the sorting and interpretation of stimuli creating an experience for that person.

Robbins and Judge (2009: 173) defined the term as a process which an individual sorted and created an impression for themselves to give meaning to their surroundings.

From the above, it can be concluded that perception is a process in which an individual selects, sorts, and interprets the information from stimuli or the environment.

2.2.1 Factors that Influence Perception

Perception is different for each person depending on the factors and the source of stimuli. The factors which can affect perception can be classified as factors in the perceivers, factors in the target, and factors in the situation, as illustrated in Figure 2.2 (Robbins and Judge, 2009: 174)

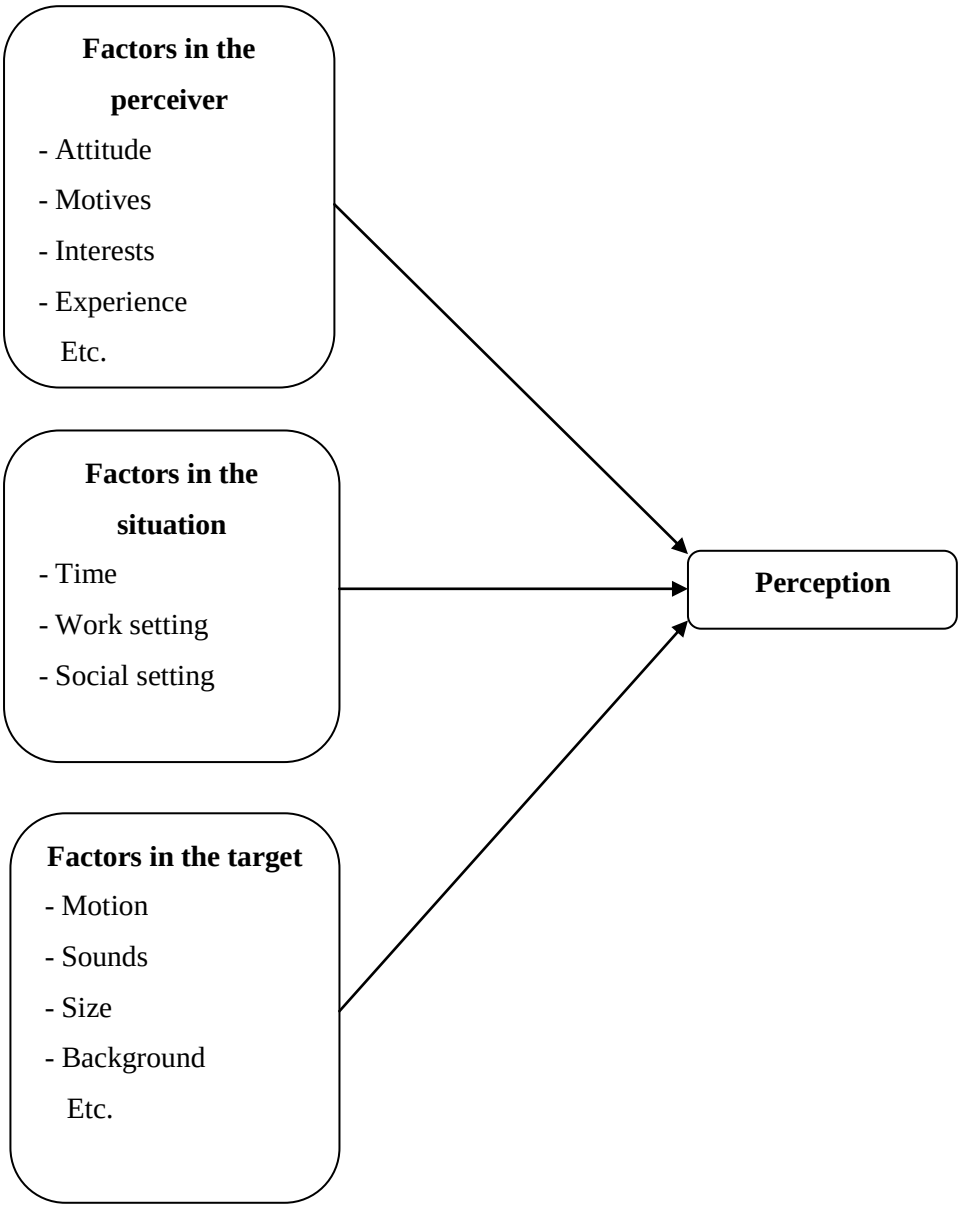

Figure 2.2 Factor Influencing Perception
Source: Robbins and Judge, 2009: 174.

Figure 2.2 can be explained as follows:

1) Factors in the Perceiver: When an individual looks at the target and tries to interpret what he/she sees, the interpretation will depend on internal factors such as attitude, incentive, interests, experience, and expectation of the perceiver.

2) Factors in the Target: These include familiarity, movement, sound, size, background, and proximity and can have an impact on individual perception. For example, loud people are more noticeable than quiet people. As targets are not perceived compartmentally, the background of the target will influence the perception of an individual and tend to be generalized with similar things or groups of people.

3) Factors in the Situation: The context which an individual is looking at a target or the situation which is about to happen is important to the perception of that individual. For example, if an individual is amongst hard-working students, other people tend to think that the person will also be hard-working which may not be necessarily true. These factors include timing, working conditions, and social environment (Robbins et al., 2009: 174).

2.2.2 Sub-Processes of Perception

The sub-processes of perception are considered to be complicated and sophisticated. Initially, the first sub-process is the stimulus or situation which is occurring at that time. Confrontation with another person can stimulate an emotion and other physical/social stimuli can also shape the perception. For example, an employee has to confront his boss in a work environment leading to individual perception which consists of physical (sensory) and psychological (emotional) response known as registration leading to interpretation. How this information is interpreted will depend on several internal and external factors which can lead to a response or feedback in the form of behavior, such as increased/decreased determination, and eventual consequences to the organization (Luthans, 2002: 186 – 188). This has been summarized in Figure 2.3.

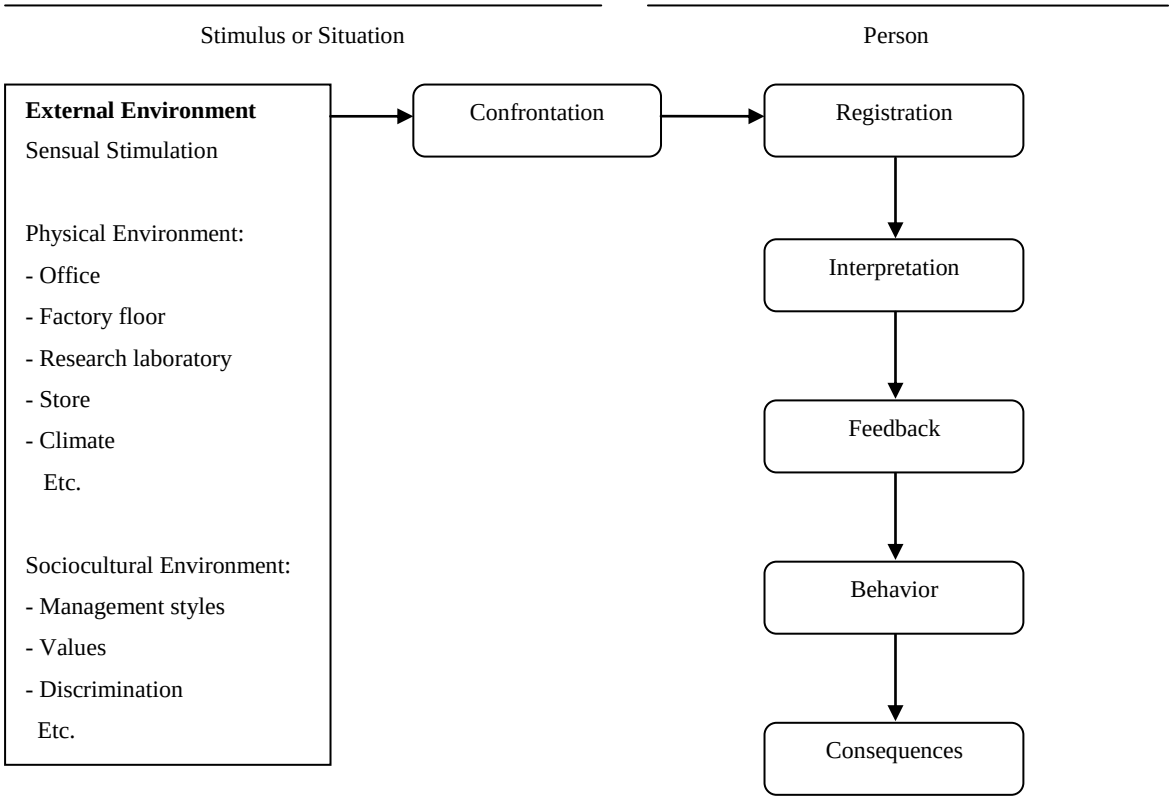

Figure 2.3 Sub-Processes of Perception
Source: Luthans, 2002: 187.

Several factors such as transformational leadership, human resource management practice, and learning organization (which will be mentioned later in 2.3-2.5) will each be summarized at the individual level from the perspective of staff perception.

2.3 Transformational Leadership

In the past 30 years, academics have variously defined the term ‘leadership’ as follows:

Katz and Kahn (1978: 528) defined leadership as influence which can increase the work effectiveness through a chain of command within that organization.

Northouse (1997: 3) defined the term as a process in which an individual has an influence on the group in order to achieve the desired objectives.

Lussier and Achua (2001: 6) provided the definition of a process which has an influence between the leader and followers leading to achievement of organizational objectives through change.

Ricketts (2003: 3) defined it as the ability to drive or influence other people in order to achieve the objectives of an individual or organization.

Robbins and Judge (2013: 368) gave a definition as the ability to influence the group to achieve an objective or vision.

From the above, it can be concluded that leadership refers to a process which the leader has a role and express behavior which influence the group in order to implement and achieve the objectives of organization.

The studies on leadership can be divided into two groups, the studies concerning the scope and those that examining the relevant environment (Daft and Lane, 2005: 594-597).

1) Studies on Scope: This group of studies can be subdivided into two types which are studies at the micro and macro levels. The studies on leadership will focus on the leader, followers, and the organization. Micro-level studies examine the leadership over a certain time period or for certain project, or examine leadership with a single subordinate. Macro-level studies look at leadership which affects the society or organization as a whole.

2) Studies on Relevant Environment: This group can also be subdivided in two types which are studies on leadership in stable environments or in chaotic environments. In a stable environment, previous practice can be used in current and future situations. However, in a chaotic environment where things can suddenly change, the leader must have a vision, good risk and people management skills, be able to foster relationships and cooperation allowing the subordinates to adapt to changes, and learn new things.

From the above, the studies on leadership based on scope and environment can be classified into four types which are typically leadership of four different periods as follows. (Pichaphob Punpae, 2011: 6-9)

1) Macro Leadership in a Stable World or Period 1: The studies in this period were typically before the industrial or bureaucratic period when organizations were small in size and managed by a single person. Friends and other

acquaintance were usually recruited without considering relevant skills which that person may or may not have. Organizations were usually small in size and simple, and the environment was quite stable and easy to manage. The leaders could make accurate forecasts, easily manage resources and productivity, and learn about good business principles. The studies in this period were also referred to as the studies of 'Great Man Leadership' where the leader looked at the organization as a whole and developed a vision and strategy to encourage people to work for a cause and/or objective.

2) Micro Leadership in a Stable World or Period 2: These were studies of leadership in a period when organizations were managed bureaucratically and worked according to a chain of command. In this period, leadership was based on science and engineering as work were controlled using well-structured management principles. Financial rewards were used as incentives to recruit workers. Leadership in this period can also be referred to as 'Rational Management' as influence from the leaders down to subordinates was driven by task assignment and completion. This type of leadership is more appropriate in a stable environment which is easier to analyze and the focus is on the work detail rather than the big picture.

3) Micro Leadership in Chaotic World or Period 3: In this period, leaders began to switch to flat organizational structures and decentralization became more typical. The Japanese style of management and the focus on quality became more and more popular. However, a number of managers were still quite conservative and disliked this decentralized style of management similar to leadership in Period 2 as mentioned above, which was in contrast to the fact that the environment now had become more chaotic and the organization needed to be more adaptable. Because of this, leadership in this period can also be referred to as 'Team leadership'.

4) Macro Leadership in a Chaotic World or Period 4: The style of leadership in this period is similar to 'coaching' where the leader helps their subordinates perform. The old ways of exerting control over others were no longer the case and influence over other team members were achieved through personal relationship with focus on active participation of team members in order to facilitate learning and adapting to the new chaotic world. Leaders usually tried to make the organization into a 'learning organization' and promoted brainstorming amongst team

members so that the organization could continue to grow and adapt itself to new challenges. Leadership in this period can also be referred to as 'Learning Leadership'.

Transformational Leadership

J. M. Burns proposed the concepts of transformational leadership in 1978 and Bernard Bass expanded the concept 10 years later. Burns emphasized that there were two types of leadership which could lead to success. These were transactional leadership and transformational leadership (Achua and Lussier, 2010). Bernard Bass and Bruce Avolio explained further that leadership has evolved continuously from laissez faire leadership to transactional leadership and then it became transformational leadership. Since laissez faire leadership is effectively no leadership, it should be avoided at all costs. However, transactional leadership and transformational leadership have been shown to positively correlate with attitudes and behaviors of employees (Kinicki and Kreitner, 2009).

Attributes of transformational leaders are as follows (Bass and Riggio, 2006: 5 - 7)

1) **Idealized Influence (II)**: Transformational leaders act as a good example to others which will allow the leaders to gain respect and trust from their subordinates and they will behave accordingly. This type of leader will take risks with their team members and try to find consensus rather than making the decision alone. Transformational leaders will do the right thing, act morally, and avoid exerting their power.

2) **Inspirational Motivation (IM):** Transformational leaders motivate and inspire their subordinates by giving them challenging and high value assignments based on the skills of individual team members which stimulate the team spirit. This type of leader uses positive thinking, allows team members to participate in setting the vision of the organization, and builds good communication skills so that team members can perform and achieve the objectives and vision collectively.

3) **Intellectual Stimulation (IS)**: Transformational leaders stimulate their subordinates to express their creativity and innovation by creating a hypothesis and revisiting old problems using innovative thinking to solve them. Criticism is not used when someone makes a mistake rather they are encouraged to solve problems in

a creative way. Team members will be stimulated to think about new ways and they will not be criticized if their ideas are different from their leaders'.

4) Individualized Consideration (IC): Transformational leaders are interested in the needs of each team member in a number of aspects, such as success and career opportunities, they will be responsible for giving advice and coaching in order to develop more capabilities in their team members. This type of leader is aware of the different needs of each team members and adapts according to the situation. For example, some members may need more freedom in how they work whereas others may need constant encouragement and/or guidance. Transformational leaders listen carefully to the needs of others and respond in such a way as to improve the work performance of that particular team member.

In addition, McShane and Von Glinow (2010: 373 – 374) presented the four components of transformational leadership which include the creating a strategic vision, communicating the vision, modeling the vision, and building commitment towards the vision. This is summarized in Figure 2.4.

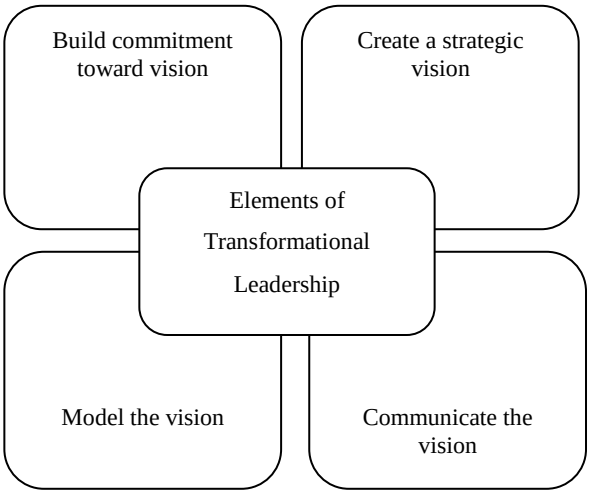

Figure 2.4 Components of Transformational Leadership
Source: McShane and Von Glinow, 2010: 373.

1) Creating a Strategic Vision: Transformational leaders create a strategic vision for the organization in order to allow the staff perform and achieve the

target. A strategic vision is usually aimed high and can start with the leader. However, this vision must be derived from the opinion of the staff, customers, and other stakeholders as the target will be based on common benefit to all stakeholders in order to incentivize and motivate staff to achieve the objectives.

2) Communicating the Vision: Transformational leaders can create the vision however, to share it with the organization they must be able to communicate the objectives and the vision to staff through symbols, metaphors, stories, and other communication tools. This enables the staff to share this vision and achieve organizational objectives.

3) Modeling the Vision: Leaders cannot just communicate the vision but they need to behave and be a role model for the staff as well. For example, leaders need to visit the customers, talk to the staff, and get rid of ineffective policies. Leading by example according to the vision is important as it can create trust and aspiration to be like the leader.

4) Build Commitment toward the Vision: Leaders can make commitment to their staff in many ways that build positive atmosphere and stimulate staff acceptance of the vision. Leaders must be role models in their attitude that anything is possible and achievable through cooperation. This will promote the image of the leaders as honest and trustworthy. In addition, leaders can also build commitment by allowing staff participation in setting the organizational vision.

Similarly, Yukl (2002: 263 – 266) reported the following characteristics of transformational leaders:

1) Articulate a Clear and Appealing Vision: Transformational leaders have a clear and appealing vision that they are able to articulate such that their staff have a good understanding of the organization's vision. As a result, the staff will be clear about the target, objectives, and what needs to be done.

2) Explain How the Vision Can be Attained: Leaders can make a connection between the vision and a strategy which must also linked to a benefit that all the staff within that organization can collectively enjoy. Leaders have a role in advising their staff to find their own work style but they are not responsible for finding all of the answers for.

3) Act Confidently and Optimistically: Leaders must think positively and express themselves confidently through communications and actions as this will help with the performance and allow the organization to achieve the objectives.

4) Express Confidence in Followers: Staff will perform well if the leader has expectations and believes in the staff, particularly in difficult or dangerous tasks. The leaders should review the capabilities and resources which the organization needs to achieve the goal according to the strategy, and using encouragement to build confidence in staff.

5) Use Dramatic, Symbolic Actions to Emphasize Key Values: Actions and symbols portrayed in those actions can create organizational culture and value. An example might be communicating previous experiences in the organization for new employees.

6) Lead by Example: Leaders acting as good role models and interacting with staff every day can result in organizational loyalty and commitment to the task at hand.

7) Empower People to Achieve the Vision: Empowerment can occur at the individual or team level. Staff can help in specifying the task assigned to them and how to achieve the goal and this will help stimulate them to be problem-solvers while the leaders supervise and provide appropriate support and resources.

Furthermore, Dubrin (2007 quoted in Pichaphob Punpae, 2011: 232), mentioned about critical success factors for transformational leadership to succeed as below:

1) Create awareness in staff about the importance organizational development

2) Create an environment where staffs emphasize the benefit to the group rather than the individuals

3) Help staff to achieve work satisfaction

4) Help staff to understand the need to adapt and change

5) Convince middle management of the need for change

6) Build a culture of success with staff and value the success of the staff as the success of the organization

7) Widen the horizon and look ahead to the future of the organization as the basis of change

8) Build credibility between leader(s) and staff

9) Dedicate resources to solve the most important problems

From the review on transformational leadership concepts, these are summarized in Table 2.2.

Table 2.2 Summary of Transformational Leadership Concepts

Academic	Explanation Issue	Component
Bass and Avolio (1994) Bass and Riggio (2006)	Attributes of transformational leaders	1) Idealized influence 2) Inspirational motivation 3) Intellectual stimulation 4) Individualized consideration
Yukl (2002)	Characteristics of transformational leaders	1) Articulate a clear and appealing vision 2) Explain how the vision can be attained 3) Act confidently and optimistically 4) Express confidence in followers 5) Use dramatic, symbolic actions to emphasize key values 6) Lead by example 7) Empower people to achieve the vision
McShane and Von Glinow (2010)	Components of transformational leadership	1) Create a strategic vision 2) Communicate the vision 3) Model the vision 4) Build commitment toward the vision

Table 2.2 (Continued)

Academic	Explanation Issue	Component
Dubrin (2007)	Critical success factors for transformational leadership	1) Create awareness in staff about the importance organizational development 2) Create an environment where staff emphasize the benefit to the group rather than the individuals 3) Help staff to achieve work satisfaction 4) Help staff to understand the need to adapt and change 5) Convince middle management of the need for change 6) Build a culture of success with staff and value the success of the staff as the success of the organization 7) Widen the horizon and look ahead to the future of the organization as the basis of change 8) Build credibility between leader(s) and staff 9) Dedicate resources to solve the most important problems

In summary, we are concerned with transformational leadership where the staff perceives that the leadership can inspire, be a good role model, communicate their vision and persuade staff to accept and follow it in order to achieve the goals of the organization. This leadership must also be perceived as understanding each individual's needs and help each satisfy them.

2.3.1 Relationship between Transformational Leadership and Performance

Leadership is an important factor for managing an organization whether an organization will be success or not is dependent on leadership (Lussier and Achua, 2004). In support of this, Jain (2005) stated that transformational leadership is a leader's ability to inspire employees through vision and mission in a way that enhances employees' confidence and responsibility, as well as stimulate them to have creative ideas and new ways of working.

In the past three decades, there were a great number of academics who found the relationship between transformational leadership and performance (e.g., Singer, 1985; Hater and Bass, 1988; Selter and Bass, 1990; Tucker, Bass and Daniel, 1990; Hoover, Petrosko and Schulz, 1991; Kirby, Paradise and King, 1992; Silins, 1992; Yammarino and Dubinsky, 1994; Charbonneau, Barling and Kelloway, 2001; Egri and Herman, 2000; Gellis, 2001; Mackenzie, Podsakoff and Rich, 2001; Wofford, Whittington and Goodwin, 2001; Elenkov, 2002; Jung and Sosik, 2002; LeBrasseur, Whissell and Ojha, 2002; Bass, Avolio, Jung and Berson, 2003; Harvey, Royal and Stout; 2003).

Since then, there has been extensive investigation into the relationship between transformational leadership and performance by academics. Some of the studies reviewed follow.

Piccolo and Colquitt (2006) revealed that transformational leadership has a significant effect on task performance and organizational citizenship behavior. In addition, transformational leadership also has an effect on job characteristics which influence intrinsic motivation and goal commitment. Intrinsic motivation relates to task performance and organizational citizenship behavior, whereas goal commitment only relates to task performance.

Garcia-Morales, Matias-Reche and Hurtado-Torres (2008) reported that transformational leadership has an effect on organizational performance, especially in organizations in which the level of organizational learning is high.

Tsai, Chen and Cheng (2009) investigated the relationship between transformational leadership and employee work outcomes. They collected data from employees and immediate supervisors in insurance companies in Taiwan. This study

reported that transformational leadership has significant positive effect on employee task performance and behavior in helping coworkers.

Chi, Lan and Dorjgotov (2012) investigated the moderating effect of transformational leadership on knowledge management and organizational effectiveness by collecting data from research and development professionals at research institutes in Mongolia. This study revealed that the highest level of organizational effectiveness depended on the high level of transformational leadership and knowledge management, and suggested that the most effective leadership style in research and development organizations in Mongolia was transformational leadership.

2.3.2 Relationship between Transformational Leadership and Human Resource Management Practices

Zhu, Chew and Spangler (2005) revealed that CEO transformational leadership has an indirect effect on subjective assessment of organizational outcomes and absenteeism through human-capital-enhancing human resource management.

2.3.3 Relationship between Transformational Leadership and Learning Organization

Investigating the relationship between transformational leadership and learning organization has been of wide interest among academics. Reviews of some of these studies follow.

Aragon-Correa, Garcia-Morales and Cordon-Pozo (2007) revealed that CEO transformational leadership has a strong effect on organizational learning.

Chang and Lee (2007) reported that transformational leadership has effect on the operation of learning organizations. They suggested that to increase the number of knowledge workers in Taiwan, the administrators should enhance their transformational leadership skills including being a role model, encouraging innovation and learning activities, developing employees' competency, and supporting employees' training and education.

Singh (2008) investigated the relationship between transformational leadership and learning organizations in India's banking organizations. The study found that

transformational leadership articulates vision and stimulates intellectual roles enhancing the development of a learning organization.

Zagorsek, Dimovski and Skerlavaj (2009) found that transformational leadership has a direct effect on learning in organizations. These effects include information acquisition, and production of behavioral and cognitive changes.

Rijal (2010) stated that transformational leadership has a direct positive effect on the development of learning organizations.

Camps and Rodriguez (2011) revealed that transformational leadership influences organizational learning, and then organizational learning influences faculty members. In the other words, it can be concluded that transformational leadership has an indirect effect on faculty members through organizational learning.

Mirkamali, Thani and Alami (2011) reported that transformational leadership components have direct positive effects on organizational learning, especially, idealized influence components have the greatest effect on organizational learning.

Similarly, Garcia-Morales, Jimenez-Barrionuevo and Gutierrez (2012) found that transformational leadership has a positive effect on organizational learning.

2.4 Human Resource Management Practices

The term “Human Resources Management” or HRM started in the United States in the 1980s due to the specific responsibilities and challenges within different organizations (Analoui, 2007: 5). Again, a number of academics have defined this term as reported here.

Dessler (2002: 2) defined HRM as practice and policy for managing staff. These included recruitment processes, evaluation, reward processes, and promotion of work safety for staff.

Mondy and Noe (2005: 4) defined the term as the utilization of human resources for achieving the objectives of the organization.

Armstrong (2006: 3) referred to HRM as a strategy to manage the most valuable asset in the organization to be aligned with the overall corporate strategy, as the work of these individuals or teams can lead to achievement of the objectives.

Noe, Hollenbeck, Gerhart and Wright (2007: 2) provided a definition of this term as a policy, practice, and system which can influence the behavior, attitude and performance of staff.

From the above, it can be concluded that HRM is a policy and set of activities including recruitment processes, performance management, reward systems, and training and development which allow the staff to achieve the objectives of the organization.

HRM should be implemented through human resources systems consisting of the following: (Armstrong, 2006: 4)

1) HR philosophies are the values and principles used in HRM
2) HR strategies are the desired direction of HRM
3) HR policies define the values, principles, and strategies of HRM and how they should be implemented
4) HR processes include the formal processes and HRM practices
5) HR practices consist of informal practices used in HRM
6) HR programs are part of the HRM strategy, policy, and practice which are implemented according to the plan.

Becker and Gerhart (1996) divided HRM into 3 basic components which were the system architecture, policy alternatives, and processes and practices.

The concept of HRM can be classified into many types, but in general, HRM can be divided into 2 categories. There is Hard HRM, and Soft HRM which Clegg, Kornberger and Pitsis (2008: 176) explained below.

Hard HRM: This is derived from the basic concept that people do not want to empower but want to exert influence over others and need the support of resources and training in order to perform according to the organizational objectives. Once objectives are achieved, they would like to be rewarded and the organizations which have clear objectives, unambiguous job duties, and provide good rewards, are considered to be attractive. Hard HRM emphasizes the fit between organizational objectives and strategies and the HRM objectives which are in line with the utilitarian instrumentalism approach and connected to McGregor's Theory X.

Soft HRM: This derived from the basic concept that work is part of life which is integrated into other parts. People should be fulfilled, empowered, and receive good

experience and they will be attracted by jobs with are high potential. Organizations perceive that people are assets which are in line with the humanist development approach and connected to McGregor's Theory Y.

The main models for HRM include the Michigan Model of HRM, the Harvard Model of HRM, and the Warwick Model of HRM which are outlined below (Analoui, 2007).

2.4.1 Michigan Model of HRM

This HRM model was developed at the Michigan School which proposed that HR systems and organizational structures should be managed in accordance with corporate strategy, and this was the basis of the Matching Model. Within this model, the human resource cycle consists of 4 processes which are (Fombrun, Tichy and Devanna, 1984 quoted in Armstrong, 2006):

1) Selection Process: A process for recruiting and selecting human resources suitable for the job.

2) Appraisal Process: A process for performance management in order to maximize the benefits for the organization.

3) Reward system: A tool for mobilizing and driving the performance of the organization.

4) Development Process: A process for building capacity and the capabilities of staff.

The Michigan HRM Model is illustrated in Figure 2.5.

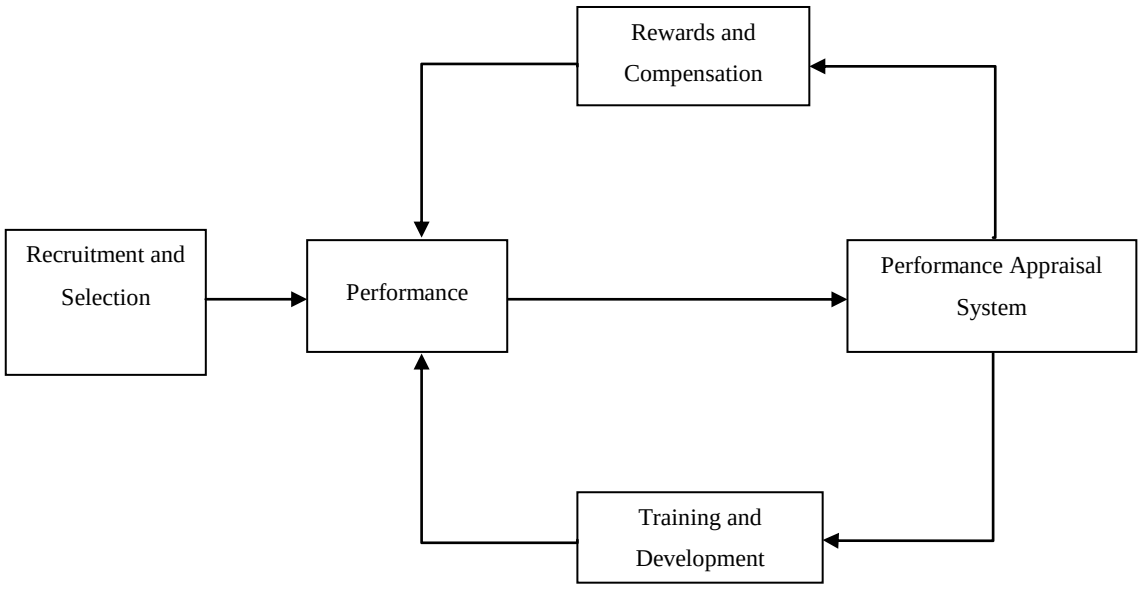

Figure 2.5 Michigan Model of HRM

Source: Fombrun et al., 1984; Bratton and Gold, 2003 quoted in Analoui, 2007: 11.

2.4.1.1 Recruitment and Selection: Employers produce a job description based on an analysis of required tasks and activities in order to manage human resources (e.g. training and development, and incentive package) and usually decide whether to recruit a candidate or not based on this job description. The process for recruitment and selection can be done based on the following steps (Dessler, 2002: 72 – 73).

1) Develop a workforce plan and forecast demand in order to identify open or opening positions for recruitment.

2) Develop a selection process for both internal and external candidates.

3) Ask the candidates to submit an application form and conduct a preliminary interview in order to select the most suitable candidates.

4) Employ a number of techniques for selection, such as quizzes, background checks, and health examinations in order to differentiate the attributes of each candidate.

5) Select suitable candidates and forward to the selection/recruitment committee.

6) Recruit the most suitable candidates according to the criteria and objectives.

2.4.1.2 Performance Management: This is a process for the management team to feel confident about the activities and outcomes which should be aligned with organizational objectives and lead to a competitive advantage. Performance management consists of three components (Noe, Hollenbeck, Gerhart and Wright, 2008: 343).

1) Defining performance in different aspects within the organization through analysis.

2) Measuring performance in different aspects through evaluation.

3) Information/Feedback on performance allows staff to improve themselves and work according to the goals and objectives of the organization. Feedback can be given in a number of ways including incentives and bonuses.

Similarly, Armstrong and Baron (2007: 16) mentioned that performance management was a management process and not a technique or tool for HRM which can be explained using William Deming's Plan-Do-Check-Act Model or PDCA model as illustrated in Figure 2.6.

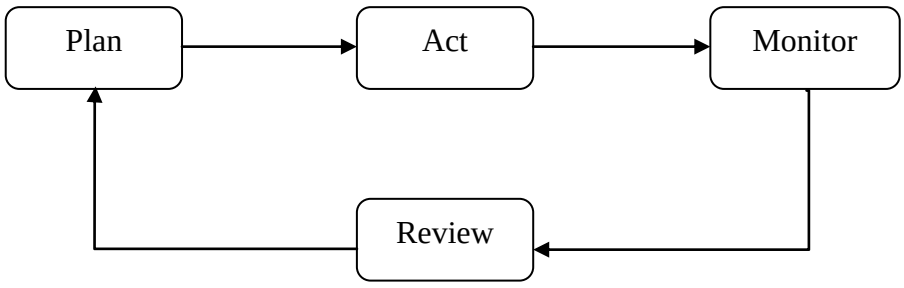

Figure 2.6 PDCA Model

Source: Deming, 1986 quoted in Armstrong and Baron, 2007: 16.

From Figure 2.6, PDCA consists of:

1) Plan is a process where desired objectives, capabilities, and behaviors are agreed on and defined, and then tasks and outcome measures can be identified in order to achieve the targets and allow improvement to be made. In addition, a human resource development plan should be prepared to increase the capabilities of staff.

2) Act is about meeting new needs by implementation based on the goals and objectives indicated in the plan.

3) Monitor refers to the importance of keeping track of the progress and whether the plan has been implemented in such a way that the objectives and other new needs are met. This means that monitoring should be continuous rather than done on an annual basis.

4) Review is to see whether the objectives have been met by reviewing the performance from the first steps and the outcomes of the implementation resulting in the development of an after-action plan to improve on the performance.

2.4.1.3 Compensation: Employee compensation includes wages and other form of incentives paid to the employees according to the employment contract. Compensation can be divided into two main types which are 1) direct financial incentives paid to employees and 2) indirect compensation in the form of insurance and annual leave. The following factors can affect the compensation package provided to employees (Dessler, 2005: 390 - 398).

1) Employment/Labor Law
2) The influence of Labor Unions
3) Corporate Policy
4) Fairness

2.4.1.4 Training and Development: Ivancevich (2007: 394) defined the term ‘training’ as assistance provided to staff to improve their capabilities to work, whereas the term ‘development’ was defined as future preparation for staff with emphasis on learning and development. This is similar to the definition provided by Noe (2010) which referred to ‘training’ as an attempt to provide convenience to staff to learn and increase their capacity to work. Development has a broader definition as

it looks toward the future and focuses on long-term career development, increased confidence, maturity, and security of staff in preparation for roles with more responsibilities. Training tends to stress capacity while development expands its scope to include the staff's psychological growth.

Leatherbarrow, Fletcher and Currie (2010: 202 – 203) stated that training and development are beneficial to staff at an individual level as training can lead to increased skills which can, in turn, lead to capabilities. This allowed staff to be more confident, and feel more secure and more valuable which can help staff with their career advancement. In addition, training can be beneficial to the organization as a result of the staff possessing a higher level of capabilities and commitment which can contribute to the achievement of the goals and objectives of the organization.

Training courses can be developed based on the following steps (Leatherbarrow et al., 2010: 206 – 221):

1) Identify training needs
2) Set training objectives
3) Plan the training
4) Implement the training
5) Evaluate the course
6) Analysis and review

2.4.2 Harvard Model of HRM

Beer, Spector, Lawrence, Quinn and Walton (1984 quoted in Armstrong, 2006) developed an HRM model called the Harvard Framework which emphasized the fact that HRM was a type of management which was more general, rather than expressing roles and specific responsibilities in people management. The Harvard Model of HRM is illustrated in Figure 2.7.

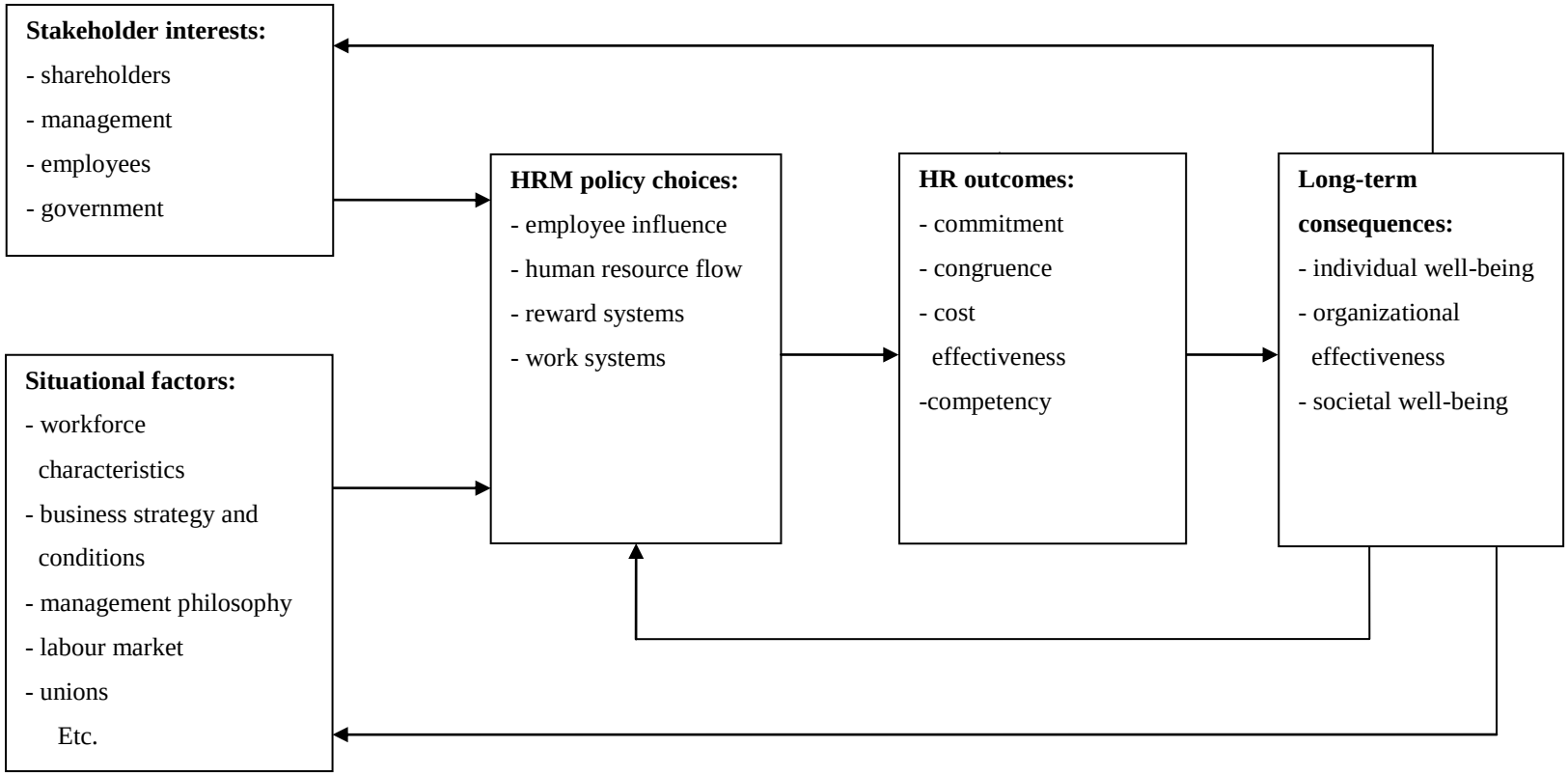

Figure 2.7 Harvard Model of HRM

Source: Beer et al., 1984 quoted in Armstrong, 2006: 7.

From Figure 2.7, it can be explained that HRM policy choices as developed in the Harvard Model consist of four components (Analoui, 2007):

1) Human resource flows: This is concerned with recruitment, selection, performance evaluation, and promotion.

2) Reward systems: This is very important in the Harvard Model as it must be designed to attract, encourage, and retain staff within the organization.

3) Employee influence: This model is characterized by the emphasis on empowerment which allows staff to make decision and delegate tasks.

4) Work systems: Description and design of the role and responsibilities of a position is important when recruiting new staff. For example, for each open position, a clear job description should be provided as this will provide a good foundation and practices for future staff recruitment.

These HRM policy choices will lead to the following HR outcomes or the '4Cs':

1) Competency: This includes knowledge, skills, and behaviors with which staff express themselves that can contribute to effectiveness, efficiency, and success.

2) Congruence: This is situation where the goals of the organization and employees are aligned in order to promote satisfaction of both parties and a productive environment.

3) Commitment: This is the main component of the Harvard Model where staff feel happy working in a dedicated and committed manner for the organization.

4) Cost-effectiveness: This emphasizes the importance of value for money in terms of value creation for the organization and the HR investment.

These HR outcomes can lead to long-term benefits in terms of HRM practices for the organization which can create positive influences on the well-being of individual staff members, organizational effectiveness, and societal well-being.

In addition, Beer et al. (1984) stated that the Harvard Model consists of situational factors and stakeholder interests which can occur within the organization or from the external environment.

2.4.3 Warwick Model of HRM

Hendry and Pettigrew (1990 quoted in Analoui, 2007) adapted the Harvard Model and developed it into the Warwick Model of HRM which focuses on connecting HRM to business strategy. In other words, The Warwick Model attempt to integrate HRM with an organizational environment, which includes economic, social and political conditions, and business strategy (Beardwell and Claydon, 2007). Figure 2.8 illustrates the Warwick Model below.

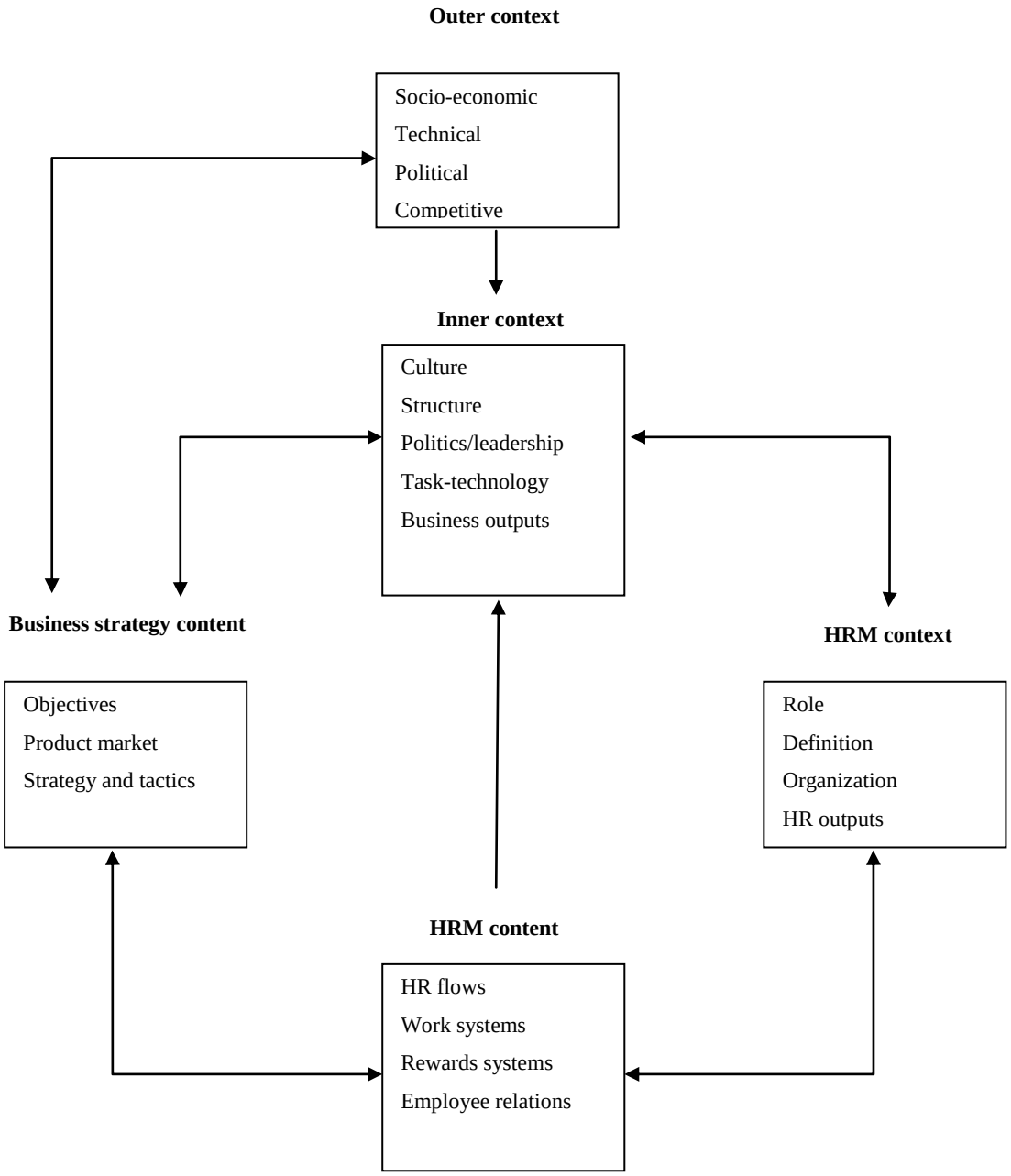

Figure 2.8 Warwick Model of HRM

Source: Hendry and Pettigrew, 1990: 6; Bratton and Gold, 2003 quoted in Analoui, 2007: 14.

From the figure, it can be seen that staff will be hired at the lowest possible cost and they will be developed and utilized fully according to their capabilities and the organizational objectives. At the same time, a strategic plan is prepared for the

senior management in order to foster relationships with staff with emphasis on commitment building, incentives, and congruence (Analoui, 2007).

However, the scope of this research only focused on concepts of HRM practices included in the Michigan Model. Because of this, the definition of the perception of HRM practices can be summarized as the perception of staff regarding HRM policies and activities which consist of selection and recruitment, performance management, reward systems, and training and development.

2.4.4 Relationship between Human Resource Management Practices and Performance

In the past, there were a large number of academics who studied and defined the relationship between human resource management practices and performance (e.g., Huselid, 1995; Huselid and Becker, 1996; Becker, Huselid, Pickus and Spratt, 1997; Guest, Michie, Sheehan and Conway, 2000; Purcell, Kinnie, Hutchinson, Rayton and Swart, 2003). After that, studying the relationships between human resource management practices and performance has been widespread among academics, and some of these studies are reviewed.

Challis, Samson and Lawson (2005) found that human resource management practices were able to explain the variation of employees' performance. In addition, high performance firms had more awareness of human resource management practices than the lower performance firms.

Vlachos (2008) investigated the effect of human resource practices on organizational performance in Greece. These findings reported that selective hiring is an important factor that enhances organizational performance, as well as compensation policy, information sharing, decentralization of decision making, and extensive training have effects on organizational performance.

Baloch, Ali, Kiani, Ahsan and Mufty (2010) investigated the influence of human resource practices on bankers' perceived performance in Pakistan. They found that compensation practices, promotion practices, and performance evaluation practices have effects on bankers' perceived performance.

Lee, Lee, and Wu (2010) examined the effect of human resource management practices on Taiwanese steel firms' performance. They revealed that human resource

management practices including training and development, teamwork, compensation, human resource planning, performance appraisal, and employment security have effects on firms' performance.

Boohene and Asuinura (2011) reported that human resource management practices including recruitment, selection, and performance appraisal all have positive effects on organizational performance.

Sohail, Tanveer and Muneer (2011) found that human resource management practices including recruitment and selection, training and development, and employee participation are positively correlated with organizational performance of the Pakistani telecom sector.

Moideenkutty, Lamki and Murthy (2011) examined the relationship between high-involvement human resource management practices and organizational performance in Oman. They found that high-involvement human resource management practices were related to organizational performance when controlled for size, firm type, and average industry price/earnings ratios.

Santiago and Alcorta (2012) investigated the influence of human resource management practices on research and development performance in Mexican pharmaceuticals firms. They found that human resource management practices have an effect on learning at the firm level. This effect depends on expectations for research and development outcomes. In addition, provision of training has an effect on pharmaceuticals firms' research and development performance.

2.4.5 Relationship between Human Resource Management Practices and Learning Organization

Lopez, Peon and Ordas (2005) revealed that high performance human resource practices such as recruitment and selection, training, compensation, and participation have a positive effect on organizational learning, and organizational learning has a positive effect on business performance. Therefore, they summarized that human resource practices are just factors that motivate employees to work based on knowledge, whereas competitive advantage is generated by organizational learning. In addition, Wang, Tseng, Yen and Huang (2011) reported that performance appraisal systems have a positive effect on organizational learning.

2.5 Learning Organization

Within the past decade, many organization identified ‘learning’ as one of the main competencies. Learning organizations will find new ways to satisfy customers and other stakeholders by using skills which are derived from several resources including information, technology, human capital, and new knowledge which is utilized in an effective manner. Learning organizations are forever changing both gradually and instantly (Jackson, Schuler and Werner, 2009: 77) and many academics have given many definitions for this term.

Senge (1990: 3) stated that learning organizations are organizations which can continuously develop and expand their capabilities in the future. These organizations can adapt their learning for survival and creatively improve their capacity.

Pedler, Burgoyne and Boydell (1991: 1) stated that learning organizations are organization that promote learning for all of their staff and continually improve themselves.

Garvin (1993 quoted in Goh, 1998: 15) stated that learning organizations are those with skills to build, search and transfer knowledge. These organizations are able to increasingly express specific behaviors which reflect their foresight and new knowledge.

Watkins and Golembiewski (1995) stated that learning organization are those with continuous learning and adaptation which can come from individual, team, organizational, and/or social levels. Learning is a continuous and strategic process.

Marquardt and Reynold (1994: 19-20) stated that learning organizations are those with sustainable learning that consists of selections and changes in order to manage the knowledge for the success of the organization. This usually involves empowering the staff to learn new things and use learning technology to maximize productivity.

Daft (2007: 28) stated that learning organizations promote and support the cooperation among the staff in order to collectively solve problems and learn, as well as continuously develop and improve organization capacities.

Yukl (2002: 295) stated that learning organizations are those which desire to learn new things in order to improve their work processes and share/exchange these

ideas. These organizations adapt to their environment, dedicate their resources to investment in learning for all levels of staff, and create culture and norms for building innovation and experimenting on new things.

In conclusion, learning organizations are those which emphasize expansion of the capabilities of their staff by supporting them and providing the opportunities for continuous learning, adapting the organization and creating an environment which facilitates learning; staff is committed to learning, knowledge management, and the application of learning technology for their staff.

Marquardt (1996) proposed a concept for creating learning organizations called "The Systems – Linked Organization Model" which consist of five components. These are learning dynamics, organization transformation, people empowerment, knowledge management, and technology application. All of these components are inter-related and need to be developed together. Learning dynamics were considered to be the most important components because this is a critical component to develop the others. When all of the components are systematically connected, the organization can then become an effective learning organization. The five components are outlined below.

1) Learning – Learning Dynamics: Learning must be promoted within the organization to be dynamic which means that learning must be moving constantly, never static and learning is occurring continuously, taking into account the learning subsystems which consist of level, type and skill of learning. The organization must promote and arrange for activities related to learning management, training on teamwork and learning skills, staff self-development, exchange of knowledge, and ability to operate in a team to work on complex tasks in a systematic and effective manner.

2) Organization – Organization Transformation: The senior management must be able to align the visions of the organization and staff. The objectives and vision must have appropriate strategy in order to develop the organization into a learning organization. For example: the chain of command must be simplified and shortened; information exchange should be encouraged to build on the knowledge and create a learning culture for all the staff within the organization.

3) People – People Empowerment: Organizations must provide the opportunities for the staff to collaborate on their learning which can be done through a learning network with the senior management acting as facilitators or advisors in order to allow staff to learn and solve their problem together.

4) Knowledge – Knowledge Management: Organization must have knowledge management including tacit knowledge management, which derived from 'doing' and practicing, and explicit knowledge which came from studying document, textbooks and databases. This information must be stored, compiled, transferred, and built on, and utilized.

5) Technology – Technology Application: Organizations can bring technology to help facilitate staff learning. This includes providing a training room, computer software, information systems, and a knowledge database.

Furthermore, Marquardt and Reynolds (1994: 51 - 77) listed 11 components which can help supporting the development of learning organizations. These components were:

1) Appropriate Structures: The best organizational structures to develop in learning organizations are those small in size so that the chain of command can be short leading to responsiveness and the holistic structure can be adopted with an emphasis on teamwork.

2) Corporate Learning Culture: In order to promote or encourage staff to learn, organizations need to 1) provide incentives when staff create innovation and 2) build a culture for staff to learn from experience, both through self-learning and exchange of knowledge with colleagues. Senior management should be supportive both financially and psychologically.

3) Empowerment: Responsibilities can be delegated to staff. As implementers who are facing problems themselves, they should be able to make better decision as they understand the causes of the problems. Because of this, staff should have certain attributes, such as being effective learners and problem solvers, in order to expand their capabilities to boost productivity, creativity and learning.

4) Environmental Scanning: Three aspects should be considered: 1) Environment Monitoring - to prepare for any relevant changes which might impact the organization; 2) Environment Shaping - how organizations can influence the

environment to be more favorable; and 3) Environment Targeting - where organizations should target for interaction and learning and how to benchmark with other similar organizations within the same industry.

5) Knowledge Creation and Transfer: This should not be perceived as the role of research and development department only but as a responsibility for every employee. Knowledge creation and transfer can be achieved through the use of an online database which can be used across all departments where anyone can learn from others.

6) Learning Technology: Technology is an important tool for building learning organization as it can help in storing and creating new knowledge. For example, technology can be used for long-distance training in electronic classrooms. Artificial intelligence can provide advice and assistance to staff.

7) Quality: As organizations can succeed only through continuously quality improvement, it is important to be constantly thinking about how to improve productivity and learning can help this.

8) **Strategy:** In order to become a learning organization, a strategy for learning is important and it should promote continuous learning and integration of work processes according to the strategy.

9) Supportive Atmosphere: The quality of life of staff is an area where organizations need to focus. This includes respecting human dignity, fairness, non-discrimination, and promotion of an environment where participation is encouraged.

10) Teamwork and Networking: Effective learning organizations are aware of the importance of teamwork in order to expand knowledge and resources. In addition, external networking with other organizations is also critical and can be done through cross-functional networking or exchange of information between staff and customers.

11) Vision: This will help create a joint objective leading to enhance learning processes and guiding the organization to success.

Senge (1990) proposed a way to build a learning organization and focused on the five disciplines of the learning organization which can help drive this process.

1) Personal Mastery: People in the organization must have continuous behavior of learning and searching for new knowledge in order to be productive throughout their lifetime.

2) Mental Model: Mental models are deeply ingrained assumptions, generalizations, or even pictures of images that influence how we understand the world and how we take action. .

3) Shared Vision: This will create the power to learn and lead to success in achieving organizational objectives.

4) Team Learning: This is to allow diversity in thinking and select the best options for implementation, which can be done by allowing freedom to talk within the team and providing opportunities for feedback and comments in order to further develop the ideas into viable options.

5) Systems Thinking: Staff must think about the organization as a large system which consists of smaller subsystems which are related and interconnected. The majority of problems usually occurs from one sector but requires the cooperation of all departments.

Werawat Punnitamai (2000: 49) summarized all of the principles related to the fifth discipline of learning organization by Senge (1990) as: 1) individual discipline which includes systems thinking, personal mastery, and mental model; 2) team discipline which are shared vision and team learning; and 3) organizational discipline which is a learning organization which can lead to prosperity of the organization as illustrated in Figure 2.9**.**

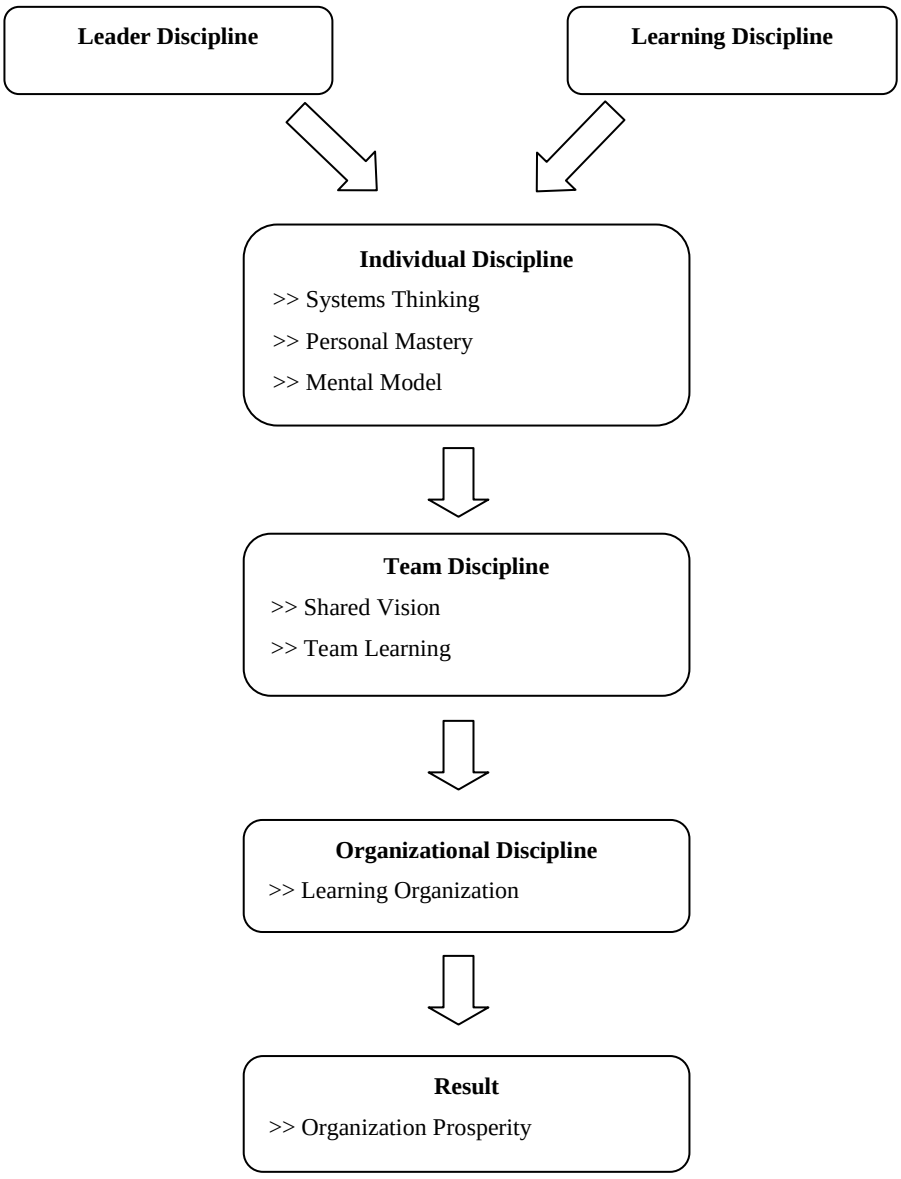

Figure 2.9 Summary of the Fifth Discipline of Learning Organization by Senge (1990)

Source: Werawat Punnitamai, 2000: 49.

Garvin (1993) proposed a principle for the development of a learning organization which requires skill in creating and transferring knowledge, and the ability to adapt its behavior based on any new knowledge and foresight. This principle consists of five main aspects:

1) Systematic Problem Solving: This has been used to analyze the problems instead of guessing by gathering real world data for decision making instead of making assumptions. This method is also known as fact-based management and can involve utilization of statistical tools to help with data management.

2) Experimentation with New Approaches: This is a set of activities related to searching and experimenting on new knowledge by using the scientific method in a systematic way. The experiment is done together with systematic problem solving and may consist of a number of smaller experiments in order to gather the information and continuously improve the solution. The organizations which succeed will be those where all of the staff are trained on how to experiment and conduct sound evaluation and are determined to constantly obtain new thinking, reward innovation.

3) Learning from Their Own Experience and Past History: Organizations must monitor and assess both their successes and failures in a systematic way by keeping records which will allow staff to browse and extract knowledge from the experiences. Learning from failure can be a tool for achieving success in the future.

4) Learning from the Experiences and Best Practices of Others: Learning from the experience of others can be done through benchmarking with good practices from other organizations, or learning from customers which requires an open-minded approach from the organization allowing feedback and criticism to be acknowledged and processed for future improvement. This is a trait which will allow an organization to become a learning organization.

5) Transferring Knowledge Quickly and Efficiently: Rapid, effective knowledge dissemination throughout the organization is very important and a number of mechanisms can be used, such as reports, visits, staff rotation, and training and development.

Marsick and Watkins (1999) also proposed seven key components which can help the development of learning organizations. These components emphasize continuous learning, and knowledge creation and management which can lead to improved performance and value to the organization.

1) Create Continuous Learning Opportunities: Staff should be allowed to further their study for future career advancement.

2) Promote Inquiry and Dialogue: Staff should be trained to use reasoning to explain their own perspective and also listen to find a solution by considering the perspectives of others. This will create a culture of asking questions, providing feedback, and experimenting.

3) Encourage Collaboration and Team Learning: Tasks should be designed so that each group has their own ideas and they should be allowed to learn and work together. The culture of participation should be promoted and rewarded.

4) Establish Systems to Capture and Share Learning: Technology for knowledge sharing should be built and integrated in order to allow easy access and maintenance.

5) Empower People toward a Collective Vision: Staff should participate in development of the vision and its implementation. Responsibilities should be assigned appropriately according to level of seniority. This will create incentive to learn through their responsibilities which they have been assigned to.

6) Connect the Organization to Its Environment: Staff should be able to see the impact of their work on the organization and analyze the environment in order to use the existing data to improve their work and make it relevant to the community.

7) Provide Strategic Leadership for Learning: Leaders should be role models to assist staff and support learning with emphasis on strategic leadership for learning in order to boost business outcomes.

Goh (1998) proposed five components which the senior management should do in order to develop the organization into learning organization. In addition, there are two facilitating factors which are all outlined below.

1) Clarity and Support for Mission and Vision: Learning organizations are those which empower the staff to work according to their ability and understand the mission of the organization in order to know what their roles are and how they can create or improve their work.

2) Shared Leadership and Involvement: In a highly competitive environment, leadership needs to understand about empowerment and support an

organizational culture on experimenting. Senior management will be responsible for coaching, and encouraging staff to work creatively despite the risk and uncertainty from such environment. All of the staff will contribute to the overall performance of the organization and the management must lead the change from within, providing advice to staff, and taking criticism and learning from them.

3) A Culture that Encourages Experimentation: In learning organization, experimenting culture is very important and rewards and support must be provided for these activities at all levels in order to promote creativity.

4) Ability to Transfer Knowledge across Organizational Boundaries: This is the skills to transfer knowledge internally and externally which includes learning from failure. These skills and knowledge can be transferred and used to improve performance, help solve problems, and create a new set of knowledge. This can be achieved through exchange of experience and learning from others who have succeeded.

5) Teamwork and Cooperation: This is when team members compile the skills and knowledge and use it collectively to solve problems and develop new creative ideas for the organization. Effective teams should be from many departments within the organization.

Apart from the five components, there are two additional facilitating factors:

1) Organizational Design: This should be simple and stress decentralization in order to reduce formality**.**

2) Employees Skills and Competencies: Organizations must prioritize training and development for their employees by focusing on expanding experiences which can help team development.

Lussier and Achua (2001) mentioned the characteristics of learning organizations which should consist of the following:

1) Organizational culture for incentives and performance evaluations will value experimenting, creativity, and innovation.

2) Senior management is supportive on the development to become learning organization.

3) Mechanisms and structure are in place to support staff at all levels to initiate creative ideas.

4) Staff can access knowledge and information with ease and the use of technology is encouraged.

5) Staff at all levels is committed to learning. For example, 3M allows their employees to dedicate 15 percent of their work time to experiment and learn or do what they want to do.

6) Staff are empowered to solve problems and encouraged to find good solutions for their work.

7) The staff is aware of short and long-term performance of the organization.

8) New developments and discoveries occur from work and the organization adapts itself to the changing environment in order to achieve organization objectives.

9) Staffs are not afraid to make mistakes in work.

Garvin, Edmondson and Gino (2008) stated that there were three building blocks needed for an organization to become a learning organization.

1) A supportive learning environment consists of:
   (1) Psychological safety
   (2) Appreciation of differences
   (3) Openness to new ideas
   (4) Time for reflection
2) Concrete learning processes and practices consist of:
   (1) Experimentation
   (2) Information collection
   (3) Analysis
   (4) Education and training
   (5) Information transfer
3) Leadership that reinforces learning

From the literature review on learning organization, a summary of principles on this subject is provided in Table 2.3.

Table 2.3 Summary of Learning Organization Concepts

Academic	Explanation Issue	Component
Senge (1990)	The fifth disciplines of a learning organization.	1) Personal mastery 2) Mental model 3) Shared vision 4) Team learning 5) Systems thinking
Garvin (1993)	Principles of organizational development that lead to being a learning organization.	1) Systematic problem solving 2) Experimentation with new approaches 3) Learning from their own experience and past history 4) Learning from the experiences and best practices of others 5) Transferring knowledge quickly and efficiently
Marquardt (1996)	Components are conductive to being a learning organization.	1) Learning dynamics 2) Organization transformation 3) People empowerment 4) Knowledge management 5) Technology application
Goh (1998)	Principles in practice of an administrator in order to develop an organization into a learning organization.	1) Clarity and support for mission and vision 2) Shared leadership and involvement 3) A culture that encourages experimentation 4) Ability to transfer knowledge across organizational boundaries 5) Teamwork and cooperation

Table 2.3 (Continued)

Academic	Explanation Issue	Component
Marsick and Watkins (1999)	Important components to develop learning organization	1) Create continuous learning opportunities 2) Promote inquiry and dialogue 3) Encourage collaboration and team learning 4) Establish systems to capture and share learning 5) Empower people toward a collective vision 6) Connect the organization to its environment 7) Provide strategic leadership for learning
Garvin et al. (2008)	Important component to being a learning organization	1) Supportive learning environment 2) Concrete learning processes and practices 3) Leadership that reinforces learning

From Table 2.3, a learning organization is when the staff perceives the development of the organization to become a learning organization which consists of creating continuous learning opportunities, organization transformation, and commitment to learning, knowledge management, and technology applications.

2.5.1 Relationship between Learning Organization and Performance

Ellinger, Ellinger, Young and Howton (2002) stated that due to the fact that learning is a key to competitive advantage, the learning concept has been of great interest to academics. Their research found that the learning organization concept has a positive effect on firms' financial performances. After that, investigating the relationship between the learning organization and performance has occurred widely in academics' research.

Kontoghiorghes, Awbrey and Feurig (2005) reported that learning organization characteristics, such as openness in communication and information exchange, acceptance of risk, and the presentation of new ideas influence organizational performance.

Yeung, Lai and Yee (2007) revealed that factors to enhance organizational learning such as staff being valued by senior management, and supported by appropriate learning infrastructure and a culture have effects on organizational efficiency.

Yang, Wang and Niu (2007) studied the relationship between organizational learning and organizational performance in Taiwan's industries. They found that applying organizational learning has a positive effect on organizational performance.

Davis and Daley (2008) revealed that learning organizations show positive direct effects on business performance such as return on investment (ROI), return on equity (ROE), earnings per share (EPS), net income per employee, and percentage of sales from new products.

Walumbwa, Cropanzano and Hartnell (2009) investigated the integrative model of voluntary learning behavior which collected data from 398 employees from a large automobile dealership. This study revealed that effective learning behavior is a factor that enhances job performance.

Som, Saludin, Shuib, Keling, Ajis and Nam (2010) found that learning organization elements including individual learning practices, organizational learning practices, and team problem-solving have positive effects on organizational performance of non-profit organizations (NPOs) in Singapore.

Tahir, Naeem, Sarfraz, Javed and Ali (2011) reported that organizational learning significantly influences positive employee performance. Similarity, Garcia-Morales, Jimenez-Barrionuevo and Gutierrez (2012) found that organizational learning has a direct positive effect on organizational performance.

2.6 Related Research

Kriengkriyos Punthai (2009) studied the influence of leadership behaviors, organizational culture, and human resource development on employees' performance

in state enterprises. This research finding revealed that 1) transformational leadership, an adaptable culture, and training and development activities have direct effects on employees' performance, 2) transformational leadership has a direct effect on organizational culture including adaptability, involvement, and mission cultures, and 3) organizational culture which has concepts of both involvement and mission cultures has direct effects on training and development activities.

Pilan Patipimpakom (2007) studied leadership style and administrators' effectiveness in private elementary schools. The research findings revealed that in the private elementary schools there is significant correlation between

1) The leadership of executives in private elementary schools was comprised of vision, persuasion, being a role model, relationship between school and communities, wisdom, and administration

2) The school efficiency in private elementary schools was comprised of productivity, attitude development, adjustment, school environment, staff satisfaction, staff development and school problem solving

3) The relationship between the executives' leadership and the school efficiency

Pongthep Chandasuwan (2011) studied leadership, organizational culture, and organizational effectiveness of the schools managed by the Bangkok Metropolitan Administration. These research findings revealed that: 1) leadership was composed of four components including co-learning encouragement leadership, ideological influence leadership, ethical leadership, and non-leadership; 2) organizational culture was composed of four components including employee-centered organizational culture, strategic organizational culture, learning and change organizational culture, and congruent organizational culture; 3) organizational effectiveness was composed of four components including process oriented work, and goal, participation, and harmony orientation; and 4) both leadership and organizational culture has positive effects on organizational effectiveness.

Sansanee Jasuwan (2007) studied the development of the learning organization model for Rajabhat universities. The research findings revealed that 1) Rajabhat universities' learning organization including learning, organization, personnel, technology, and knowledge management aspects were at a medium level,

2) organization aspects such as management and organizational culture and technology information system have an effect on the current status of Rajabhat universities, 3) personnel aspect such as personnel's attitudes and job performance, and personnel's knowledge and skills have an effect on the current status of Rajabhat universities, 4) leadership aspects such as transformational leadership, colleague-like leadership, and manager-like leadership have effects on the current status of Rajabhat universities.

Somkid Sakunsatapat (2009) investigated the model of effective transformational leadership for sustainable education reform. This research revealed that the effective transformational leadership components including potential mediation, emotional intelligence, inspirational motivation, intellectual stimulation, and idealized influence have both direct and indirect effects on sustainable education reform components such as learner focus, a balanced change process, synergized inputs, quality outputs, a dynamic balance of outcomes, and a suitable context.

Songpol Charoenkham (2009) investigated the model of Excellence Schools under Bangkok Metropolitan Administration. This research revealed that the model of Excellence Schools consisted of school administration, school director, school structure, students, parents, community and society, teachers and staff. However, three important components including the school administration, the school director, and parents and community were significantly correlated.

Thidarat Sukprapaporn (2007) studied factors affecting the personnel performance efficiency in Chiang Rai Rajabhat University. This study, using Hertzberg's Two Factor Theory revealed that 1) the highest hygiene factor that affected on personnel performance efficiency was relationship among their colleagues, followed by relationship with their immediate superiors and working conditions, policy and administrative technique, position and work security, compensation, and welfare and private life, 2) the highest motivator factor that affected personnel performance efficiency was job success, job characteristics and job responsibility. However, this study, contrary to Hertzberg, found that differences in gender, age, position, education, work tenure, and compensation had different effects on some factors affecting personnel performance efficiency.

Wandee Tubtim (2003) studied the relationship between operative workers' perceptions of leadership, organizational commitment, and work unit effectiveness at Chiang Mai Ram Hospital 1. These research findings revealed that 1) the operative workers' perception of leadership were at a high level, 2) their perception of leadership is related to both of their organizational commitment and work unit effectiveness, and 3) their organizational commitment is related to their work unit effectiveness.

Watcharapong Intrawong (2009) studied the influence of human resource practices on Thai academics' performance in higher education institutions. This research revealed that human resource practices consisting of four groups - 1) recruitment and selection, and training and development, 2) performance appraisal and rewards, 3) job design, participation and communication and 4) internal promotion, job security and equity - have direct effects on academics' performance. In addition, human resource practices also have indirect effects on academics' performance through ability, motivation, engagement, and commitment.

Witchasarat Dhammaratjinda (2009) investigated the relationship between learning organizations and school effectiveness in Suphanburi educational service Area Office 2. This research revealed that both the learning organization structure in schools and the school effectiveness in Suphanburi educational service area office 2 were at a high level, and that learning organization is significantly correlated with school effectiveness.

2.7 Conceptual Framework

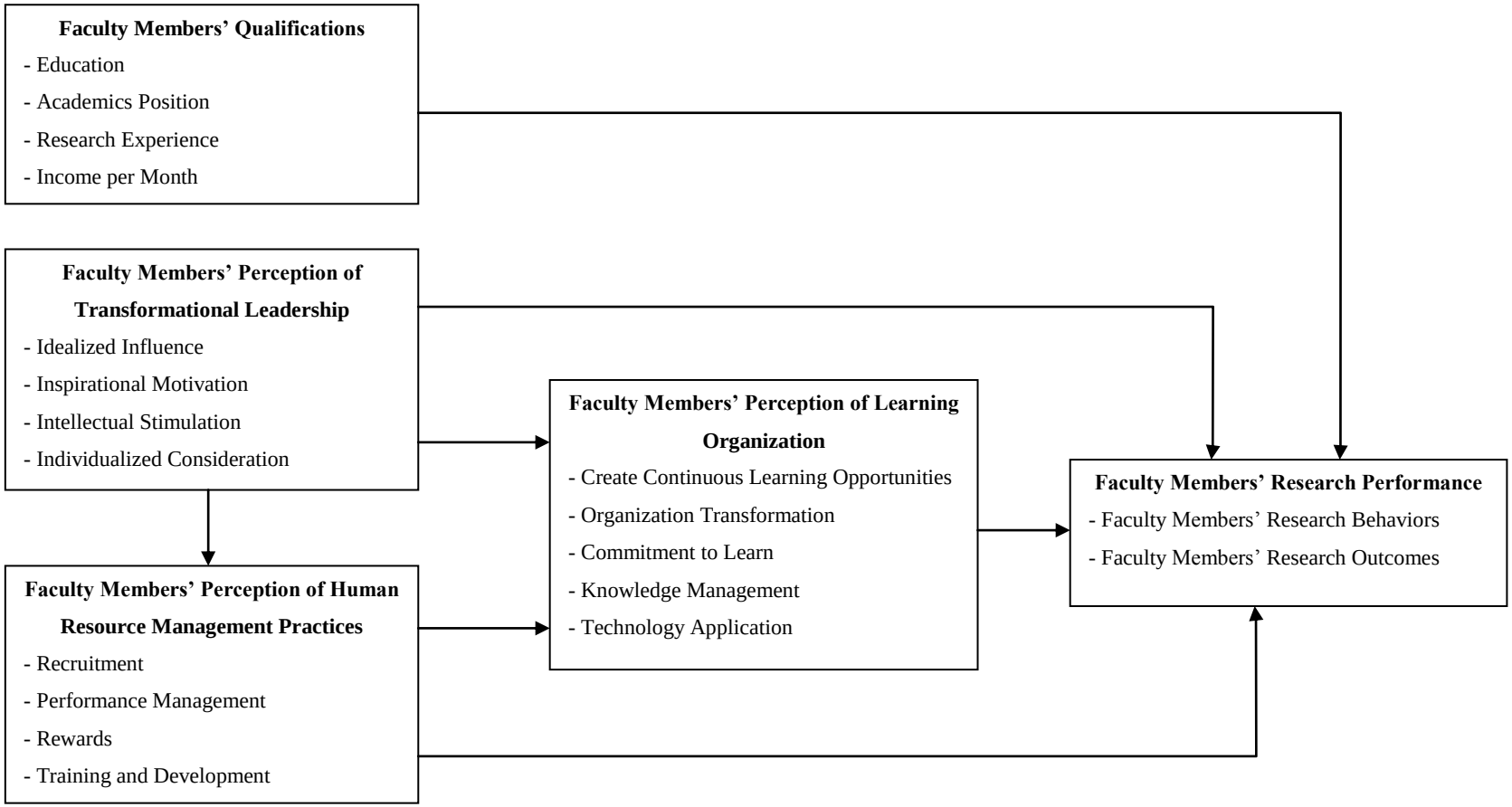

Figure 2.10 Conceptual Framework

2.8 Hypothesis

Hypothesis 1 Faculty members' qualifications have a positive direct effect on their research performance.

Hypothesis 2 Faculty members' perceptions of transformational leadership have a direct effect on their research performance.

Hypothesis 3 Faculty members' perceptions of transformational leadership have an indirect effect on their research performance through their perceptions of human resource management practices.

Hypothesis 4 Faculty members' perceptions of transformational leadership have an indirect effect on their research performance through their perceptions of learning organizations.

Hypothesis 5 Faculty members' perceptions of transformational leadership have an indirect effect on their research performance through their perceptions of human resource management and learning organizations.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

This research is an exploratory and cross sectional study that considers the effects of faculty members' qualifications and their perceptions of transformational leadership, human resource management practices, and learning organization on National Research Universities' faculty members' research performance to develop a model of faculty members' research performance. To accomplish this, the mixed methods research including of quantitative and qualitative methods was used and is explained as follows:

1) Quantitative Research - The unit of analysis of this research was at the individual level, and data was collected from the faculty members in National Research Universities.

2) Qualitative Research - The qualitative results which were the in-depth interviews of nine faculty members in National Research Universities. These were used to interpret and explain the quantitative analysis findings.

3.2 Population and Sample

3.2.1 Population

The population in this study included 18,035 faculty members from nine National Research Universities: Chulalongkorn University, Kasetsart University, Khon Kaen University, Chiang Mai University, Thammasat University, Mahidol University, Prince of Songkla University, Suranaree University of Technology and King Mongkut's University of Technology, Thonburi. Those faculty members included 502 professors, 3,767 associate professors, 4,722 assistant professors, and 9,044 lecturers. The data is shown in table 3.1.

Table 3.1 Population in Nine National Research Universities Separated by Academic Position

National Research University	Academics Position				Total
	Professors	Associate Professors	Assistant Professors	Lecturers	
Chulalongkorn University	123	697	859	1,186	2,865
Kasetsart University	43	512	572	1,483	2,610
Khon Kaen University	33	498	614	701	1,846
Chiang Mai University	51	432	588	1,096	2,167
Thammasat University	38	381	443	848	1,710
Mahidol University	160	802	841	1,841	3,644
Prince of Songkla University	25	268	504	1,331	2,128
Suranaree University of Technology	14	44	115	165	338
King Mongkut's University of Technology, Thonburi	15	133	186	393	727
Total	502	3,767	4,722	9,044	18,035

3.2.2 Sample

In this section, the researcher calculated the sample size for faculty members by using Yamane's formula (Yamane, 1973) before collecting data by using simple sampling technique which aimed to create a sampling frame for all cases (Nueman, 2006: 241). Yamane's formula and the calculation of sample size are shown as follows:

$$n = \frac{N}{1 + Ne^2}$$

Where, n = the sample size

N = the population size

e = the error of 5 %

$$\text{Samples} = \frac{18{,}035}{1 + 18{,}035(0.05^2)}$$

$$= 392$$

Thus, the sample was 392 faculty members which was composed of 45 professors, 90 associate professors, 107 assistant professors and 150 lecturers. The data is shown in table 3.2.

Table 3.2 Sample Separated by Academic Position

Academic Position	Population (N)	Sample (n)
Professors	502	45
Associate professors	3,767	90
Assistant professors	4,722	107
Lecturers	9,044	150
Total	18,035	392

Finally, the researcher used a simple sampling technique to collect data.

3.3 Operational Definitions and Levels of Measurement

Effect refers to the variance of an independent variable that affected a dependent variable which is considered by a path coefficient at a significant level of .05.

Leader refers to respondent's direct supervisor.

Faculty member refers to an academic in a National Research University who works as professor, assistant professor, associate professor, or professor.

Faculty member's research performance refers to respondent's research performance that was dependent on respondent's research behavior and respondent's research outcome.

Faculty member's research behavior refers to respondent's research behavior that included developing his or her research competency, suggesting research for others, collaborative research with outsiders, and publishing his or her research in the academic communities or acceptable sources.

Faculty member's research outcome refers to respondent's research outcome, both qualitative and quantitative, that were accepted by academics communities. The faculty's research outcome consists of respondent's quantitative and qualitative research outcomes that were accepted by the academic community, the amount of research publishing, number times as major and co-researcher, number of research awards, number of research citations and number of patents received.

Faculty member's qualifications refers to respondent's individual data that includes gender, age, education, academic position, work experience, research experience, and income per month.

Faculty member's perception of transformational leadership refers respondent's perception of leader's behaviors that include providing inspiration, being a role model, and leading a vision that gives faculty motivation to perform in a way that achieves organization objectives. In other words, transformational leadership is composed of idealized influence, inspirational motivation, intellectual stimulation, and personal consideration.

Idealized influence refers to the leader as a role model, doing the right things, having morals and ethics, and being empowering.

Inspirational motivation refers to leader motivates and inspires faculty members. In the same way, leader thinks positively, arouses faculty members to participate in setting visions, and motivates them to perform success in organization goals.

Intellectual stimulation refers to leader stimulates faculty members to have creative ideas, and motivates them to solve working problems creatively.

Individualized consideration refers to leader emphasizes in individual needs by treating suits for individual different.

Faculty member's perception of human resource management practices refers to human resource activities in respondent's perception that concern on recruitment, performance management, rewards, and training and development.

Recruitment refers to recruitment and selection approaches which are consistent with organization goal, obvious, and transparent.

Performance management refers to faculty members' performance appraisal process which is formal, regular and transparent.

Rewards refers to faculty members' rewards approach both of tangible and intangible that concern on faculty's duties, responsibilities, and can compete with other universities.

Training and development refers to supporting and organizing activities that increasing faculty members' knowledge and competency, and promoting faculty members' career path in the future.

Faculty member's perception of learning organizations refers to the respondent's perception of the organization developing to be learning organization that enables continuous learning opportunities, organization transformation, commitment to learn, knowledge management, and technology application.

Creating continuous learning opportunities refers to supporting faculty members' opportunities in continuous learning, and provisions for a career path.

Organization transformation refers to transforming the organization's vision, culture, and values that promote a learning organization.

Commitment to learn refers to faculty members' emphasis on learning, persistence in learning values, and thinking that learning is an investment to enhance their performance.

Knowledge management refers to searching, collecting, transferring, creating and applying knowledge.

Technology application refers to the use of technology for facilitating faculty members' learning in the organization.

Table 3.3 Variables / Operational Definitions and Levels of Measurement

Variables/Operational Definitions	References	Questions	Levels of Measurement
Faculty member's perception of transformational leadership refers to the respondent's perception of the leader's behaviors that concern building inspiration, being a role model, and leading visions that give faculty members to accept and perform in a manner so as to achieve organization objectives. Transformational leadership is composed of idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration.			
Idealized influence refers to leader is a role model, doing the right things, having morals and ethics, and being empowerment.	Bass and Avolio (1994) Avolio (1999) Kriengkriyos Punthai (2009) Northouse (2007)	1. You are proud to work with your direct supervisor. 2. Your direct supervisor is a good example for your work. 3. You have great respect for your direct supervisor. 4. You feel comfortable working with your direct supervisor.	Interval scale/ 5-point Likert scale. "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.
Inspirational motivation refers to how a leader motivates and inspires faculty members. In the same way, leader thinks positively, arouses faculty to participate in setting visions, and motivate them to perform successfully in organization goals.	Bass and Avolio (1994) Avolio (1999) Kriengkriyos Punthai (2009) Northouse (2007)	5. Your direct supervisor frequently gives you work encouragement. 6. Your direct supervisor stimulates you so that you are enthusiastic about your work. 7. Your direct supervisor can motivate you to achieve your work objectives.	Interval scale/ 5-point Likert scale. "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
		8. Your direct supervisor helps you understand about your work objectives.	
Intellectual stimulation refers to the leader's stimulation of faculty members to have creative ideas, and motivation to creatively solve working problems.	Bass and Avolio (1994) Avolio (1999) Kriengkriyos Punthai (2009) Northouse (2007)	9. Your direct supervisor always has good logical solutions to problems. 10. Your direct supervisor always gives you good advice in your work. 11. Your direct supervisor always encourages you to think and find your own solution in your work. 12. Your direct supervisor always encourages you to think and find new ways to work.	Interval scale/ 5-point Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.
Individualized consideration refers to the leader's emphasis on individual needs by treating individuals based on personal needs.	Bass and Avolio (1994) Avolio (1999) Kriengkriyos Punthai (2009) Northouse (2007)	13. Your direct supervisor cares about your needs. 14. Your direct supervisor acknowledges your problems when they arise. 15. Your direct supervisor gives you assistance when you have a problem. 16. Your direct supervisor cares about your safety.	Interval scale/ 5-point Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
Faculty member's perception of human resource management practices refers to the respondent's perception of human resource activities that concern recruitment, performance management, rewards, and training and development.			
Recruitment refers to recruitment and selection approaches which are consistent with organization goals that are obvious, and transparent.	Watcharapong Intrawong (2009)	1. Your organization recruits staff according to organizational objectives. 2. Your organization is able recruit staff with the educational qualifications specified in the job opportunity announcement. 3. During the interview, the interview panel mainly asks the applicant about work 4. Work experience (especially in research) was considered when accepting you for your position. 5. Your organization has an evaluation system for successful applicants when they start working in their position.	Interval scale/ 5-point Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
Performance management refers to faculty members' performance appraisal process which is formal, regular, and transparent.	Watcharapong Intrawong (2009) Shipton, West, Dawson, Bird and Patterson (2006)	6. Your performance was formally evaluated. 7. Your performance is evaluated in a consistent manner. 8. Your organization has criteria for performance evaluation and clear key performance indicators. 9. Your performance is evaluated in a fair and transparent manner. 10. The results of your performance evaluation are useful for work improvement.	Interval scale/ 5-point Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.
Rewards refer to the faculty approach to rewards (both tangible and intangible) concerning faculty members' duties, responsibilities, and competitiveness with other universities.	Watcharapong Intrawong (2009) Lopez et al. (2005)	11. Your current salary is suitable to your roles and responsibilities. 12. Your total compensation (include salary and other incomes) is consistent with your performance. 13. Your total compensation is considered to be high when compared with similar roles in other universities.	Interval scale/ 5-point Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
		14. Your organization gives social recognition, compliments, and respect for faculty members with exceptional output.	
Training and development refers to supporting and organizing activities that increase faculty members' knowledge and competency, and promote faculty members' career paths in the future.	Watcharapong Intrawong (2009) Lopez et al. (2005)	15. You receive sufficient financial support for your training needs. 16. The training that you have done was consistent with organizational objectives. 17. You receive good support (time and resources) when applying for a higher academic position. 18. You have a clear training and development plan for each year.	Interval scale/ 5-point Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
Faculty member's perception of learning organization refers to the respondent's perception of the development of the organization to be learning organization that supports the creation of continuous learning opportunities, organizational transformation, commitment to learn, knowledge management, and technology application.			
Creating continuous learning opportunities refers to supporting faculty members' opportunities in continuous learning and career path.	Marquardt (2002) Marsick and Watkins (2003)	1. You receive sufficient financial and resource support for your learning. 2. You feel that any problem you encountered in your work is an opportunity to learn. 3. You know the skills that you need in your future work. 4. Your continuous learning is important to your organization. 5. You are expected to manage your learning and development.	Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.
Organizational transformation refers to transforming the organization's vision, culture, and values that promote learning organization.	Marquardt (2002)	6. Senior management supports the vision of being a learning organization. 7. Your organization has a positive environment which encourages learning and creates an awareness of its importance.	Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
		8. Your organization has developed processes for knowledge sharing and promotional activities on learning, such as academic conferences and academic journals. 9. You have the opportunities to learn from your work and other projects initiated by your organization. 10. You feel attached to the idea of continuous learning which can lead to work improvement and development.	Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.
Commitment to learn refers to faculty members' emphasis on learning, persistence in learning values and thinking that learning is an investment to enhance their performance.	Phayat Wutthirong (2009)	11. You are well aware of the importance of learning. 12. Learning is an important factor in producing exceptional work. 13. You feel that learning is an investment 14. Learning which can lead to work improvement is part of the basic values of your organization.	Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
		15. Learning is an important factor considered during performance audit and quality assurance in your organization.	
Knowledge management refers to searching, collecting, transferring, creating, and applying knowledge.	Marquardt (2002)	16. Your organization looks for information which can improve organizational performance (especially in research). 17. You can access an information storage system from inside and outside the organization. 18. You are aware of the necessity of knowledge storage for sharing with others in the future. 19. Your organization fully supports the department and projects which generate new knowledge, such as workshops, research, academic services. 20. You consistently receive training in skills related to research and creativity.	Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
Technology application refers to applying technology to facilitate faculty members' learning in the organization.	Marquardt (2002)	21. Your organization has database systems which are efficient, effective and convenient for learning. 22. You can easily access the 'information highway' from a LAN, the internet, and an intranet with ease. 23. You can access the information that you need in order to work efficiently and effectively. 24. IT support within your organization helps you to learn and work better.	Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
Faculty member's research performance refers to respondent's research performance that consists of respondent's research behavior and respondent's research outcomes.			
Faculty member's research behavior refers to respondent's research behavior that consisted of developing his or her research competency, suggesting research for others, collaborating research with outsiders, and publishing his or her research in the academic communities or acceptable sources.	Kewali Duangkamnerd (2008) Office of the Higher Education Commission (2009).	1. You have developed your knowledge in research to continuously increase your capacity in research. 2. You have consistently produced research output which improve existing knowledge or help in solving problems at societal/community/national levels. 3. You consistently supervise research projects for students and other researchers. 4. You are consistently involved in research as partner with other researchers, organizations or research networks. 5. You have consistently disseminated your research in acceptable sources/media at national or international levels.	Likert scale. The "Strongly agree" was translated as a 5 for analysis, "Agree" as a 4, "Neutral" as a 3, "Disagree" as a 2, and "Strongly disagree" as a 1.

Table 3.3 (Continued)

Variables/Operational Definitions	References	Questions	Levels of Measurement
Faculty member's research outcomes refers to respondent's research outcomes (both qualitative and quantitative) that were accepted by academic communities. The faculty member's research outcome is concern on faculty member's quantitative and qualitative research outcomes that accepted by academic community, and it consists of amount of research publishing, being major and co researcher, research awarding and patents granted.	Creswell (1985) Watcharapong Intrawong (2009) Office of the Higher Education Commission (2009).	6. The number of your domestic research publications within the last 3 years. 7. The number of your international research publications within the last 3 years. 8. The number of research projects on which you were a major researcher in the last 3 years. 9. The number of research projects on which you were a co-researcher in the last 3 years. 10. The number of research awards that you received in the last 3 years. 11. The number of patents you have been granted domestically and in other countries. 12. How do you rate your previous research performance? (Please rate with a score between 1-10)	Ratio scale

3.4 Research Instruments

Research instruments consist of 1) the questionnaire and 2) the interview outline. The researcher created the questionnaire from related concepts and operational definitions. The questionnaire consists of five sections as follows:

Section 1: Faculty member's qualifications

Section 2: Faculty member's perception of transformational leadership

Section 3: Faculty member's perception of human resource management practices

Section 4: Faculty member's perception of learning organizations

Section 5: Faculty member's research performance

3.4.1 Research Instrument Establishing

Based on the literature reviews in Chapter 2, the research instruments were composed of the questionnaire and the interview outline are explained as follows:

1) The questions of faculty member's perception of transformational leadership were derived from the concepts and questionnaires of Bass and Avolio (1994), Avolio (1999), Northouse (2007) and Kriengkriyos Punthai (2009).

2) The questions of faculty member's perception of human resource management practices were derived from the questionnaires of Lopez et al. (2005), Shipton et al. (2006) and Watcharapong Intrawong (2009).

3) The questions of faculty member's perception of learning organization were derived from the questionnaires of Marquardt (2002), Marsick and Watkins (2003) and Phayat Wutthirong (2009).

4) The questions of faculty member's research performance were derived from the questionnaires of Creswell (1985), Kewali Duangkamnerd (2008), Watcharapong Intrawong (2009) and Office of the Higher Education Commission (2009).

The questions of the faculty member's perceptions of transformational leadership, human resource management practices, learning organization, and their research performance such as research behavior component were quantized using the five-point Likert scale where the response ranged from "Strongly agree" to "Strongly

disagree" (Likert, 1932), while the faculty member's research performance such as research outcome component was quantized using a ratio scale.

After that, the researcher examined the quality of the research instruments including validity and reliability of the questionnaire.

3.4.2 Measurement of Validity and Reliability

1) Content Validity

The questionnaire was approved by three experts to check the accuracy of language and the appropriateness of the questionnaire in order to ensure whether or not the content validity of the questionnaire reflected the overall content which this study aimed to measure (Pornpen Petsuksiri, 1998: 21). The researcher accepted the index of item-objective congruence (IOC) which value was equal or greater than .5 (Pissanu Fongsri, 2009). The result is shown in Appendix B.

2) Construct Validity

Construct validity was used to examine degree to which the questionnaire explained the construct of theory or concept that it aimed to measure (Pornpen Petsuksiri, 1998: 22). The researcher used a factor analysis technique to examine the construct validity of the questionnaire and accepted a factor loading which was 0.4 or higher (Nunnally and Bernstein, 1994).

3) Reliability

The researcher tested the reliability of the questionnaire by trying out this questionnaire with 40 faculty members who were excluded from the sample in this study, and the Cronbach's alpha was 0.7 or greater indicating reliability (Hair, Black, Babin and Anderson, 2010). The results are shown in table 3.4.

Table 3.4 Reliability of the Instrument (Cronbach's Alpha)

Variables	Item	Cronbach's Alpha
Faculty Member's Perception of Transformational Leadership		.969
Idealized Influence	1 – 4	.945
Inspirational Motivation	5 – 8	.922
Intellectual Stimulation	9 – 12	.905
Individualized Consideration	13 – 16	.926
Faculty Member's Perception of HRM Practices		.931
Recruitment	1 – 5	.797
Performance Management	6 – 10	.864
Rewards	11 – 14	.887
Training and Development	15 – 18	.849
Faculty Member's Perception of Learning Organization		.923
Organization Transformation	1 – 5	.899
Knowledge Management	6 – 9	.835
Technology Application	10 – 13	.869
Commitment to learn	14 – 16	.824
Creating Continuous Learning Opportunities	17 – 19	.737
Faculty Member's Research Performance	1 – 5	.830

3.4.3 The Interview Outline Establishment

The researcher also applied an interview outline as a research instrument in this study. The procedures in forming and investigating the quality of the interview outline are explained as follows:

1) The researcher established the interview outline based on a statistical analysis of the results from the quantitative portion of the research, and the questions aimed to query for the faculty members' qualifications, their perceptions on how their research performance in National Research Universities was affected by

transformational leadership, human resource management practices, and learning organizations.

2) A group of experts approved the interview outline after considering the accuracy and fullness of the interview's issue.

3) The researcher improved the interview outline following recommendations from the experts, and the edited interview outline was reapproved by the experts before use.

4) The researcher used the interview outline in the in-depth interview with the key informants in face-to-face interviews. Interviews were approximately 60 to 90 minutes in length.

3.5 Data Collection

The researcher collected data from December 2012 to April 2013. The data collection included data from the questionnaire and the in-depth interviews.

1) The data collected from questionnaire: The questionnaires were posted to faculty members in National Research Universities between December 2012 and February 2013. The ratio of completed questionnaires to calculated sample size was 99.49 percent, with 390 complete questionnaires out of 392 samples aimed for.

2) The data collected from in-depth interview: The in-depth interview data was collected between March 2013 and April 2013. The researcher appointed 9 faculty members in National Research Universities, and each in-depth interview took approximately 60 to 90 minutes. While making the in-depth interviews, the researcher took notes and recorded those of data. After that, the in-depth interview data was organized by grouping it by factor categories.

3.6 Data Analysis

3.6.1 Data Analysis from the Questionnaire

1) Descriptive statistics, such as percentage, mean, standard deviation (S.D.), minimum, maximum, skewness, and kurtosis were used to describe the respondents' qualifications and their research performance.

2) The respondents' perceptions of transformational leadership, human resource management practices, and learning organization and their research performance were questions with scores between 1 and 5. The researcher interpreted the average mean of each variable based on Best's (1981) absolute criteria as follows:

4.51 – 5.00	Excellent
3.51 – 4.50	Good
2.51 – 3.50	Average
1.51 – 2.50	Fair
1.00 – 1.50	Needs Improvement

3) Inferential statistics, such as analysis of variance (ANOVA), exploratory factor analysis (EFA), simple correlation analysis, and path analysis were used to examine the research hypotheses 1 through 5.

3.6.2 Data Analysis from the In-Depth Interview

1) The in-depth interview data including short notes and voice records were summarized and organized.

2) All of the in-depth interviews data was distinguished into the related issues, and reported these based on the conceptual framework.

CHAPTER 4

RESULTS OF THE STUDY

Chapter 4 presents the quantitative results of the study and explains these results by using in-depth interviews results. The statistical data analysis answers the research questions. This chapter is organized into the following sections:

4.1 Descriptive statistics of faculty members' qualifications and research performance

4.2 Variance analysis

4.3 Exploratory factor analysis

4.4 Mean and standard deviation analysis

4.5 Correlation matrix of variables in the path model

4.6 Path analysis

4.7 Summary of the in-depth interviews

4.8 Model of faculty members' research performance in National Research Universities

4.1 Descriptive Statistics of Faculty Members' Qualifications and Research Performance

Tables 4.1 and 4.2 present descriptive statistics of respondents' qualifications and research performance, such as percentage, mean, standard deviation (S.D.), minimum, maximum, skewness, and kurtosis.

Table 4.1 Descriptive Statistics of Faculty Members' Qualifications (n = 390)

Faculty Members' Qualifications	**Percentage**
Gender : Female	50.3
Employment	
University Employee (Academics)	46.2
Government Official	51.8
Retired Government Official	2.1
Academics Position	
Lecturer	31.3
Assistant Professor	35.1
Associate Professor	30.3
Professor	3.3
Educational Qualification	
Master Degree	17.4
Doctoral Degree	82.6

Faculty Members' Qualification	**Mean**	**S.D.**	**Min**	**Max**	**Skew-ness**	**Kurto-sis**
Age (years)	45	9.27	28	77	.35	-.69
Work Experience (years)	17	10.07	1	49	.39	-.73
Research Experience (years)	15	9.28	1	44	.72	-.36
Income per Month(baht)	51,805	21,677	18,000	150,000	1.25	1.79

From Table 4.1, it can be seen that 50.3 percent of respondents were female, the mean age was 45 years, 35.1 percent of the respondents were assistant professors, more than half of the respondents were government officials, most of them completed a doctoral degree, the mean work experience was 17 years, the mean research experience was 15 years, and the mean income was 51,805 baht per month.

Table 4.2 Descriptive Statistics of Faculty Members' Research Performance

Faculty Members' Research Performance	Mean	S.D.	Min	Max	Skew-ness	Kurto-sis
Research Behavior	3.70	.68	1.60	5	.00	-.30
Research Outcomes						
1. Number of domestic research publications within the last 3 years	3.87	5.24	0	45	3.50	17.40
2. Number of international research publications within the last 3 years	4.08	5.52	0	51	3.81	21.43
3. Number of research projects which respondent was a major researcher in the last 3 years	3.70	4.44	0	41	4.23	25.89
4. Number of research projects which respondent was a co-researcher in the last 3 years	3.60	3.92	0	30	2.77	10.70
5. Number of research awards that respondent received in the last 3 years	.37	.97	0	9	4.16	23.51
6. Number of patents granted respondent domestically and in other countries	.22	.84	0	9	5.89	44.19

From Table 4.2, it can be seen that mean of respondents' research behavior was 3.70 (the highest was 5 and the lowest was 1.60). In addition, the research behavior variable had a small range and the data had a normal distribution. On the other hand, our analysis calculated that respondents' reported research outcomes in the prior three years had a mean number of domestic research publication of 3.87, international research publications of 4.08, research projects on which they were a major researcher of 3.70, research projects on which they were a co-researcher of 3.60, research awards received was .37, and patents granted domestically and internationally was .22. All variables for research outcomes had wide range, and none of these data sets had a normal distribution. As a result, the respondents' research outcomes could not be analyzed in the following sections, but only respondents'

research behaviors could be analyzed and reported as faculty members' research performance in the following sections.

4.2 Variance Analysis

In order to study the relationship between faculty members' qualifications and research performance, the researcher used variance analysis to investigate this hypothesis. The results are shown in the following tables (Table 4.3 - 4.6).

Table 4.3 Results of Comparison of Means between Faculty Members' Research Performance and Level of Academic Position

Academic Position	Number	Mean	SD	1	2	3	4	Statistics Test
1. Lecturer	122	3.439	.673	-				
2. Assistant Professor	137	3.736	.658	.296*	-			F = 11.732
3. Associate Professor	118	3.853	.631	.413*	.117	-		Sig. = .000
4. Professor	13	4.246	.649	.807*	.510	.394	-	
Total	390	3.695	.681					

Note: *Significance at .05

From Table 4.3, it can be seen that faculty members who were assistant professors, associate professors, and professors have significantly higher research performance than lecturers.

Table 4.4 Test of Homogeneity of Variances of Faculty Members' Research Performance by Academic Position Level

Levene Statistic	df1	df2	Sig.
.216	3	386	.885

From Table 4.4, the Levene statistic was .216, and it was significance at .885 which was higher than .05. Therefore, the variance across the four groups based on academic position was not different, so the analysis results in Table 4.3 was reliable.

Interviews were held with key informants in order to evaluate the effect of academic position on the research performance of faculty members in National Research Universities; it was found that academic position has an effect on the research performance due to:

1) Faculty members with academic position usually have the knowledge and capabilities to do research:

> "…People who have high academic positions usually have a lot of knowledge specifically related to doing research leading to better research performance…"
>
> "…People who have an academic position will have a lot of experience before acquiring the position of Assistant Professor, Associated Professor, or Professor. As a faculty member does more research, he/she will have better vision and ability to see problems. So I think that academic position can lead to better capabilities in research…"

2) Academic position is a sign of 'quality assurance' for research work:

> "…with rules and regulations such that once you get a position of Assistant or Associate Professor, you need to complete a certain amount of work. If not, you may lose the position…"
>
> "…To be an Assistant or Associate Professor, you must apply for it. You will be forced to have certain amount of research done. Therefore, they need to fulfill their potential to do the research and force themselves to do more research…"
>
> "…If you are a professor, you will usually receive a lot of funding for research. For example, Prof. Narongsak, who is an expert in energy at the National level, has produced a lot of high quality research. When

his works are inspected, he will also be approved for a lot of research funds. He also has a lot of capacity and 'guarantees' from his academic position which ensure that his work will also be high quality…"

In conclusion, the academic position of faculty members has an effect on research performance as those with positions will already have good knowledge and capabilities, and can provide a sign of quality assurance for the research work that they have been involved in.

Table 4.5 Results of a Comparison of Means between Faculty Members' Research Performance and Level of Their Income per Month

Income per Month	Number	Mean	S.D.	1	2	3	Statistics Test
1. Less than 40,000 baht	160	3.524	.670	-			
2. Between 40,000 and 80,000 baht	201	3.752	.652	.228*	-		F = 16.563 Sig. = .000
3. More than 80,000 baht	29	4.248	.597	.725*	.496*	-	
Total	390	3.695	.681				

Note: * Significance at .05

From Table 4.5, it can be deduced that faculty members who have more income per month will have higher research performance than faculty members who have a lower income per month. In particular, faculty members who have incomes more than 80,000 baht per month will have higher research performance than both groups of faculty members who have income less than 80,000 baht per month. Similarly, faculty members who have incomes between 40,000 and 80,000 baht per month will have higher research performance than faculty members who have income less than 40,000 baht per month.

Table 4.6 Test of Homogeneity of Variances of Faculty Members' Research Performance by Income per Month Level

Levene Statistic	df1	df2	Sig.
.001	2	387	.999

From Table 4.6, the Levene statistic was .001 and its significance was at .999 which was higher than .05. Therefore, the variance of the three income groups was not different, so the analysis of the results in Table 4.5 was reliable.

From the interviews with key informants in order to ask about the effect of income on research performance of faculty members in National Research Universities, it was found that income has an effect on the research performance due to:

1) Income, especially research grants can be an incentive for faculty members to conduct research, as some key informants commented:

> "…When we have income from research funding, for example the funding of 40,000 baht per year, it makes us want to work in research even more…"
>
> "…With respect to income from research funding support, it provides the incentive to want to start doing some research, because, as we know, faculty members don't have a lot of salary. If we get research grants, we will have more money for research, and also produce more work…"

However, these key informants also stressed that income cannot be the only incentive for faculty members to conduct research, but research interests were also important:

> "…Income can have some effect in encouraging more research, but it should not be much. It depends more on whether the research I do can satisfy my curiosity and interest. However, if we compare getting some

income with no income at all, then to receive some income from research would be better…"

"…People whose income may be high may have a high tendency to high performance in research as they are generating income, such as research funds, which can be an incentive. However, some people have a high performance in research due to 'love'…"

"…The researchers themselves, they do not look at research funding as a key achievement to acquire. What I want to know is more important..."

2) Income, especially research grants, can facilitate research as explained below:

"…It would be sweet if we got paid for research on top of our salary. In my view, when I get paid, I use it to support my work. It allows us flexibility when we do research as everything must be paid for..."

"…Every project must have a cost. If no funding is available to sustain the research, it may be troublesome. If the cost can be sufficiently covered, it will help make research more efficient. Therefore, there should be enough funding for each phase of research because there are costs for conducting research projects including data collection, wages of research assistants, overhead, etc. Everyone needs to cover their own living expenses..."

3) Income, especially research grants, can dictate the quality of research as the criteria for particular grants are set:

"…Research grants which provide large funds will have a better monitoring process and clearer objectives than those providing smaller funds. They will have higher expectations and demands in terms of more research performance…"

> "...If you get a research grant and you believe that there is adequate funding for the management of the research projects, it will lead to a better quality of research. We are only able to do so much according to the funding that we receive. If we have a lot of money to support it, we can do the best work, for example adding 3D animation..."

It can be concluded that income and research grants can have an influence on research performance due to the financial incentives provided, accompanied by research interests. Research grants through both the income, and the quality assurance dictated by the criteria in the research grants can facilitate research.

However, from Table 4.1, it can be seen that 82.6 percent of faculty members have completed PhDs, so variance analysis of the relationship between educational qualifications and research performance of faculty members in National Research Universities could not be tested. Therefore, the researcher used the in-depth interviews to investigate this hypothesis. It was found that educational qualifications have an effect on the research performance due to:

1) Faculty members who graduated with a PhD will have a better understanding of conducting research than those with only Master's degrees:

> "…In PhD studies, students learn about the different methodological techniques and advanced research tools required for the creation of new knowledge. The performance of the faculty members with doctoral degree is better than most of those with master degree..."
>
> "…While doing a PhD, we will learn about research methodology in more depth. Faculty members who have completed only a Master's degree may not know how to start doing research…"
>
> "…Education makes people more knowledgeable on the subject of the research, including the research methodology…"
>
> "…I can see that people who have a doctoral degree or an academic position will have more skills and capabilities for research than those with lower qualifications…"

> "…When I studied for my PhD, I was able see that it is indeed a degree in philosophy! I know more about thought processes. If I encounter a problem, I know how to solve the problem…"
> "…In Master's degree and PhD studies, there were courses which encouraged the students to do in-depth research. When I did my PhD, my understanding of research became deeper than when I studied my Master's degree…"
> "…If the researcher graduated with only a Master's degree, the research will be of certain 'deepness'. However, researchers with a PhD can conduct research at a deeper level…"

2) Faculty members with PhDs will have a better chance of success when applying for grants compared to those with only Master's degree qualifications:

> "…When applying for research funding, faculty members with doctoral degrees have better opportunities to receive funding than those with only Master's degree, resulting in better opportunities to produce research work…"

3) Faculty members with PhDs will have better capacity to become research advisors for other faculty members within the same research team and have a better chance to win a research projects at the national level:

> "…At King Mongkut's University of Technology, Thonburi), the focus will be on research with a multi-disciplinary team. Faculty members who have completed a PhD will assist team members who have completed Bachelor's or Master's degrees. The person with a PhD will be the team leader, while staff with Master's and Bachelor's degrees will be research assistants and workers in the field. This allowed KMUTT to win a number of projects at the national level..."

4) Faculty members with PhDs usually have an extended research network leading to more opportunities and channels to produce research work.

> "…There are highly capable faculty members who have graduated with a Master's degree, but faculty members with a doctoral degree can do better research with more manuscripts produced due to better research networks compared to faculty members at the Master's level…"

In conclusion, educational qualifications have an effect on the research performance of faculty members, as agreed amongst the key informants, as faculty members with PhDs will have a better understanding of research methodology and tools. In addition, some of the key informants provided more information on this issue that faculty members with PhDs will have better chances when applying for research grants, better capacity to be research advisors, and more extended research networks, hence they will be able to produce more research work.

4.3 Exploratory Factor Analysis

The researcher collected data on faculty members' perceptions of transformational leadership, human resource management practices, learning organization, and research performance from 390 respondents in nine National Research Universities. The collected data was examined by Exploratory Factor Analysis (EFA) and using Principal Component Extraction in order to determine number of components in each factor having an eigenvalue more than one. In general, at first time, factor extraction is always ambiguous in what variable is a member of what component (Suchart Prasit-Rathsint, 2008). Therefore, a researcher used the Varimax Rotation Principal Component Extraction technique to clearly classify which variables were members of which components, and factor loading for each variable was accepted when it was 0.4 or higher (Nunnally and Bernstein, 1994). The results are shown in Table 4.7.

Table 4.7 Exploratory Factor Analysis

Factors	Factor Loading
Faculty Members' Perception of Transformational Leadership	.800 – .878
Faculty Members' Perception of Human Resource Management Practices	
Recruitment and Performance Management	.546 - .845
Training and Development	.708 - .815
Rewards	.847 - .876
Faculty Members' Perception of Learning Organization	
Organization Transformation and Knowledge-Management	.495 - .779
Technology Application	.617 - .870
Commitment to Learn	.617 - .829
Creating Continuous Learning Opportunities	.600 - .775
Faculty Members' Research Performance	.751 - .866

From Table 4.7, it can be seen that faculty members' perceptions of transformational leadership factor loadings are in the range of .800 to .878. Their perception of human resource management practices are composed of three components which are recruitment and performance management (factor loadings between .546 and .845), training and development (factor loadings between .708 and .815), and rewards (factor loadings between .847 and .876). In the same way, their perception of learning organization is composed of four components which are: organization transformation and knowledge management (factor loadings between .495 and .799), technology application (factor loadings between .617 and .870), commitment to learn (factor loadings between .617 and .829), and creating continuous learning opportunities (factor loadings between .600 and .775). In addition, their research performance factor loadings are in the range of .751 to .866. In conclusion, all of these factor loadings are reliable because these factor loadings are higher than .40 (Nunnally and Bernstein, 1994).

4.4 Mean and Standard Deviation Analysis

This section presents mean and standard deviation analysis results of faculty members' perceptions of transformational leadership, human resource management practices, learning organization, and their research performance in National Research Universities. The results are shown in table 4.8.

Table 4.8 Mean and Standard Deviation

Variables	Full Scores	Mean	Interpretation	S.D.
Transformational Leadership	5	3.62	Good	.73
Recruitment and Performance Management	5	3.88	Good	.63
Rewards	5	3.53	Good	.80
Training and Development	5	3.44	Average	.79
Organization Transformation and Knowledge Management	5	3.79	Good	.64
Technology Application	5	3.84	Good	.68
Commitment to Learn	5	4.19	Good	.56
Creating Continuous Learning Opportunities	5	4.10	Good	.53
Faculty Members' Research Performance	5	3.70	Good	.68

From Table 4.8, it can be seen that the highest mean score was commitment to learn, followed by creating continuous learning opportunities, recruitment and performance management, technology application, organization transformation and knowledge management, and faculty members' research performance. All of these variables were in a good level. However, the lowest mean score was training and development which was in an average level.

4.5 Correlation Matrix of Variables in the Path Model

The analysis of correlation coefficients among all variables aims to verify whether multicollinearity problem are occurring or not. In the multiple regression analysis, its prominent assumption is that all independent variables must be independent of each other. Suchart Prasit-Rathsint (2008) suggested that the correlation between two independent variables must not exceed .75 ($r < .75$). The correlation matrix of independent variables in this study is shown in the following table (Table 4.9).

Table 4.9 Correlation Matrix

Variables	RP	RE	TL	IPM	RC	TD	OKM	TA	CM	CL
RE	.185*									
TL	.258*	-.144*								
IPM	.374*	-.017	.556*							
RC	.268*	.051	.445*	.590*						
TD	.362*	.008	.549*	.609*	.668*					
OKM	.416*	-.064	.628*	.708*	.578*	.674*				
TA	.405*	.046	.433*	.549*	.486*	.531*	.669*			
CM	.324*	-.014	.381*	.420*	.305*	.314*	.594*	.483*		
CL	.344*	-.051	.347*	.460*	.367*	.440*	.557*	.414*	.542*	
Mean	3.70	14.64	3.62	3.88	3.53	3.44	3.79	3.84	4.19	4.10
S.D.	.68	9.28	.73	.63	.80	.79	.64	.68	.56	.53
Min	1.60	1.00	1.06	1.75	1.25	1.00	1.38	1.00	1.50	2.00
Max	5.00	44.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Skewness	.002	.720	-.225	-.327	-.131	-.126	-.266	-.340	-.451	-.142
Kurtosis	-.297	-.355	.267	-.135	-.041	.412	.046	.298	.748	.177

Note: * P < .05

From Table 4.9, it can be seen that all independent variables [research experience (RE), transformational leadership (TL), recruitment and performance management (IPM), rewards (RC), training and development (TD), commitment to learn (CM) and creating continuous learning opportunities (CL)] significantly relate to faculty members' research performance (RP). This indicates that all variables in the group have a normal distribution and are imperceptibly different. Additionally, none of the correlation coefficients between two independent variables exceeds .75.

4.6 Path Analysis

In this section, the researcher used stepwise multiple regression analysis in order to evaluate the path coefficients. A path model of the factors affecting faculty members' research performance basis on research hypothesis is shown in the following figure (Figure 4.1).

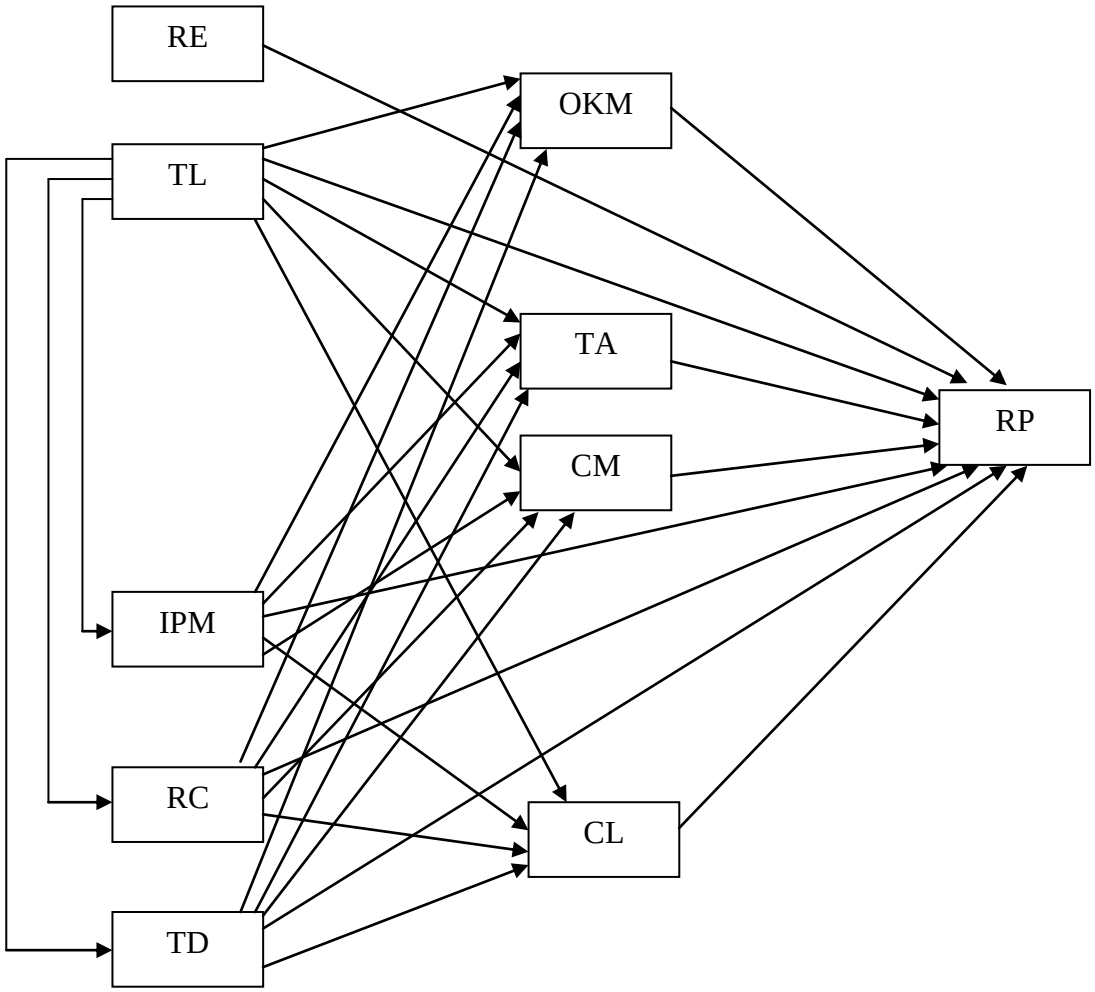

Figure 4.1 Path Model of the Factors Affecting Faculty Members' Research Performance Basis on Research Hypothesis

From figure 4.1, it can be determined eight regression equations as follows:

$$RF = \beta_1 RE + \beta_2 TL + \beta_3 IPM + \beta_4 RC + \beta_5 TD + \beta_6 OKM + \beta_7 TA + \beta_8 CM + \beta_9 CL \quad \ldots\ldots(1)$$

$$OKM = \beta_{10} TL + \beta_{11} IPM + \beta_{12} RC + \beta_{13} TD + \beta_{14} TD \quad \ldots\ldots(2)$$

$$TA = \beta_{15} TL + \beta_{16} IPM + \beta_{17} RC + \beta_{18} TD + \beta_{19} TD \quad \ldots\ldots(3)$$

$$CM = \beta_{20} TL + \beta_{21} IPM + \beta_{22} RC + \beta_{23} TD + \beta_{24} TD \quad \ldots\ldots(4)$$

$$CL = \beta_{25} TL + \beta_{26} IPM + \beta_{27} RC + \beta_{28} TD + \beta_{29} TD \quad \ldots\ldots(5)$$

$$IPM = \beta_{30} TL \quad \ldots\ldots(6)$$

$$RC = \beta_{31} TL \quad \ldots\ldots(7)$$

$$TD = \beta_{32}TL \quad \ldots\ldots(8)$$

From the above eight regression equations, the researcher used the stepwise multiple regression analysis in order to evaluate the path coefficients. The results are shown in the following tables (Table 4.10 – 4.17).

Table 4.10 Stepwise Multiple Regression Analysis of Factors Directly Affecting Faculty Members' Research Performance

Variables	Standardized Coefficient (β)	t-value	Sig
Research Experience	.198	4.464	.000*
Transformational Leadership	.026	.463	.643
Recruitment and Performance Management	.102	1.617	.107
Rewards	-.023	-.422	.674
Training and Development	.088	1.460	.145
Organization Transformation and Knowledge Management	.218	3.339	.001*
Technology Application	.185	3.103	.002*
Commitment to Learn	.041	.706	.480
Creating Continuous Learning Opportunities	.155	2.927	.004*
Constant		4.241	.000*
R = .506 R^2 = .256 SEE = .591 F = 33.084 Sig. of F = .000			

Note: * P < .05

From Table 4.10, it can be seen that four independent variables have significantly effects on faculty members' research performance. The highest effect variable is organization transformation and knowledge management, followed by research experience, technology application, and creating continuous learning

opportunities. This indicated that these variables were able to explain approximately 25.6 percent of the variation of faculty members' research performance.

From the interviews, key informants agreed that organization transformation and knowledge management have effects on the research performance of faculty members in National Research Universities starting from the vision to initiate change within the organization so preparations can be made towards being a National Research University, as commented by a key informant:

> "...Primarily, the administrators must support the vision of becoming a learning organization by setting the policy for organizational transformation and knowledge management....."

Organizational transformation and knowledge management can be accomplished by:

1) Promoting an environment which encourages learning and expanding the existing knowledge:

> "...The learning atmosphere can be created by organizing an academic conference. At Kasetsart University, we hold an academic conference every year which include the Kampaengsaen Campus as well. After the conference we will see what is going on in the outside world and what we need to modify in order to compete with them...."
>
> "...Reading, training, and exchanging knowledge with peers will allow us to learn more and give us inspiration and new ideas for research. Faculty members here agree with and share similar values for the university to become a National Research University...."
>
> "...When we have people with more experience in research to teach us and exchange knowledge with us, it will improve the research performance of faculty members. This includes identifying the importance of the problems, research objectives, setting assumptions, and data analysis...."

"...Talking amongst faculty members or attending academic conferences will create an exchange of academic knowledge and allow us to see something new. It is quite fortunate for the Faculty of Social Sciences that we have many departments and the knowledge is not concentrated in just political science or international relations or administration. We also have our peers in other disciplines such as history, law, sociology, and anthropology, who can give us new perspectives through the exchange. Our peers in political science may have to learn more about history and so we can consult the professors in the Department of History, or include knowledge in sociology to help in the analysis of our research...."

"...By creating a learning atmosphere and organizing an academic seminar or conference, we can know the needs of the graduates and employers in order to adjust our curriculum and initiate research ideas to address the needs of business, such as courses in graphic design, publishing and animation...."

2) Provide support for tools which increase work convenience:

"...To provide support on tools and equipment that help facilitating the work, such as the purchase of hard disk for every faculty member so it can be used to compile data...."

3) Provide support for faculty members to organize activities related to academic services for other organizations:

"...By providing academic services like technical training for other organizations, such as tax training, it can lead to benefits through the exchange of knowledge with others...."

4) Invite external speakers and experts to provide training for faculty members:

> "...By inviting capable people from the outside to teach or explain about new knowledge to faculty members, it can create ideas that lead to new research...."

5) Support faculty members to conduct joint research with external organizations and/or networks:

> "...If the faculty or university has a flexible policy on research sponsorship, qualitative and case study research, promotion of joint research with external organizations, these can lead to changes and create the exchange of knowledge that results in the creation of more quality research...."
>
> "...We can do this by providing academic services. Sometimes I get feedback on things like they want us to help with monitoring the quality of raw materials and so there is something else that we can do. Professional ethics will guide us to be responsible for the data that we produce...."

6) Organize knowledge management (KM) within the organization in order to develop databases which can provide meaningful benefits:

> "...The implementation of KM in the faculty allows us to see our research clearer help us determine whether there is anything that we have to focus more on and which areas are still lacking. The KM database needs to constantly expand its data but it is common that the faculty members just do their own things. Right now, we are trying to compile the data, and not just storing it; we need to be able to use it to further develop knowledge. Now, we are in the process of developing this...."

7) Develop a research support team which can provide assistance and advice to faculty members involved in research:

> "...Personally, I think that the restructuring of an organization which can affect research productivity should involve a 'research support' system. For example, the team can assist or advise about doing research. There should be a 'central lab' and statisticians to provide help and the availability of other facilities to help decrease other workload should help us to dedicate more time for research. I think that everyone is capable, and while they may not be an exact match to the initial recruitment criteria, the research performance can be maximized by having good systems in place...."

In conclusion, organizational transformation and knowledge management have effects on the research performance of faculty members starting from the development of a vision through change to becoming a National Research University. This can be done as follows: 1) Promote an environment for learning and knowledge expansion; 2) Provide support for tools to increase work efficiency; 3) Support faculty members to organize activities for external organizations based on academic services; 4) Invite external speakers and experts to provide training for faculty members; 5) Support faculty members in conducting joint research projects with other organizations; 6) Develop knowledge management and useful databases within the organization; and 7) Organize a research support team to provide assistance and advice to faculty members on research topics.

Similarly, key informants also agreed that research experience has an effect on research performance because experience allows faculty members with more experience to be able to identify the right research questions, develop an appropriate plan, and solve any research-related problems better than those with less experience.

> "...People with more experience in research will be able to identify research questions and how to best conduct research. They will

understand research methodology better than those with less experience....”

“...If we have more research experience, we know what to do when we do field work. This affects the design of a questionnaire or advance planning which we can do better than people with little or no research experience....”

“...Experienced researchers will have a better understanding of how to do research, be better prepared, and start faster than those with less experience doing research...”

“...Experience in conducting research allows faculty members to know the finer details of various issues in research.....”

“...If we have a lot of experience doing research, we will see that when we encounter a problem, we will have a way to solve it. I think that experience of doing research is very important as well....”

“...If we have experience in research, we can solve problems that we encounter during research faster. We can also anticipate and prevent new problems in the future....”

It can be concluded that research experience has an effect on research performance as experience allow faculty members to be better at identifying research questions, planning, and problem-solving.

In addition, the application of technology also has an effect on research performance. Key informants provided the following insights on how to support these activities:

1) Provide full support on tools and equipment for experimentation:

“...It can be seen that the faculty provides much support on tools and equipment so we have the facility to produce more high quality research...”

“...This is important as equipment can help us in addressing the research questions with more clarity...”

2) Provide 24-hour access to an on-line database:

"...The application of technology, such as browsing for information online and the use of computer software, can facilitate our research work enormously...."

"...The use of information technology provides us with channels to more easily search for academic data...."

"...On-line access to a database for searching articles: if WI-FI service is provided, it can facilitate the development of research and improve the quality in shorter time...."

"...By having easy-access to a comprehensive database, it can help us more conveniently search for literature...."

3) Provide basic and advanced computer software to faculty members according to their specific needs:

"...By using statistical programs for data analysis or research design, it can help us to complete research faster...."

"...If technology can be applied, it can allow us to do more research. Personally, I sometimes use SPSS in my work because most of it was qualitative research..."

"...By using advanced statistical programs, the study will be more accepted terms of the reliability of the interpretation of the results..."

"...We cannot refuse the fact that we need to use computer programs, such as SPSS, Microsoft Office, and databases to do research..."

"...We use technology to do research regularly anyway, such as Cinema 4D, Autodesk Maya, Real Flow, Adobe Photoshop CS5, Adobe Preview Pro CS5, and Adobe Aftereffect CS5. These programs have been used for creating 3D images, animation and creating sound effects..."

"...It can have an effect because current research relies on technology including computer and software...."

It can be concluded that the application of technology has an effect on the research performance of faculty members and the following should be done: 1) Provide full support for tools and equipment for experimentation; 2) Provide 24-hour access to on-line databases; and 3) Provide computer software to faculty members according to their needs.

Moreover, key informants commented that creating continuous learning opportunities has an effect on the research performance of faculty members, as explained below:

1) In general, faculty members have a willingness to find new knowledge and constantly develop themselves:

> "...When we are eager to learn, when we have new ideas to do new research, and when we are creative, the research we produce will be good as it is mainly up to our enthusiasm...."
>
> "...We go to do more research on a subject, whether in a library or a database, it is because we want to do it ourselves...."
>
> "...If we are interested in acquiring knowledge, the ability to do research and development will also increase...."
>
> "...We also need to develop ourselves so we can be clearer on the research that we are doing. Then we can address the research questions and further develop the knowledge. This can be used to build networks at both local and international levels...."
>
> "...The faculty members here like to discover new knowledge. As a young faculty member, I will be less knowledgeable in terms, concepts, and theories when compared to more senior faculty members. However, the senior faculty members may have some problems with technical issues, so we can exchange these skills. There is no information block and the age is not a barrier for the exchange here...."
>
> "...To learn something new and to have the eagerness will help us to become more productive in high quality research. For example, we

need to learn new media technologies and keep our eyes and ears open all the time....”

2) Organizations usually provide support within the budget, to faculty members to learn according to their expertise or interests:

“...When we are interested in learning something new which is supported by the faculty, it helps us to learn to see and understand the new knowledge more, and increase our abilities and improve our research performance....”

“...With the internal support of the organization in creating opportunities for continuous learning, we will be able to produce high quality research on a regular basis....”

“...And we can ask for financial support to go to training which will help us become more creative and produce better research....”

“...The training and development allow us to see and know more which can be used to improve research quality....”

“...If the organization is supportive by providing research grants then there will be incentives to do research....”

“...It is obvious. Curiosity and ambitions will lead to improvement if the faculty can also provide enough support. When faculty can further their study in the right field, at the right university, they will have more relevant skills to improve research quality....”

“...The organization needs to be supportive. However, there will be limitations, such as budget, which will prevent full organizational support of this. So I have to also look at the budget for the project, but currently I am satisfied with the level of support....”

In conclusion, the creation of continuous learning opportunities has effects on the research performance of faculty members in National Research Universities due to: 1) Faculty members, in general, having the willingness to find new knowledge and

develop themselves; and 2) Organizations usually provide as much training support as they can within the budget.

Table 4.11 Stepwise Multiple Regression Analysis of Factors Directly Affecting Organization Transformation and Knowledge Management

Variables	Standardized Coefficient (β)	t-value	Sig
Transformational Leadership	.248	6.324	.000*
Recruitment and Performance Management	.385	9.335	.000*
Rewards	.076	1.748	.081
Training and Development	.303	7.394	.000*
Constant		4.938	.000*
R = .795 R^2 = .633 SEE = .390	F = 221.601	Sig. of F = .000	

Note: * P < .05

From Table 4.11, it can be seen that three independent variables (of the five independent variables) have significant effects on organizational transformation and knowledge management. The variable with the highest effect is recruitment and performance management, followed by training and development, and transformational leadership. This indicated that these variables were able to explain 63.3 percent of the variation of organization transformation and knowledge management.

From the interviews, key informants agreed that recruitment of faculty members has an effect on organizational transformation and knowledge management. The recruitment and selection practices are explained below:

1) Level of workforce set according to workload:

"...The faculty members recruited will be according to workload...."

2) Recruitment should be done proactively:

"...Priority should be given to recruiting as many people as possible. The limitation here is that the selection process is still too passive, and usually involves only making an announcement and not actively approaching the candidates from the source. So, sometimes we miss out on the most outstanding candidates...."

3) Recruited candidates should be from variety of backgrounds:

"...Recruiting faculty members who have graduated from a variety of universities will lead to the exchange of learning together and allow us to see the perspective of others from different universities. We can then take this new knowledge to build on what we already have. The majority of faculty members that we have recruited are active people...."

"...We have been accepting faculty members who graduated from American, British, and German universities and they all have different perspectives to things, which, if we keep an open mind, can be useful to us as well...."

4) The criteria for preliminary selection should consider previous training:

"...In the selection process, I think we look the evidence of previous attendance at workshops or seminars. It's not good to only attend university degree courses and never learn anything more...."

"...Mostly we look at the credentials and what was mentioned in order to be able to recruit people who have academic ability and we also look at performance. Before we recruit them we would set a performance condition related to publishing...."

> "...I saw that most of the new faculty members have enthusiasm on publishing and presenting their work particularly in overseas conferences. This may be due to conditions put on new faculty members with PhD qualifications...."

5) Quizzes (in certain subjects), interviews, and a teaching 'audition' should be conducted:

> "...In the selection process, there will be a written test (depending on the field), a teaching audition, and an interview...."
> "...The selection process in my faculty uses interviews to ask the candidates general questions and about their attitudes and life goals...."
> "...We will spend between 30 minutes to one hour during the interview where we can see the personality and other characteristics. This is enough to see whether the candidate is an active or inactive type..."
> "...The recruitment process in my faculty has an initial interview and then a formal interview. For the initial interview, a colleague and the supervisor will be the initial interviewers, whereas the formal interview will be conducted by senior management, such as the dean. The decision-making is done in the joint meeting between the two parties...."
> "...Selection will be based on a written exam and interview. The interview panel will be chosen from within the faculty. The staffs also agree with this approach because these people know the needs of the department and are more likely to have a better understanding of the nature of the field..."

6) Recruited candidates should have good abilities in research and teamwork, be able to adapt to working with existing co-workers, and have an attitude for sharing knowledge:

"...For the selection process here, each unit will have its own needs and will look at the basic knowledge of the candidates and whether they have a good attitude at work. We will also check their psychological profile...."

"...If the candidates fit the selection criteria, we will then consider their experience. We will look at their ideas and how they lived their lives. This can be quite important. We will choose the one who understands the world better than us as we can build on that. We also look for people with creativity and skills which must be based on the knowledge, capabilities, and expertise within their field. People who get to this stage will be able to help with changes and knowledge management in the organization so it can be done faster and more conveniently...."

"...Both attitudes and goals in life will be considered. We will also see whether they are an 'academic type' or not. If they are, they have a good chance of being recruited but we will also have to consider their personality and adaptability...."

"...Many times, we come across an experienced faculty member who can help improve the knowledge management at the faculty. We also look for post-doctoral faculty members who are good at doing research...."

"...It is about the attitude of the person who has been teaching and whether he is ready to share and learn or not. We need to 'lock him up' early in the first interview if he is good. We have to ask 1) do you have management skills? I want to ask this because I came from management; 2) if I want you to be an advisor or trainer can you do this? If he says yes, I would then ask about how he would do that? 3) I will ask about his ability in research, looking at the relevant knowledge on research methodology, statistics, and research framework. We can judge the candidates based on this information and we managed to recruit some good people...."

> "...Selection will focus on recruiting capable people with good hearts in order to help with the transformation and development of the University. As we are a small university, everyone needs to work at full capacity...."

7) Evaluation of new faculty members within the first six months or a probation period should be conducted seriously and appropriately:

> "...But there are some problems. For example, we have limited time to meet with the candidates. At best, we can observe them at the written test and interview, and so the new faculty members may be accepted. Also the probation periods here have not been done as seriously as they should have been. There is too much compassion leading to an accumulation of 'sluggish' people in the organization. This considerably affects our objectives on wanting to implement change and knowledge management in order to become a learning organization...."
>
> "...This is the filter which allows truly academic type faculty members to stay. Also it is part of the university criteria for new PhD faculty members to obtain an academic position within 5 years at which point they are dismissed..."
>
> "...The process for performance evaluation in the first six months is conducted quite seriously but usually new faculty members will not get a failing evaluation right away but rather they will be warned first. But, if the next time they cannot improve, the contract may be terminated. In my own view, I think that is good as it encourages people to be active allowing an easier implementation of change and knowledge management...."
>
> "...In the evaluation during the probation period, sometimes we have pity. This is the case in every department but if it is really bad, we have to give them feedback. The first time, we will tell them about their performance, what our concerns are, and what needs to be addressed.

> In the case of continued poor performance, the second time, we will tell them in advance that they are not going to pass the evaluation. We also have some coaching and mentoring systems to support new faculty members when they have some problems....”

From the interviews, it can be concluded that the recruitment of faculty members has an effect on the organizational transformation and knowledge management. The recruitment and selection practices should be done as follows: 1) Level of workforce being set according to workload; 2) The recruitment from candidates with various backgrounds; 3) A proactive recruitment policy; 4) Preliminary selection being based on previous training experience; 5) Quizzes, interviews, and teaching auditions being conducted; 6) Requiring new recruits to have good ability to do research, to adapt to co-workers, and to have an attitude for knowledge exchange; and 7) Requiring that evaluation during probation period must be done seriously and appropriately.

In the same way, key informants also commented on the effect of performance management on organization transformation and knowledge management as below:

1) Weaknesses of the organization must be identified and considered before developing policies on performance evaluations:

> “...Before implementing organizational transformation and knowledge management, we need to start looking at the organization's weaknesses. When we use performance management, we can provide feedback which can lead to organizational change and knowledge management....”
>
> “...It can be considered as part of the policy. As I have mentioned that our university would like to be a research university, so the KPI that we set will focus on that. It is a common goal for all faculty members to achieve, so we have to develop ourselves in ways which will help the development of the university....”

2) Formal performance management should be conducted truthfully, transparently, fairly, and in a manner that is able to provide feedback:

> "...The formal assessment has to be done based on facts so it can be reliable. It is not about evaluating just to pass the criteria. This will affect the drive to push for change and knowledge management in the organization because when we see the evaluation results we will know where we need to develop...."
> "...It is influential but evaluation must be done with good accuracy and reliability because if we really understand the need to meet the criteria, we will be willing to do...."
> "...If we do not work well, they would not let us stay. Here they have policies and conduct evaluations by developing a clear KPI. For example, what is the minimum workload? Evaluations are done in a fair and transparent manner. Feedback is provided when you work for six months, one year, two years, and five years. All of this will lead to intensive change and knowledge management in the organization...."
> "...Because most faculty members are eager to use a KPI for evaluation which is a formal evaluation. When I first worked here, I had not started doing research work. However, lately, this aspect is evaluated and so, I began to apply for research grants which have been quite beneficial to me as I have gotten an academic position, published books, and attended conferences, etc...."

3) Informal performance evaluation should also be done through 'friendly' talk without any bias:

> "...Informal evaluations, such as frequent verbal communications, will allow us to know and understand the needs of management and it will be a catalyst for us to take quick action as we have respect for them. However, they must also have good governance and talk to us objectively. Personally, I believe that informal evaluation can influence

> change and knowledge management in organizations more than the formal process....”
>
> “...The informal evaluation, including informal advice and warnings should be done by an evaluator who has to be respected by us. Advice or feedback should be friendly asking for gradual change....”
>
> “...There is also an informal evaluation by the management which can reflect on development needs of the organization. We will feel obliged to quickly improve, develop and make changes according to their feedback....”

However, some key informants added that the performance evaluation was only a framework which the university developed to stimulate the faculty members to achieve the required targets but the more important thing was the attitude of the faculty members themselves.

> “...A performance evaluation can provide a basis for faculty members to work according to the criteria. But it is difficult do it precisely. This only provides the incentive framework on what we need to achieve which most faculty members can do without any problems....”
>
> “...On performance evaluations, it is not yet clear about the relationship between this and knowledge management because it is up to the faculty members to ensure that they meet the expectation of the organization....”
>
> “...The important part is that the faculty members themselves are already active in the pursuit of knowledge, so all of these criteria are only thing which motivates us to do even more...”

Regarding performance management, the key informants recommend the following in order to increase the level of organizational transformation and knowledge management: 1) Organization weakness should be considered before developing policies for performance evaluation; 2) Performance management should be conducted truthfully, transparently, fairly and able to provide feedback; and 3)

Informal evaluation is important and should be done through ‘friendly’ talk without bias. However, some key informants added that attitude of faculty members is more important than performance evaluation which was only a tool to stimulate individual faculty members.

In addition, key informants agreed that training and development support has an effect on organization transformation and knowledge management and so policies to promote these activities should be fully supported as follows:

1) Provide support according to needs or area of expertise:

> “...Everyone has good knowledge and capabilities already, so we have to utilize these people to help the organization. This should be in a form of management that promotes self-drive and not pushing KPI against the will of faculty members....”
>
> “...As most of the faculty members have doctoral degrees, training within the faculty should focus on supporting the needs of each individual....”
>
> “...In the case that we attend training and development based on our needs, it will help solve the problems that we face or improve what we are doing. In addition, the new knowledge from training can be transferred to the students, or used for research which can be published...”
>
> “...When faculty members in different departments apply for training, it will depend on what they are interested in....”
>
> “...Deep down, every faculty member wants to learn and develop themselves. For example, I went to train on sound engineering for six months which was beneficial to me including: 1) Sound effects that can be used to make learning media more interesting; 2) Sound recordings and capture in E-learning can be made; 3) It can be used in research; and 4) It can be taught to students....”

2) Provide financial support for faculty members to attend domestic and/or international academic congresses to present their research work:

> "...Here, we have policies which fully support training and development, such as 100% financial support for oral presentations at international conferences, a budget of 5,000 baht per person for attending a seminar...."

3) Provide support for faculty members to observe good practices both in domestically and abroad:

> "...By observing other good practices, we can learn new management techniques from other universities and also teaching techniques...."

4) Provide support for faculty members to attend training courses both in domestic institutions and abroad:

> "...Faculty members are sent abroad for training which results in changes and academic development...."
>
> "…after attending research training there were two to three research projects generated from the knowledge presented…"
>
> "...When you attend training and obtain knowledge, it can be used in teaching which would depend on the topics of training as well. For example, SAP training can be used to teach students and consequently they can instantly find jobs without additional training. If training is in the country and we have a sufficient budget, then we will fully support this...."
>
> "...Because if I see not only my point of view but also learn and feel about other people's opinions, we will see something that can be used to initiate change. For example, by attending training we will learn new techniques which can be applied to new research and taught to students. Whereas, lecture courses can provide us with ideas and concepts of knowledge...."
>
> "...When you go to training, you will learn new knowledge to teach the students and to share with your peers. For example, faculty members

> usually request to attend training on research methodology and when it is related to some interesting statistical techniques or research software, we will support this....”
>
> “...It can influence 1) for new faculty members, the university will provide knowledge about the career path, compensation benefits, and how faculty member development will be done. The goal is to figure out how teaching should be arranged to fit the current situation and what techniques are available; 2) the university and every department will support training for existing faculty members. Both of these points will lead to knowledge management in the organization because it allows people learn and understand more about self-development....”

5) Provide support for faculty members to improve their career prospects, such as allowing them to take study leave to obtain a PhD, providing support to gain an academic position:

> “...During the period coinciding with applications for academic positions, there will be a need to recruit more faculty members to spread the teaching load and provision of academic services which would allow them the time to produce research work. Right now, we are asking for 20 extra faculty members to help decrease the workload....”
>
> “...In terms of development, there will be financial support for faculty members to study a PhD course. If it is an overseas course, we will provide 3,000,000 baht but if it is a domestic course, we will provide no more than 500,000 baht per scholarship. As for the application for an academic position, we will provide funding of 40,000 to 50,000 baht for writing a textbook. From all the training and development initiatives, we can see the improvement in the quality of academic work and the quantity is also increasing. I feel that the organization is becoming more like a learning organization....”

> "...When we support faculty members to obtain an academic position, the outcome that we get is that we have to continue to learn in order to advance on the career path. This will make the organization change and establish knowledge management as well because people are becoming more 'academic' and there is more exchange of knowledge. Faculty members are eager to seek new knowledge and the environment become more 'academic'...."
>
> "...As for myself, when I had taught for a while, I began to feel that the knowledge that I had was not enough and I wanted to seek new things to learn. After my PhD graduation, I felt that I had changed. I became much more confident, able to control the class better and transfer more new knowledge to the students...."

6) Provide more support for training or research which helps to solve problems in the community (Area Based Research):

> "...Now, research focuses more on field work which we call 'Area Based'. I organized some training in the faculty on this. 'Area based' research focuses on meeting the needs of the community or something that can lead to useful practices. We will have to see about the local needs in the field and how to solve it. We may not have the answer yet but we learn and share with them. This is an agenda of the university in which we encourage this type of research. Currently, we do not have many projects like this but we do have a big project, for example, the research on smog problem...."

In summary, training and development support have effects on organizational transformation and knowledge management by: 1) Providing support according to needs and expertise; 2) Providing financial support to faculty members to attend academic congresses and present their work; 3) Providing support for faculty members to observe good practices in country and abroad; 4) Providing support for faculty members to attend training courses in country and abroad; 5) Providing

support for faculty members to improve their career prospects (e.g. PhD study, application for academic position); and 6) Providing more support to training and research relevant to the local community (Area Based Research).

Moreover, key informants agreed that transformational leadership has an effect on organizational transformation and knowledge management due to the following reasons:

1) The management vision supports the organizational transformation and knowledge management:

> "...The management will be clear on which university objectives that they need and how to get to what we need...."
> "...It can particularly affect policy which the dean is trying to push and monitor in practice...."

2) The management vision, which has been accepted by the faculty members, was used to develop policies on implementing organizational transformation and knowledge management, and explained to faculty members so that they can understand the objectives and the tasks that they need to do, as commented on by some of the key informants:

> "...The management will have a policy on development plan and will try to implement quickly and continuously. They want to receive feedback from faculty members in order to create knowledge for the organization and disseminate knowledge related to business administration. Some subjects are taught together. Research can be done together leading to an exchange of knowledge...."
> "...As I have worked here since 1996. I noticed that the Faculty of Veterinary Science has changed a lot, including the increase in workload. The Animal Hospital Services at Kasetsart University have also changed a lot as more technology has been used. These positive changes occurred because the executives have a clear policy leading to a better understanding of the work objectives...."

> "...The management here will have a common feature which is not standing still and always active. They will push for clear regulations and workload. For example, one publication per year needs to be achieved according to Office of the Higher Education Commission (OHEC) criteria...."
>
> "...It can be seen that the norms and values of the faculty members here are changing in a way that encourages them to do research work. The model for teaching students in KMUTT has some research blended into the course: training them to analyze data, and not allowing them believe anything unless proven by research. Amongst the faculty members, there will be an exchange of knowledge and discussions on the subject of where to get research grants and scholarship...."

3) The management encourages faculty members to keep themselves up-to-date:

> "...The management has flexibility and is eager to change the organization into a learning organization. It is also keen to encourage faculty members to discover new knowledge and encourage them to share ideas. The foundation of systematic learning must be established..."

The management supports the faculty members to attend and participate in academic congresses and training on a regular basis:

> "...The management supports the faculty members to attend conferences or seminars constantly. Sometimes the management comes across an interesting training program and they will recommend it to the faculty members. The budget will be provided by the faculty...."
>
> "...The funding provided allows us to learn and share knowledge, and to see new things. What we observe abroad, we can compare to Thailand and then tell the students about it..."

In addition, the management also supports the department in holding academic conferences, forums, and having their own academic journal in order to disseminate knowledge, as mentioned by some key informants:

> "...Management has promoted and supported the area of knowledge management in a number of ways including founding and distributing the Journal of Social Science and Humanities which has been recognized nationally and published biannually. The journal is quite beneficial to faculty members and students as it provides a platform for them to publish their research and thesises which are requirements for graduation for both MS and PhD students, 2) Academic conferences have been organized such as the National Conference on Graduate Schools which was hosted by the Faculty of Political Science in collaboration with other agencies. This is useful for MS students as it provides the space for them to publish their work and helps in the exchange of knowledge and interests. It allows the students to widen their perspectives. At the faculty level, a conference on Social Sciences and Humanities has been organized every year for the past 10 years...."
>
> "...Two years ago, the faculty organized a conference and each department planned to have their students present their research and exchange their knowledge through academic seminars. In the last conference, a seminar was organized with the Faculty of Law on an issue related to the constitution. There is also a journal on political science and public administration published once a year. The annual conference and journal are useful in the sense that they stimulate the academic atmosphere, allowing the exchange of mutual learning, and providing a platform for students to publish their work. The faculty members can also keep themselves up-to-date on subjects of interest to them...."
>
> "...For example, I gave a lecture on research methodology so faculty members can advise students better, and then summarized them in a document which became 'explicit knowledge' here...."

> "...As we do it in the faculty, we meet to exchange ideas on how to write academic papers in order to produce this kind of work as much as we can...."
>
> "...There are many events, such as The Agricultural Fairs, in which we try to disseminate knowledge to the public. We have meetings, we manage, we have department head, and we plan ahead what we would like to do for this year and how we manage the people from the old and new generations in order to drive these activities...."

4) The management understands the differences between individuals and provides support to faculty members to develop themselves according to their needs:

> "...As far as I know, administrators do not get in the way when faculty members want to develop something. You can propose what you want but there may be some limitation based on the budget so that you might have to wait a little...."
>
> "...This condition depends on the individual however; research performance does not depend on a single enforcer but is up to the person as well. Administrators can only create an atmosphere that will encourage and support the faculty members...."

It can be concluded that transformational leadership has an effect on the organizational transformation and knowledge management and should be conducted as follows: 1) The management having the vision to support this; 2) The management vision, aligned and accepted by faculty members, being used to develop policies related to organizational transformation and knowledge management, and the faculty members are clearly understanding the tasks they are required to do; 3) The management is encouraging faculty members to keep themselves up-to-date by seeking knowledge, attending academic congresses, organizing departmental academic meetings, and establishing departmental academic journals; and 4) The

management understands the differences between individuals and provides support self-development according to needs.

Table 4.12 Stepwise Multiple Regression Analysis of Factors Directly Affecting Technology Application

Variables	Standardized Coefficient (β)	t-value	Sig
Transformational Leadership	.097	1.900	.058
Recruitment and Performance Management	.321	5.997	.000*
Rewards	.131	2.301	.022*
Training and Development	.248	4.272	.000*
Constant		7.856	.000*
R = .610 R^2 = .372 SEE = .542 F = 76.123 Sig. of F = .000			

Note: * P < .05

From Table 4.12, it can be seen that three independent variables (from the five independent variables) have significant effects on the application of technology. The variable with the highest effect is recruitment and performance management, followed by training and development, and rewards. This indicated that these variables were able to explain 37.2 percent of the variation of technology application.

From the in-depth interviews, key informants agreed that faculty member recruitment has an effect on technology application and should be conducted as follows:

1) Recruitment should be more proactive:

> "...The limitation on recruitment, as I mentioned before, is the fact that we are recruiting in a 'reactive' manner which limits our options and we may recruit someone who is not interested in learning new technologies...."

"...Part of the recruitment process here is based on faculty member referrals or someone they already know. For example, we had this visiting faculty member teaching for a year and we had already seen their performance, so we persuaded them to join us...."

2) Candidates with willingness to learn should be recruited:

"...Every step of the recruitment process affects the selection of people who are interested in learning to use technology to facilitate their work...."

"...We want to select candidates with a curiosity to learn. They may not necessarily know a lot about technology from the start. Someone that really likes technology may be 'crazy' about it but never put it to good use in terms of work and research output. For me, technology can be learned...."

"...If we pick people who have diversified knowledge and capabilities, someone who is keen to apply statistical techniques and other skills and exchange this knowledge, then they can use technology to help with their work and increase convenience as well...."

3) During the interview, the interviewer should explore with candidates research tools, statistical ability, and their perspective on research:

"...We still need to consider the performance in teaching auditions and the interview in order to understand their knowledge in research. The interviewee should be led by the course director...."

"...When we select someone, we have to see if they have the ability to use technology. For example, we asked about their skills in using some computer software and then assess based on what they said...."

"...What we consider during the interview is how he answers the questions. For example, Have you ever done research?, Which statistical technique(s) did you use during your Master's and PhD

> degree courses? This information will allow us to check their background knowledge on technology....”
>
> “...Mainly during the interview, we will look for his views on academic work and whether he has previous research background....”
>
> “...The first criterion required is that you must be able to use SPSS, LISREL, and AMOS. We will ask them whether they can use these packages....”
>
> “...For computer skills, we can look at the interview, the teaching audition, and a work presentation. We can ask them about which software they can use and look at how comfortable they are with a computer. Also, we can ask about the technology he used in his research and what would he add to the department....”

In summary, faculty member recruitment has an effect on technology application and should be conducted as follows: 1) Proactive recruitment; 2) Selection of candidates with willingness to learn; and 3) Exploration of the candidate’s abilities in research, statistics, and development of research perspectives during the interview.

In addition, the in-depth interviews revealed that performance management also has an effect on technology application and should be conducted as follows:

1) Formal performance evaluations must be conducted regularly, have clear indicators, have appropriate criteria, and truly reflect the performance of the individual:

> “...We have to look at what we get after an evaluation and why are we doing it. If they become just a piece of a document then it does not lead to any change including the application of technology....”
>
> “...From the performance evaluation, we get feedback on what we need to improve. For example, we may need to attend statistics training or we may need to do more research from online databases, etc. The evaluation should be done regularly and the KPI must be clear and appropriate....”

> "...Overall, the faculty has KPIs for evaluation including the use of multimedia in teaching. This is an indirect way to force the faculty members to use technology but it is not the main issue. What is important is the core principle. The use of technology is only to make our work easier, faster and more accurate...."
>
> "...The workloads in teaching and research led us to use technology. In published articles, we also took results from the lab to write it...."
>
> "...When we do performance evaluations, we will ask the faculty members to input their workload onto the computer and then no one can deny that they cannot use technology...."

2) Informal performance evaluation is done regularly through verbal communication:

> "...Looking at it, if we do informal evaluation through informal discussion, providing feedback regularly, then this will have more effect on the technology application...."

From the above, it can be concluded that performance management has an effect on the technology application and should be conducted as follows: 1) Regular formal performance evaluations with clear indicators, and appropriate criteria that truly reflect the individual's performance; and 2) Regular, informal, verbal performance evaluation

Similarly, the key informants also commented on how to support training and development as it affects technology application as follows:

1) Organization needs must first be analyzed in order to identify the direction and goals.

> "...Before determining the needs for training and development, we have to analyze the needs of the organization. Then resources including financing and time can be allocated for specific training and development activities...."

2) Support should also focus on resources and time for training and development.

> "...The training that we attended and what we learned and saw could be used back at the office. As part of the development, when we apply for an academic position, we need support on both time and resources, which could affect our performance, and technology will be needed to help us...."
>
> "...Training allows us to know more. For example, a LISREL training course was fully supported and we could take what we learned back to do research or teach the students. I was better at using this program after the course...."
>
> "...If faculty members want to attend a new training program and we encourage them to go, they will definitely apply the new knowledge for good use...."
>
> "...For example, in the past I went to an advanced applied statistics course which was organized by the university and the trainer was a faculty member from the department of statistics. After the course, I had a deeper knowledge of statistics which became beneficial to me later on...."

3) Support should be provided to faculty members according to the needs and expertise of each person.

> "...In my case, I went to training on several topics which allowed me to develop some creative ideas and apply them to work. If we also have the foundation relevant to the content of the training, it will lead to the use of technology to make us our work more convenient in...."
>
> "...I have been to a training program at Mahidol University which was related to a calculation program for the nutritional value of food. I taught this to students and used it in my research. I managed to get a publication out of this...."

4) Both internal and external training courses should be made available to the faculty members on regular basis.

> "...The training which teaches us about new knowledge or new systems can help us a lot. The university will tell us about training courses on basic and advanced statistical program on regular basis. Also the university provides training on MIS to all of the faculty members...."

However, key informants who held managerial positions mentioned a number of limitations on the management workload which could be quite high and therefore unable to use the knowledge acquired from training to be more productive in research as they would like to:

> "...Now, the management workload is too much. I am currently the director of the Animal Hospital at Kasetsart University as well and so I have little time to do academic work. This is the same with the application of technology...."
>
> "...For young faculty members, when they go to training, they can develop a research topic and they will be able to utilize and adapt the knowledge from the training. But as I also have to do management work, I do not have the time to take advantage of or build on the knowledge from the training as much as I would like. But if I have time, I would like to do this too...."

As a result, it can be concluded that training and development has an effect on technology application, and the following can be done to support these activities: 1) Analyze organizational needs, direction, and goals; 2) Provide support of resources and time; 3) Provide support according to need and expertise; and 4) Provide regular updates on internal and external training courses. However, the high workload for faculty members in management positions meant that these people lack the opportunity to use the new knowledge from training and are unable to produce as much research work as they would like.

Furthermore, key informants also stated that rewards also affect to technology application, and rewards setting should be conducted as below:

1) Rewards should be suitable to the needs and age of the faculty members:

> "...The compensation must be appropriate to the age of the individual. If it is a senior faculty member with a high base salary then financial rewards may not be as effective. However, if you give recognition, compliments and honor, then it may work better. Whereas for new faculty members with low base salaries, what they need is cash and challenging tasks. If we can meet the needs of each individual teacher, then it can be an effective tool in motivating the individual in their work which now requires technology to increase productivity and convenience...."

2) Non-financial rewards in the form of a favorable environment or other conveniences will help faculty members to access technology more easily:

> "...As an example, my faculty provides non-financial rewards by giving a laptop to each faculty and installed a WI-FI network throughout the building. The databases are available 24 hours a day leading to easy access to technology and more convenience...."
>
> "...By creating an atmosphere which encourages easy access to technology, such as WI-FI access and a computer room for faculty members, it encourages us to use more technology to work because it is easy and convenient...."
>
> "...The faculty has the budget to support the purchase of computer equipment, including hardware, which allows faculty members to work more easily and more conveniently...."
>
> "...Requests for tools and equipment for the lab would normally be approved, but it also depends on the budget. Overall, we have enough to work on...."

"...In addition to this, the work environment which includes technology can facilitate the work...."

3) Rewards should be related to creativity and innovation:

"...For manuscript publication or presentation in overseas congresses, the faculty members need to produce research with 'advanced' qualities which may involve advanced statistical programs known for their precision and reliability...."

"...As seen from the Faculty of Agriculture at the Agricultural Fair, it is a way to demonstrate agricultural innovation with various prizes being awarded by the university and external sources...."

"...Inventor Awards from the Faculty of Engineering will recognize faculty members who apply new technology to create their work. The award will be in the form of cash and recognition which will provide incentives for faculty members to keep producing things which require technological applications..."

"...This will provide incentives to take advantage of technology, such as online access to databases to create work, because there are both financial and non-financial rewards to motivate us..."

In conclusion, rewards can affect the application of technology, and rewards setting should be conducted as follows: 1) Rewards that are suitable to the needs and age of faculty members; 2) Non-financial rewards that facilitate access to technology such as a favorable environment and convenience; and 3) Rewards related to creativity and innovation.

Table 4.13 Stepwise Multiple Regression Analysis of Factors Directly Affecting Commitment to Learn

Variables	Standardized Coefficient (β)	t-value	Sig
Transformational Leadership	.213	3.918	.000*
Recruitment and Performance Management	.302	5.543	.000*
Rewards	.051	.894	.372
Training and Development	.024	.393	.694
Constant		15.727	.000*
R = .456 R^2 = .208 SEE = .497 F = 50.823 Sig. of F = .000			

Note: * P < .05

From Table 4.13, it can be seen that two independent variables (of five independent variables) have significantly effects on commitment to learn. The highest effect variable is recruitment and performance management, followed by transformational leadership. This indicated that these variables able to explain approximately 20.8 percent of the variation of commitment to learn. However, commitment to learn has no significantly effect on faculty members' research performance (Table 4.10), so the in-depth interview in the topic of the effect of recruitment, performance management and transformational leadership on commitment to learn will be skipped.

Table 4.14 Stepwise Multiple Regression Analysis of Factors Directly Affecting Creating Continuous Learning Opportunities

Variables	Standardized Coefficient (β)	t-value	Sig
Transformational Leadership	.060	1.074	.284
Recruitment and Performance Management	.306	5.516	.000*
Rewards	.033	.531	.596
Training and Development	.254	4.587	.000*
Constant		17.221	.000*
R = .502 R^2 = .252 SEE = .460 F = 65.356 Sig. of F = .000			

Note: * P < .05

From Table 4.14, it can be seen that two independent variables (of five independent variables) have significantly effects on creating continuous learning opportunities. The highest effect variable is recruitment and performance management, follows by training and development. This indicated that these variables were able to explain approximately 25.2 percent of the variation of learning opportunities.

From the interviews, key informants provided comments on faculty member recruitment which affect the creation of continuous learning opportunities and how recruitment should be conducted:

1) Recruitment should be proactive:

> "...We are still doing the recruitment process passively, by making job announcements but not actively searching for qualified candidates....."

2) Interviews should be conducted asking academic questions to explore the candidates' perspectives on learning and their career and life goals, and attitudes:

"...Academic questions will allow us to know their views on learning which can be used to predict their eagerness to learn...."

"...In the recruitment process, we must consider their enthusiasm, life goals, and attitudes altogether in order to see if he is interested in learning new things. For example, during the interview, what we need to ask is, Do you have goals in life that you want to obtain in an academic position? Are you willing to work late when you have to? If a student asks you something that you cannot answer, what will you do? Or when you have problems during your work, what will you do? This is to see whether they have any signs of enthusiasm to learn and whether they have problem-solving skills or not...."

"...We are trying to recruit people who are willing to learn. If the recruitment process can select people like this, then it is a success...."

"...If we select people with curiosity, they will start sharing information. Overall, almost all faculty members regularly share their knowledge and as we have a lot of people like this, it becomes the atmosphere here...."

"...When we interview a candidate, we can predict whether the person will be eager to learn and want to create learning opportunities or not. We can see signs as to whether the person would seek to learn new things and develop or not...."

"...Questions used in the interview include asking their views on what they would aim to be in 2 years, 5 years, 10 years, and 15 years. When I ask this, the candidates will start telling me. An insightful candidate will have a good idea of when they want to apply for an Assistant Professor or Associate Professor position. Now that is the conditions which he needs to determine in order to further his academic position...."

"...From the interview, we can use questions to look at his opinions and listen to his view of self-development. We will also look at his grades, previous research grants, and experience, and also his previous training as stated in his CV...."

3) Visiting or part-time faculty members with good performance and willingness to learn should be persuaded to be full-time faculty members:

> "...Recruitment of faculty members here is partly done by approaching visiting faculty members who we know well, have good performance records, and want to learn new things...."

4) Work-related conditions should be brought up at the beginning with a clear understanding by the candidates. For example, faculty members with only a Master's degree need to pursue PhD study within a year, or new faculty members need to acquire an academic position (e.g. assistant professorship) within 5 years after recruitment.

> "...Now, the university has a criteria that if we recruit faculty members who only have a Master's degree, they will need to start a doctoral degree in one year. The condition is written into the contract...."
> "...When we interview, we will only have a short time to talk to him and so we may not be able to choose the right person and will make mistakes. In the interview, everyone wants to present their good side. However, the university has a regulation to help by insisting that the faculty members obtain an academic position within 5 years after recruitment...."

In conclusion, the faculty member recruitment process has an effect on creating continuous learning opportunities and should be conducted as follows: 1) Recruitment should be done proactively; 2) Academic questions should be asked during the interview to explore the candidates' perspective on learning, personal goals, and attitude; 3) Visiting or part-time faculty members with good performance should be offered full-time position; and 4) Work-related conditions should be clearly defined so that new recruits can understand (e.g. periods for pursuing PhD study and academic position).

In addition, key informants also stated that performance management affects to the creation of continuous learning opportunities and should be conducted as follows:

1) Formal performance evaluation should be done regularly with clear indicators and appropriate criteria which are flexible, unbiased, and can provide reliable feedback to faculty members:

> "...The performance evaluation system must be just and the evaluators must be unbiased when doing their job. We will listen and find ways to improve our performance for the better. We are eager to study more in order to reduce our own flaws...."
>
> "...Formal performance evaluations, which are conducted annually, include the evaluation of teaching, research, academic services, and participation in various activities. There will be clear criteria and it should be done regularly...."
>
> "...There will be some effect if the evaluation can tell us something. However, if the evaluation is not reliable, it will be useless. The evaluation should understand the limitations in the differences between each department and it should not refer to the criteria of the Office of the Public Sector Development Commission (OPDC) too much. It should be flexible in order to make it as fair as possible...."
>
> "...It is a way to provide feedback. For example, there is a ranking of faculty members but I will only know what my ranking is and not others'. This will make me feel eager to learn something new...."
>
> "...Does evaluation force people to develop themselves? It can have that effect. If the evaluation result is not good, we need to develop ourselves. On KPI related to teaching, it will tell us what we are lacking in this area, which content needs to be adjusted. In research, I still do not have a lot done and so I will need to adjust. Personally, I think this is positive rather than negative...."

> "...When an evaluation is done, it should make people want to develop, to learn, to attend more training, and to find new knowledge to improve their work...."
>
> "...Performance evaluation is something which can motivate us so we are willing to learn something new, so we never stop trying to think about new projects. However, by its nature, social science compared to natural science takes a longer time to develop new concepts to create advancement in the field. For example, the science behind the development of a robot can be done quickly and this is a limitation of social science...."

2) Informal performance evaluation can be done through informal chat and when done by respected evaluators who are good role models, the faculty members will listen and believe:

> "...Informal performance evaluation is more effective, because every week, we will dine together at least once and talk about what we need to improve. It is like giving feedback to each faculty member, which I found works better. The faculty members are more united, and help in motivating them to learn more in order to address the feedback that they receive...."
>
> "...The evaluator must be respectable. If that person is a good role model for us, then we will definitely listen...."

In summary, performance management affects the creation of continuous learning opportunities and should be conducted as follows: 1) A regular formal performance evaluation with clear indicators and appropriate criteria which are flexible and unbiased ; and 2) Effective feedback provided in informal performance evaluations, conducted by a respectable role model, because faculty members will listen and believe more.

Similarly, key informants also agreed that training and development has an effect on creating continuous learning opportunities and provided guidance for the activities that follow:

1) Provide support to faculty members to attend training on new knowledge or tools:

> "...I went to an academic veterinary training program and I saw new things overseas which I brought back and adapted to my research. Personally, I prefer to attend a training course if it is for academic work...."
>
> "...Training allows you to obtain new knowledge from outside as the knowledge related to management is constantly changing. These things will motivate you to be curious, try to find new things, and build on what you already know through training and development..."
>
> "...If the content in training is challenging including new tools, it will be interesting to learn and try out, or build on the knowledge from the training...."
>
> "...When we encounter something new, we want to investigate more..."
>
> "...Training gives us an idea and widens our horizon to the outside world so we know about the views of others and how it has changed from what we have known. When circumstances or context change, we get to see and experience them. For example, when another organization holds a training course, we can go and see what they have and take back what we learn to further develop this into something useful...."

2) Provide support to faculty members to attend training which add to their expertise:

> "...When we go to training, we also want to add something to it because that is why we are interested in the course and we planned it beforehand...."
> "...If you have a certain level of knowledge and go to training, it will make you want to learn more...."

3) Provide support for faculty members to observe other organizations, domestic and abroad, who have good practices:

> "...If it is related to management work, I prefer to go and observe other good practices as it will create ideas for me to adapt for use in my organization...."

However, due to limitations in the training budget, the target or needs of the university are still unmet, as commented by a key informant:

> "...Training and development encourage the creation of opportunities for learning. On the other hand, the budget provided for training is still not enough because we focus mainly on sending people to study for PhDs. If the purpose and benefit of training is unclear then we will not allow it as the budget must be used for supporting PhD students...."

To conclude, training and development has an effect on creating continuous learning opportunities and the following support should be provided: 1) Support for faculty members to learn new knowledge and tools; 2) Support for faculty members to attend training which adds to their expertise; and 3) Support for faculty members to observe good practices in other organizations, domestic or abroad. However, due to limitation of budget, some training needs have not been met.

Table 4.15 Stepwise Multiple Regression Analysis of Factors Directly Affecting Recruitment and Performance Management

Variable	Standardized Coefficient (β)	t-value	Sig
Transformational Leadership	.556	13.175	.000*
Constant		15.877	.000*
$R = .556$ $R^2 = .309$ SEE = .525	F = 173.573	Sig. of F = .000	

Note: * P < .05

From Table 4.15, it can be seen that transformational leadership has a significant effect on recruitment and performance management. This indicates that transformational leadership was able to explain 30.9 percent of the variation of recruitment and performance management.

From the interviews with key informants, they commented that the effect of transformational leadership on recruitment of faculty members was due to the following reasons:

1) The management presented their vision in order to get acceptance from their faculty members and asked them to carry out the tasks to achieve the objectives. Criteria for each job will be set as an initial guide so recruiters can realize required or desirable types, capabilities, and attitudes in candidates:

> "...The recruitment process will define which types of attributes will be the main focus of management. During the process, the Head of the Department will play a part in the decision-making, and most of them will want candidates with similar type to themselves by considering 1) The field and expertise required for the position 2) the evaluation of the knowledge, cleverness, and capability of candidate, and 3) ability of the candidate to blend with colleagues in the department. This can all be considered in the interview..."

"...Executives with transformational leadership will select the candidates whom they can work with, and who have similar attitudes or mind set. Those with high capabilities or good reputations can be recruited as visiting lecturers. This type of management likes to provide guidance, confidence, and try to pick the ones that seem to be very optimistic or persons with 'good hearts'...."

"...Selection depends on the vision of the Dean, who now will see whether they have the ability to do research or not. Some candidates have good attributes but are not interested in research. They will not get accepted...."

"...Method of selection in Thammasat University uses a written exam (in some subjects), a teaching audition, and an interview. Personally I think that the criteria should be based on things like PhD graduation, work experience, reasonable age, technical capabilities, and personality. This will help to determine whether the candidate will be likely to work well together with other colleagues or not...."

"...Now that Chiang Mai University is a research university, the executives will tend to have policies which align with the objectives of the university, such as a desire to recruit candidates who have finished a doctoral degree. The recruitment process will begin to look at the scope of the candidate's work. For example, for the Faculty of Political Science and Public Administration, workload will be considered first including looking at which courses are planned to open and the level of the workforce can be identified for recruitment. The basic qualifications required will generally focus on candidates having a doctoral degree but usually this is difficult to achieve. So, sometimes candidates with Master's degrees will be recruited with the condition that they will pursue a PhD within 3 years. Also, there will be written test (unless the candidate has a PhD), an interview, and a look at the personalities and types of expertise of the candidate to determine whether they are a match to the criteria...."

> "...The management can have an influence. In order to 'put the right man in the right job', there will usually be a criteria set for the desired type of candidates. There are conditions on educational qualifications and experience. If two candidates are equally qualified, we will see whether the candidates live in the local area or not. The attitude of the candidates will be assessed by the interview looking at the attitude towards colleagues and bosses. The best candidates will be those with a positive attitude allowing them to work with their colleagues and listen to the orders of their superiors...."
>
> "...The management will consider the candidates capacity, mental health, responsibilities, loyalty, and 'love' of the organization. At KMUTT, we will focus on the integrity and 'love'...."
>
> "...Management will look at performance including previous publications and/or research experience. I think that they will also look at the candidates' research networks...."

2) The management will stimulate their faculty members to think and carry out the tasks by handing down policies and appointing the recruiting committee, as explained in the comments below:

> "...The selection committee has two levels which are 1) Department level, led by the head of the department who will appoint the interview panel; and 2) Faculty level who will not conduct further interviews but they will see the results from the department panel...."
>
> "...We use a committee which consists of the dean, head of department, and other senior position such as associate dean to decide. The size of the committee is approximately seven to eight people and they will consider the candidates...."
>
> "...To start with, we have to identify that we need someone in this position for the department. We will call the candidate for an informal talk first outside of the university before the actual interview in order to get to know the candidates before the formal interview. After that,

> the interview will be conducted by 1) the University's interview committee consisting of the Vice President on Human Resources and the Vice President for Academic Affairs; 2) the Faculty Dean; and 3) the Head of the Department. We will provide the information from the informal interview to the committee for decision making...."

3) The management has to listen to the opinion of the faculty members by allowing them to participate in the selection process and considering the views of all of the committee members:

> "...At my Department that I am currently working in, the head will have a major role in the decision-making on recruitment, but he will also listen to the opinions of others...."
>
> "...The power to decide depends on the Faculty and so the dean will have the final say but he/she will also hear the opinions of everyone before making the decision...."

However, during the interview, there were some limitations raised which prevent certain candidates with specialized expertise/experience from being recruited:

> "...Transformational leadership cannot be used fully due to political and cultural factors which may interfere with the leadership...."

As a result, it can be summarized that transformational leadership has an effect on the recruitment and selection process of faculty members due to the management having certain vision for the organization and influence the selection by: 1) Setting criteria on which types of candidate are suitable for this position; 2) Setting policies and appointing committee members; and 3) Compiling the opinions of faculty members and committee members in order to decide whether to accept a particular candidate or not.

In addition, the key informants also commented that the effect of transformational leadership on performance management was due to the following reasons:

1) Management brings their vision to the faculty members and gains acceptance so that they perform and achieve organizational objectives which were designed through the development of indicators and evaluation of criteria for performance and aligning with the faculty members' goals. A number of key informants commented:

> "...As KMUTT is no longer state-owned, we have to raise funds ourselves. When the manager develops a policy, he will invite all level of executives to a meeting to ask their opinion on what we should do and what type of candidates we need. Then the announcement is made following university policies...."
>
> "...In the evaluation of performance, we will submit our work based on four types of workload which would be evaluated regularly in a transparent manner...."
>
> "...Assessment will be a 360-degree assessment which means that the leaders assess their subordinates, faculty members assess their students and vice versa, and also self-assessment of their work based on their position requirements. In the past, the evaluation results have been fair, transparent, and truthful. There are currently two types of faculty members. These are 1) Government officers who will be evaluated every six months and 2) University staff who will be evaluated once a year...."
>
> "...Assessment is based on achievement including the quality of teaching and the assessment from students. There is a document called CMU-MIS which acts as a self-assessment for faculty members every year. It produces a report from the data entered into the system. The results of the self-assessment will be sent to the department and then the faculty for comments. Evaluation here is done in a systematic manner and reflects reality...."

2) Management encourages faculty members to think and implement by providing policy and appointing a performance evaluation committee that has the power, responsibilities, and trust required to evaluate the performance of faculty members based mainly on task outcome and workload:

> "...Here, performance evaluations are done by forming a committee consisting of three to four people and assess performance based on position description and requirements..."

At the same time, management also conducts an informal performance evaluation by providing feedback, such as verbal warnings or expressions which indicate that faculty members need to improve. Comments on this process by some key informants included:

> "...The administration still evaluates in the form of an informal talk (not formal evaluation) based on his work and achievement, problems and how to solve them...."
> "...There is also an informal evaluation in the form of an informal talk. If someone is responsible, comes to work on time, direct compliments may not be given but it will be supportive. However, if someone is not as responsible or comes to work late, some direct verbal feedback will be mentioned as normal...."

3) Management listens to the opinion of their faculty members, as one key informant reported:

> "...Sometimes, when we meet with the Dean or the Head of the Department, we also discuss something about the vision, such as the limitations of the research which they would be happy to help. Now the problems are high workload among faculty members leading to restrictions on the time to write academic papers. We are afraid that the work may not get finished and then, how would they evaluate our

> performance? However, in the past, I have managed to pass and my salary increase was okay....”

4) Management should understand about individual differences that exist in the organization on the limitation of performance evaluation. For example, criteria for performance evaluation for new faculty members should be different from older faculty members, as commented on by one of the key informants:

> “...The evaluation methods at Thammasat University have some limitations which use a common set of indicators to evaluate both new and existing faculty members. While they are fair and transparent, they do not allow time for new faculty members, who may not have had previous experience, to adapt. When the 6-month evaluation arrives, the new faculty members may have some difficulties....”

In addition, performance evaluation criteria for faculty members in science-based faculties and social science-based faculties should be different as raised by one of the key informants:

> “...If the management has transformational leadership and open-mindedness to accept the difference between individuals, it may lead to changes in KPI which is currently the same in all fields. But the truth is the art and science of each discipline are not the same, and to use the same KPI would be impossible. In some departments, the score will be lower, and some may be high. We can see that in some departments they teach a lot of students. So, the management needs to understand the difference of each individual and each department, which will make the performance evaluation more fair and reliable....”

However, some of the key informants mentioned that they were quite satisfied with the fairness of management in performance evaluations:

"...The head of the department has been fair in performance evaluations...."

"...When they evaluate the performance of subordinates, he/she will give high score to those who can work within deadlines. However, for those who are 'sluggish', the score will be another story...."

"...He is our leader so he must monitor our performance and whether the relationships between colleagues are good or not. If everything is good, they should also give us good results in the evaluation. In my opinion, he has given me fair evaluations...."

It can be concluded that transformational leadership has an effect on the performance management of faculty members due to: 1) The management bringing their vision to the faculty members to gain acceptance so that they perform and achieve the objectives by setting KPI and criteria on performance evaluation and align these with them; 2) Management encourages faculty members to think and implement by providing policy and appointing a performance evaluation committee who evaluates based on task outcome and workload; 3) Management listens to the opinions of their faculty members; and 4) Management understands about individual differences and limitations on using a single set of criteria for performance evaluation. However, some of the key informants reported that they were quite satisfied about the level of fairness from management on this issue.

Table 4.16 Stepwise Multiple Regression Analysis of Factors Directly Affecting Rewards

Variable	**Standardized Coefficient (β)**	**t-value**	**Sig**
Transformational Leadership	.445	9.796	.000*
Constant		9.720	.000*
R = .445 R^2 = .198 SEE = .713	F = 95.955	Sig. of F = .000	

Note: * P < .05

From Table 4.16, it can be seen that transformational leadership has significant positive effects on rewards. This indicated that transformational leadership was able to explain approximately 19.8 percent the variation of rewards.

From the interviews with key informants, they agreed that transformational leadership has an effect on the rewards setting due to:

1) The management bringing their vision to the faculty members to gain their acceptance and by setting reward policies and aligning this with their faculty members, as commented on by key informants below:

> "...Policymakers can influence and drive this to implementation, by such setting conditions for awards or incentives and whether to provide anything or not. The awards or incentives can be in the form of financial or non-financial rewards, or for example, formal and informal recognition by peers...."
>
> "...Administrators will clearly set the rules for rewarding faculty members. They will have clear policies and rules which will be actively implemented...."
>
> "...Executives will set the remuneration policy, such as incentives for presenting academic work in addition to travel expense, and formal recognition for research which is considered to be one of the top five best research projects or results at either the national or global level...."
>
> "...The faculty also provides the incentives for research as faculty policies which include research output, and publications. The incentives will be provided on top of the rewards from the university...."
>
> "...As the Dean, if you ask me whether I am using a process for rewards, the answer is 'yes' in the form of contingency rewards which provide compensation according to performance. We have financial rewards which involve raising salaries and also non-financial rewards, such as the opportunities to further their studies. We will provide incentives to people whose work was clearly outstanding...."

> "...The management of the Faculty of Social Science at Kasetsart University is quite supportive of rewards because it is part of the work of faculty members. Let me quote the words of the Dean. He said, 'As we want our performance to be good and efficient, our facilities need to be ready'...."

2) Management understands the differences between individuals and rewards must be set according to the needs of each group, as commented on by some of the key informants:

> "...The executives have a vision of transformational leadership and so the incentives provided for faculty members will align with individual needs of each faculty member...."
>
> "...It depends on the strategy of each person on how to motivate people. The Dean/Head of Department will provide incentives such as providing financial support to publish their work or giving out awards for outstanding work. The awards are based on the quality of the work with which I am quite satisfied...."
>
> "...You can see that every faculty member will have a personal computer, laptop and printer, which are basic equipment which all faculty members must have...."

In addition, the management should also acknowledge the value of each individual:

> "...The faculty members feel that when management provides support and shows appreciation, it gives them extra motivation and nourishment, and makes them want to improve themselves more and more. When they are looking for something such as support for English course or further studies, they can tell the management...."

> "...The administration will try to motivate the faculty members who want to develop themselves by constantly providing rewards and compliments..."
>
> "...On recognition, announcements are made during organization meetings and rewards, such as awards, flowers, etc., will be given out. If we have someone talented, we can also reward the person with a senior position, such as Assistant Dean, Associate Dean and/or as a committee member for special courses..."
>
> "...As for non-concrete rewards, during the meeting faculty members who presented their work in a conference will be recognized both in the meeting and other internal media..."

3) The management will encourage the faculty members to think creatively by setting a variety of incentives to reward creativity, as commented on by the key informants:

> "...The management would like to do something new to support creativity. So any rewards given to faculty members will try to encourage them with new ideas and creativity to participate in projects where there are extra rewards or incentives..."
>
> "...There are many ways to formally reward someone, such as providing grants to present papers in international meetings without restrictions. Financial rewards will also be provided for publications in international journals..."
>
> "...If you can get published in international journals on the ISI database, the faculty will compensate 30,000 baht per article. If it was published in a national journal on the TCI database, the faculty will provide a compensation of 5,000 baht per article. As for funding support for research, the faculty can provide 100,000 baht per person per year. I understand that it will depend on the faculty..."
>
> "...In terms of cash awards, the administration has a policy to provide these for publications in domestic and international journals. In

addition to the awards, expenses will also be provided for research presentation in academic meetings, but there might be conditions for the research to be published in the faculty. Also, there are rewards for doing other research as well....”

From the above, it can be concluded that transformational leadership has an effect on rewards setting due to: 1) Management setting the rewards according to their vision; 2) Management understanding individual differences and setting the rewards according to their needs as well as recognizing each individual’s value; and 3) Management encouraging faculty members to be creative using various forms of incentives.

Table 4.17 Stepwise Multiple Regression Analysis of Factors Directly Affecting Training and Development

Variable	Standardized Coefficient (β)	t-value	Sig
Transformational Leadership	.549	12.940	.000*
Constant		7.682	.000*
R = .549 R^2 = .301 SEE = .659	F = 167.433	Sig. of F = .000	

Note: * P < .05

From Table 4.17, it can be seen that transformational leadership has significantly positive effect on training and development. This indicated that transformational leadership was able to explain approximately 30.1 percent of the variation of training and development.

From the in-depth interviews, key informants agreed that transformational leadership has an effect on training and development support. They explained as follows:

1) Management had the vision to fully support and promote training and development:

> "...Management's policy is to support the training and development budget in full...."
> "...For example, each year a budget for training is assigned from 40,000 to 50,000 baht per person. Anyone can choose what they want which will usually be approved. This will affect the quality assurance results and create explicit knowledge...."
> "...At this time, the Dean or Head of Department will continue to support the training and development...."

2) Management develops policies on training and development from their vision and announces it to their faculty members:

> "...Management will know the university's objectives of being a National Research and they want everyone to have an academic position. So, support for training according to the needs of the faculty members is provided...."
> "...Here we have training by providing funding normally around 20,000 baht per person per year for training. This can be used for self-development including training courses and seminars...."
> "...For training, the executives set policy to assign budget for each faculty member every year...."

3) Management encourages the faculty members to be insightful and keep themselves up-to-date by constantly providing for training faculty members:

> "…Visiting lecturers can be invited to provide short training classes (several weeks on a specific topic). This can lead to explicit knowledge that can affect the quality assurance audit...."

> "...Executives with transformational leadership will support the faculty members in constantly learning new things in order to contribute to their development. In the past, I applied to go to a seminar on rubber in Malaysia and received the support from management. They said that even though it was not directly relevant to my expertise, it could be useful for future research, which eventually turned out to be true...."
>
> "...I received full funding support for training seminars for both domestic and international courses. For example, I got some funding to present my research in Japan, and in July, I will get a chance to attend a conference seminar in Vienna. However, it is not like they send you anywhere. They will support something which is related to your expertise not sending you without purpose...."
>
> "...When we want to train, we will have to make a request and then they will determine whether or not it is relevant or not...."

In addition, management also supports and promotes further education to specialize their knowledge:

> "...On sending faculty members to study for a PhD, for example if they need to go to study before completing the process of scholarship application, or if the budget request is on-going, the faculty has established a loan fund which can also be used to complete the PhD studies in case the initial funding has dried up. In principle, it depends on the needs of the faculty members as well...."
>
> "...If you have to study, we will provide the budget. We can provide support up to one million baht for a faculty member to study for a domestic PhD course. What you need to do is to find a good place and a good faculty and we will support you...."
>
> "...To further your study here, we will support you in taking the TOEFL exam, provide funding support for the study in domestic and international sources which sometimes involves collaboration with

universities abroad. There are many ways to help support faculty members....”

4) Management understands the difference between individuals by providing training and development support for faculty members according to the needs and abilities of each individual:

“...When we apply for training, management will immediately support us....”

“...Mostly we will have something that we are interested in before requesting permission to attend a training course which will be fully financially supported. However, conditions may be set for sharing of information and knowledge. In principle, there should be a reason for training and if it involves the development of faculty members the benefit will fall to the students as new knowledge can be transferred to them. Knowledge is changing fast and new principles and concepts keep coming up. Management will understand and support the training and development of faculty members....”

Also, Management must be open to hear the needs and opinions of each faculty member, as commented on by some of the key informants:

“...The management usually understands the needs of each individual, is open to feedback, and easily accessible. The process is simple and I feel comfortable enough to keep applying for training....”

“...When the executives fully provide assistance like this, I feel comfortable requesting permission to attend training courses to develop myself more and more....”

In summary, transformational leadership has an effect on training and development support due to: 1) The vision of management fully supporting training and development; 2) The management vision being used to develop policies on

training and development; 3) Management encouraging faculty members to learn and keep themselves up-to-date, and providing support for further education; and 4) Management understanding the differences between individual in terms of needs and abilities, and being open to suggestions from the faculty members.

As a result, it can be concluded that a path model of the factors affecting faculty members' research performance basis on research hypothesis has nine casual paths as shown in figure 4.2.

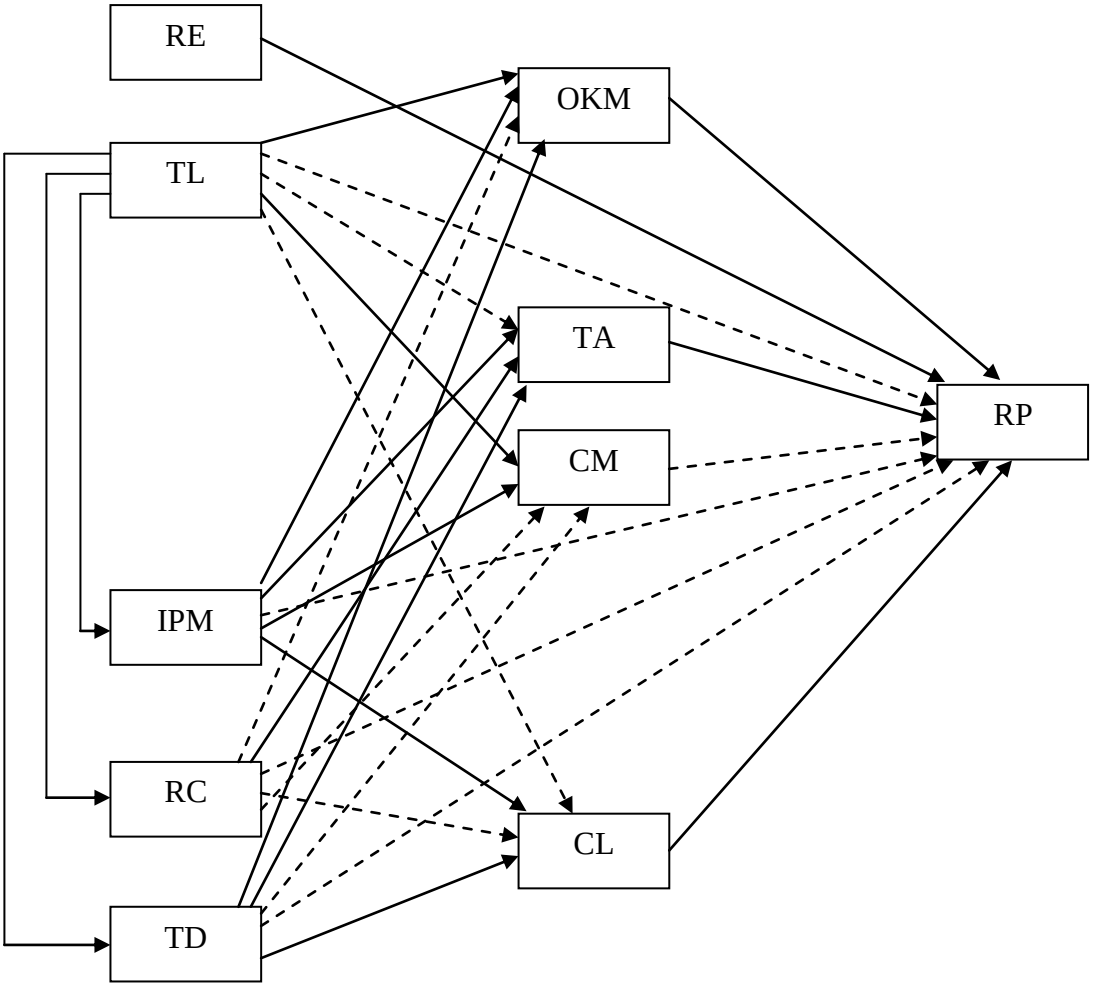

Figure 4.2 Path Model of Factors Affecting Faculty Members' Research Performance

Therefore, it can be summarized to a path model of faculty members' research performance with significance path coefficients as shown in Figure 4.3.

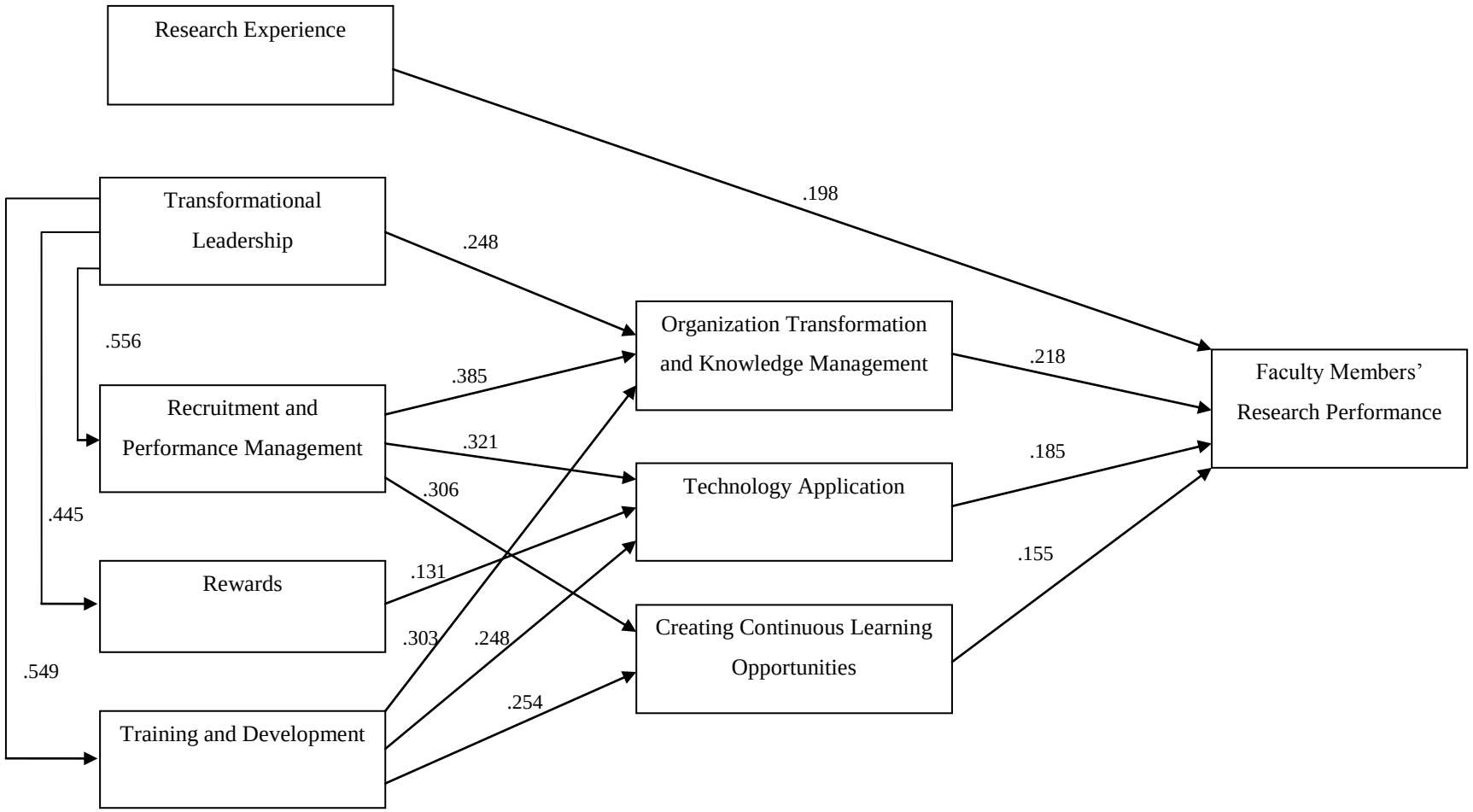

Figure 4.3 Path Model of Faculty Members' Research Performance with Significance Path Coefficients

From Figure 4.3, the researcher calculated indirect causal effects of independent variables which were transformational leadership, recruitment and performance management, rewards, and training and development.

Transformational leadership has indirect effect on faculty members' research performance through recruitment and performance management, rewards, training and development, organization transformation and knowledge management, technology application, and creating continuous learning opportunities. The calculation is shown as below:

TL → OKM → RP
+ TL → IPM → OKM → RP
+ TL → IPM → TA → RP
+ TL → IPM → CL → RP
+ TL → RC → TA → RP
+ TL → TD → OKM → RP
+ TL → TD → TA → RP
+ TL → TD → CL → RP

.248 x .218	=	.054
.556 x .358 x .218	=	.047
.556 x .321 x .185	=	.033
.556 x .306 x .155	=	.026
.445 x .131 x .185	=	.011
.549 x .303 x .218	=	.036
.549 x .248 x .185	=	.025
.549 x .254 x .155	=	.022

.054 + .047 + .033 + .026 + .011 + .036 + .025 + .022 = .254

Training and development has an indirect effect on faculty's research performance through organization transformation and knowledge management,

technology application, and creating continuous learning opportunities. The calculation is shown as below:

IPM → OKM → RP
+ IPM → TA → RP
+ IPM → CL → RP

.385 x .218 = .078
.321 x .185 = .019
.306 x .155 = .047

.078 + .019 + .047 = .144

Recruitment and performance management has an indirect effect on faculty's research performance through organization transformation and knowledge management, technology application, and creating continuous learning opportunities. The calculation is shown as below:

TD → OKM → RP
+ TD → TA → RP
+ TD → CL → RP

.303 x .218 = .066
.248 x .185 = .046
.254 x .155 = .039

.066 + .046 + .039 = .151

Rewards have an indirect effect on faculty's research performance through the application of technology. The calculation is shown as below:

RC ⟶ TA ⟶ RP

.131 x .185 = .024

Therefore, the direct, indirect, and causal effects with faculty members' research performance can be shown in Table 4.18.

Table 4.18 Direct, Indirect, and Causal Effects with Faculty Members' Research Performance

Independent Variables	Direct Effects	Indirect Effects	Causal Effects
Research Experience	.198	-	.198
Transformational Leadership	-	.254	.254
Recruitment and Performance Management	-	.144	.144
Rewards	-	.024	.024
Training and Development	-	.151	.151
Organization Transformation and Knowledge Management	.218	-	.218
Technology Application	.185	-	.185
Creating Continuous Learning Opportunities	.155	-	.155

From Table 4.16, it can be analyzed and shown that organization transformation and knowledge management has the most direct effect on faculty members' research performance, followed by research experience, technology application, and creating continuous learning opportunities. Additionally, transformational leadership has the most indirect effect on faculty members' research performance, followed by training and development, recruitment and performance management, and rewards. Furthermore, transformational leadership has the most causal effect on faculty members' research performance, followed by organization transformation and knowledge management, research experience, technology

application, creating continuous learning opportunities, training and development, recruitment and performance management, and rewards.

4.7 Summary of the In-Depth Interviews

In-depth interviews were conducted with nine faculty members at various National Research Universities. In order to use the data to explain the findings from the quantitative research (Chai Phosita, 2009: 53), two were assistant professors and seven were lecturers, (this was previously discussed in sections 4.2 and 4.6). The in-depth interviews can be summarized as below.

4.7.1 The Effect of Faculty Members' Qualifications on Their Research Performance

The data from the in-depth interviews about the effect of faculty members' qualifications which affected research performance were educational qualifications, research experience, academic position and income (especially research grants) which can be described below.

1) Educational Qualifications: Faculty members with a PhD will have better research performance as they will have better understanding of research methodology and tools, a better chance of success in applying for research grants, better capabilities to be research advisors, and better research networks than their counterparts with only a Master's degree.

2) Research Experience: Faculty members with more experience will be better at identifying research questions, planning, and problem-solving when conducting research compared to those with less or no experience.

3) Academic Position: Faculty members with academic positions usually have good knowledge and capabilities to do research, as they need this expertise to apply for an academic position. In addition, these also act as a sign of 'guarantee' for research quality.

4) Income (Especially Research Grants): Normally, faculty members can receive grants from internal and external sources which can act as an

incentive for faculty members to do research. Grants can also facilitate research and lead to high quality research, particularly in highly competitive grants.

4.7.2 The Effect of Faculty Members' Perception of Transformational Leadership on Their Perception of HRM Practices

The data from the in-depth interviews about the effect of faculty members' perception of transformational leadership on their perception of HRM practices can be classified into categories according to the attributes and summarized as below.

1) The effect of transformational leadership on faculty member recruitment

The data from the in-depth interviews about the effect of transformational leadership on the recruitment and selection process of faculty members can be explained as follows:

Bringing out the vision and achieving acceptance from members so they can perform so as to reach objectives: Management will set the policy or criteria on what kind of candidates are needed by specifying the position, qualifications, and expertise. Generally, candidates will need to have good research experience and a good attitude and the selection committee will consider them and decide on who should be recruited.

Encourage staff to think and implement: Management will dictate the policy on selection to the committee so they can conduct the search and recruitment according to a plan, and then delegate power and responsibilities to the selection committee who are faculty members.

Listen to the opinion of staff: Management will consider the opinions of all the committee members before deciding on the candidates.

2) The effect of transformational leadership on performance management of faculty member

From the in-depth interviews, transformational leadership affected performance management of faculty member due to the following reasons:

The vision of the management as accepted by the staff: Senior management will set the policies and indicate which criteria for performance evaluation should be used for staff to implement accordingly.

Encouragement for staff to think and implement: Management will assign policies and appoint a performance evaluation committee for each faculty and delegate power, responsibilities, and trust to the committee to conduct the evaluation based on task outcomes and workload. From the interviews, key informants were quite satisfied about the fairness, transparency and consistency of these evaluations. In addition, each department/faculty head can conduct informal performance evaluation through verbal communication with faculty members to tell them about area(s) that they might need to improve.

Staff opinions were taken into consideration: Management empowers the committee to conduct performance evaluations on faculty members, which will be led by each department head and each faculty member will be evaluated based on teaching workload, research, academic services, and cultural conservation. In addition, some universities which became independent (e.g. KMUTT) will also evaluate the ability of faculty members to generate income or secure research funding.

Understanding of individual differences: Management should set the criteria for performance evaluation for new probationary faculty members which will be different than for older faculty members in order to allow new faculty members some time to adapt to their new work environment. However, it is still current practice to have the same criteria for faculty members in science and social science faculties which creates unfairness to faculty members in social science faculties due to the different nature of producing research output.

3) The effect of transformational leadership on rewards setting

From the in-depth interviews, transformational leadership impacted the setting of rewards as explained below.

The vision was presented to faculty members to gain acceptance so they could achieve the objectives: Senior management developed policies related to rewards and announced the details to the faculty members.

Understanding the differences between individuals: Management needs to reward faculty members according to their needs, both financially and otherwise. These other rewards may include a good working environment, compliments, recognition, and career support for future advancement into senior management roles.

Encouragement for faculty members to think creatively: Management can set incentives to reward creativity, such as financial rewards for domestic and international journal publications, funding support for faculty members to present at an academic congress, and recognition and compliments when faculty members receive academic awards. Each reward or compliment given will reflect well on the management and drive the faculty members to be more productive and creative.

4) The effect of transformational leadership on training and development support

From the in-depth interviews, the effect of transformational leadership on training and development support can be explained as follows:

Management's vision fully supports training and development: As the vision of the university is to become a National Research University, senior management must prioritize capacity building for faculty members by developing policies to fully support training and development as much as possible within the means of the university.

Management's vision must be accepted by faculty members so they can perform to achieve the target: Senior management must develop policies related to training and development and pass them on the faculty/department heads in order for them to explain the criteria and regulations to their faculty members, leading to successful implementation and achievement of the objectives.

Faculty members need encouragement to keep themselves up-to-date: Management must support faculty members to obtain relevant training and development by assigning an annual budget for this purpose, particularly on specialization of expertise, and allowing faculty members to further their studies in domestic institution and abroad.

Understanding the differences between individuals: Management should support faculty members for training and development according to their needs or expertise, and must also be open to suggestions from faculty members, be accessible, and provide simple processes to apply for training in order to make them feel at ease about requesting support for additional training and development.

4.7.3 The Effect of Faculty Members' Perception of Transformational Leadership on Their Perception of Learning Organization

From the in-depth interview of the effect of transformational leadership on organization transformation and knowledge management, the information can be classified according to the attributes and summarized as below.

A Management vision which supports the organization transformation and knowledge management: The senior management has the vision to change the organization into a learning organization by support the establishment of knowledge management and promote working environment, through management policies, where learning is encouraged.

The relevant management vision is accepted by faculty members who perform accordingly to achieve organizational objectives: The management has clear policies and clearly communicates to faculty members so they understand about the objectives and the tasks they required to do.

Faculty members are encouraged to keep themselves up-to-date: The management must push for faculty members to seek new knowledge, encourage them to speak out, and provide support for self-development, such as providing support for faculty members to attend academic congress, providing timetable for upcoming training events, providing support to organize departmental academic meetings, and establishing department academic journal.

Understanding individual differences: The management must understand the needs of each individual faculty members on which areas they wish to develop and provide support and advice accordingly.

4.7.4 The Effect of Faculty Members' Perception of HRM Practices on Their Perception of Learning Organization

The data from the in-depth interviews about the effect of faculty members' HRM practices on their perception of becoming a learning organization can be classified into categories according to the attributes and summarized as below.

1) The effect of HRM practices on organization transformation and knowledge management

From the in-depth interview, the effect of HRM practices on organization transformation and knowledge management can be explained below:

Faculty member recruitment: This starts with analyzing the level of workload in order to identify how many faculty members is required for which department. After that, announcement can be made about which positions are available and this should be done proactively. This means that labor pool should be accessed more directly and candidates should come from various backgrounds. The initial criteria are on academic excellence, PhD qualifications (Master Degree may be adequate for some areas which are lacking), interview and tests, ability to do research, and tendency to be able to adapt to co-workers. However, due to the limitation of time, the 6-month probation period is useful in the selection process to determine the quality of the candidates and to guide and provide advice to new recruits.

Performance management: This starts with analyzing the weakness of the organization which will be used to develop policies for performance management. For example, the indicators used in National Research University would be research-related. In addition, some faculties may have indicators for other aspects to cover other areas. Performance evaluation may consist of two parts which are formal and informal evaluation. Formal evaluation will be conducted based on key performance indicators which are clear-cut, transparent, fairness and can provide feedback. Informal feedback will be done through verbal feedback in order to identify areas for improvement. This can be particularly effective when the respected senior management provide comments to the evaluated individual as they would feel more inclined to develop these areas. Overall, the aim of performance evaluation is to provide reliable feedback for self-improvement based on fact without bias.

Training and development support: When university fully provides support to faculty members on training and development, this will help with organizational development, change and knowledge management. The support can be in the form of several policies development including policies to provide training and development support according to needs, support for attending academic congresses, support to observe good practices, support for training courses and to further their

studies, support for obtaining higher academic position. These policies will help faculty members to improve their career prospects. In addition, support should be provided for training and research which help solving community problems (Area Based Research) which may involve sharing of knowledge and partnering with the community to solve their problems.

2) The effect of HRM practices on technology application

From the in-depth interview, the effect of HRM practices on the technology application can be explained as followed:

Faculty member recruitment: Each step of the recruitment process can affect the organization in terms of acquiring faculty members who have willingness to learn and able to apply technology to increase convenience in their work, particularly in research. This starts from being proactive in the recruitment process, accessing appropriate labor pool, considering candidates from various backgrounds. When considering the candidates, certain attributes, such as willingness to learn, good research skills, ability to use research and statistical software, and candidates' perspectives on research, should be the emphasis. In addition, part-time or visiting lecturers with good performance should be persuaded to work in the organization on a full-time basis.

Performance management: Formal performance evaluation can somewhat affect the application of technology to increase convenience, clarity and accuracy in the work of faculty members. This is because the faculty members can receive feedback in their performance and able to improve and develop themselves accordingly. In addition, in research, technology has become more important. Performance evaluation should be done regularly with clear indicators and appropriate criteria, and it should not be just a document for administrative purposes which will not lead to change or improvement. Informal performance evaluation which can be done through informal talk can provide regular feedback to faculty members which can also help with the application of technology to improve their work.

Rewards: Application of technology can be affected by rewards, both of financial or non-financial, as it can incentivize the faculty members to use technology to improve their work quality and speed. In general, rewards should be provided as: 1) Rewards should be appropriate to the needs and age of faculty

members. For example, senior faculty members with high basic salary may not respond to financial rewards as well as to recognition, whereas younger faculty members should be rewarded with challenging work and financial incentives; 2) Non-financial rewards, such as favorable work environment, can allow faculty members to access technology more easily. This includes providing personal computer, WIFI coverage in workplace, and 24-hour access to database. Also, work-related software should also be provided to faculty members; and 3) Incentives should be provided to rewards creativity and innovation. For example, the Invention Award of the Faculty of Engineering, KMUTT and Agricultural Innovation Award from Kasetsart University. This will encourage faculty members to use more technology to help with creating their work.

Training and development: This should start with analyzing organization needs in order to identify areas for development. Organization support, in terms of budget, resource and time, can be provided. Organization support for these activities should be provided according to the faculty member needs and expertise so that they can use the new knowledge for work in the future. Furthermore, regular updates and communication should be provided for faculty members on internal and external training. Examples from the in-depth interview include training for new research and teaching software, training on advanced applied statistics for research, and Training on MIS system used in the university. However, it was also found that faculty members with managerial responsibilities had limitation on time due to high workload and therefore unable to attend training or use the new knowledge from training to use in their work and research compared to younger faculty members.

3) The effect of HRM practices on creating continuous learning opportunities

From the in-depth interview, HRM practices affected the creating continuous learning opportunities explained below:

Faculty member recruitment: From the information gathered, recruitment should be done in a proactive manner by accessing the appropriate labor pool more. Interviews with candidates should explore their insight by asking academic questions looking at willingness to learn, personal goals and attitude. Universities may want to offer visiting or part-time lecturers a full-time position. In

addition, due to the limitation of time in the recruitment process, work-related conditions may be set by the university to stimulate and retain high quality candidates, such as the period for pursuing a PhD Study or acquiring academic position.

Performance management: This can be quite influential on faculty members regarding the creation of continuous learning opportunities. Formal performance evaluation must be flexible and should not be based too much on the criteria of OPDC or OHEC as social science and science subjects are different and the time it takes to produce research work are not the same. As a result, the criteria need to be flexible and appropriate. In addition the evaluation needs to be fair, unbiased, conducted regularly, and able to provide reliable feedback to faculty members. The results of the evaluation should lead to change and development, such as additional studies and additional training. Similarly, informal performance evaluation should be done by respectable role model and the communication needs to be unbiased allowing the faculty members to accept the feedback and improve themselves based on the comments leading to better overall performance.

Training and development: This support will help providing the faculty members with the opportunities to learn new things more conveniently. From the in-depth interview, faculty members who attended training to learn new knowledge or tools will have more eagerness to adapt the new knowledge to their work. The following practices on training and development can affect continuous learning: 1) Provide support for faculty members to attend training on new knowledge and tools which are challenging; 2) Provide support for faculty members to attend training which add to their expertise; and 3) Provide support for faculty members to observe good practices in another organization to widen their perspective and initiate new ideas which can be applied to the organization.

4.7.5 The Effect of Faculty Members' Perception of Learning Organization on Their Research Performance

From the in-depth interviews about the effect of faculty members' perception of learning organization on their research performance, the information has been summarized as followed:

Organization transformation and knowledge management: This starts from the management vision to implement organization transformation and knowledge management in order to develop the organization into a National Research University, and provide the following support: 1) Promote environment for learning and provide support for organizing academic meetings and attendance of external academic congresses at both domestic and international level; 2) Provide support for tools and equipment which help increasing work convenience, particularly for research including computer hardware and software; 3) Provide support for academic services to external organization, such as training, which can be beneficial for the society and create sharing of knowledge between organizations; 4) Invite external speakers and experts to transfer new knowledge for faculty members in order to initiate new ideas on research; 5) Support faculty members to conduct joint research with other organizations; 6) Knowledge management and development of useful knowledge database should be prioritized; and 7) Research support team should be set to provide assistance and advice on research-related problems to faculty members. These supports will be able to help faculty members to initiate new ideas and understand the research methodology better as well as feeling more confident. Consequently, faculty members will be able to produce high quality research in order to create new knowledge and help solving problems at community, societal, and national levels.

Technology application: The use of technology in research will increase productivity reliability and convenience which can be promoted by: 1) Provide support for tools and equipment for experimentation with good quality so the results can be accurate and reliable; 2) 24-hour access to on-line database should be available and meet the needs of faculty members when doing literature search or research; and 3) Computer software should be available according to the needs of faculty members.

Creating continuous learning opportunities: Usually, faculty members are generally interested and willing to explore and sharing new knowledge and further develop them. The organization also plays a role in supporting the faculty members to be able to access continuous learning according to their needs and expertise. These include financial support for PhD scholarship, support on resources and time for faculty members conducting research, applying for an academic position, or attending

training courses. This will allow faculty members to be able to improve their career prospects and conduct high quality research which align with the objectives of National Research University.

4.8 Model of Faculty Members' Research Performance in National Research Universities

From the results of the statistical analysis and in-depth interviews, we can develop the model of faculty members' research performance in National Research Universities, as shown in Figure 4.4.

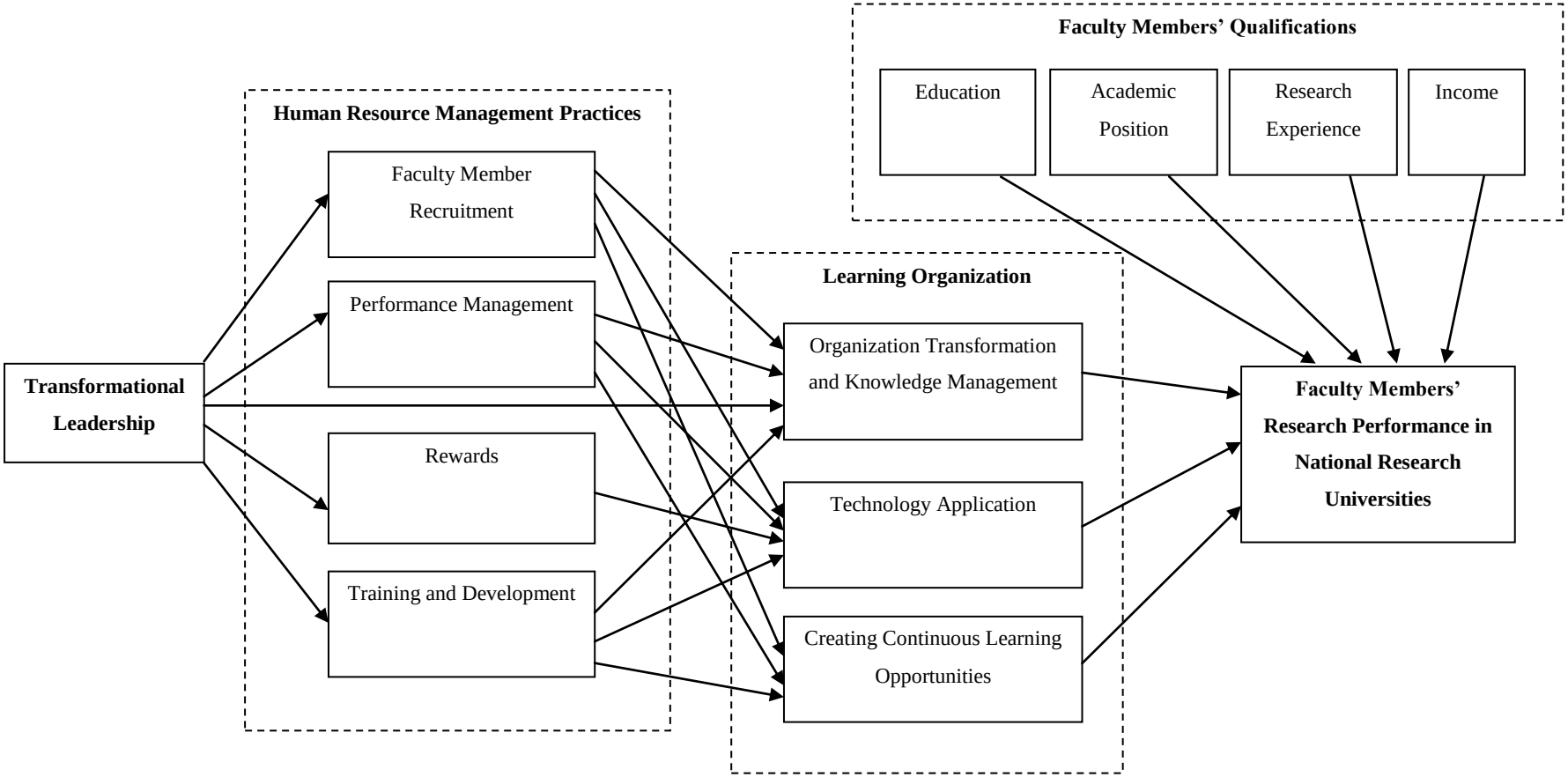

Figure 4.4 Model of Faculty Members' Research Performance in National Research Universities

Figure 4.4 describes the model of faculty members' research performance in National Research Universities as below:

1) Transformational Leadership- To improve the research performance of faculty members, in addition to the research capabilities that the faculty members had already, leadership is also important. The management should have transformational leadership which includes the vision to improve the research performance of faculty research, bringing their own vision to subordinates and established practice to achieve organization goals, motivating the subordinates to think and take action, listen to the opinions of faculty members, and to understand the differences between each individual. The transformational leadership of the executives can affect the human resource management of the university and it needs to be appropriate and aligned with the organization's objectives. It also helps to push for proper change and knowledge management in the university as well.

2) HRM Practices- Importance should be given to HRM practices in four aspects as followed:

(1) Recruitment of Faculty Member: This should be done more proactively with emphasis on recruiting capable people who can do research well. During the interview, research matters should be asked including statistical tools in order to assess the research perspectives of the candidates. Also, people with enthusiasm to learn, good attitude, and good adaptability to work with colleagues and supervisors should be selected. Any conditions related to learning requirement or career advancement should be mentioned upfront, and the evaluation after the probation period should be done seriously and truthfully.

(2) Performance Management: Formal evaluate should be done based on facts, transparent, and fair. This should be done regularly with clear KPI and appropriate and flexible criteria. Reliable feedback should be provided to faculty members. Informal evaluation should be done by a respectable evaluator using 'friendly' talk without bias.

(3) Training and Development: Support should be provided for faculty members to attend academic conference, to present their work, to observe good practices in other organizations, and to attend training. Support should be provided for learning on new knowledge and tools, and allow faculty members to

further their career by providing scholarship and/or support for applying academic position.

(4) Rewards: This should be in the form of financial and non-financial rewards in order to match the needs for different age groups and personal needs. Non-financial rewards include provide good atmosphere and facilities for faculty members to easily access technology and provide rewards for innovation.

These 4 aspects of HRM practices, recruitment, performance management, training and development, and rewards, will provide the motivation and drive organizational development to become a learning organization.

3) Becoming a Learning Organization- Emphasis should be on the following three aspects:

(1) Organization Transformation and Knowledge Management: This should start from the management's vision to implement change and knowledge management in organizations in order to develop the organization into a National Research University. Focus should be on creating an atmosphere of learning and knowledge creation, supporting faculty members to provide academic services to external organizations, encouraging and supporting faculty members in joint research projects with other organizations, developing knowledge management through the establishment of a database which can respond to the faculty members' needs, and organizing a research support team to provide help or consultation on to faculty members on their research.

(2) Technology Application: Support should be provided for good quality tools and equipment for experimentation, 24-hour access to on-line databases, and computer software for faculty members according to their needs.

(3) Creating Continuous Learning Opportunities: The organization should provide as much support as they can within the budget for training in order to boost the capabilities of faculty members to conduct high quality research.

These three aspects must be addressed in order to become a learning organization. This will allow faculty members to further develop themselves and be more productive in their research.

4) Individual Qualifications of Faculty Members- Educational qualifications, academic positions, research experience, and income can influence research performance. Apart from the enthusiasm of the faculty members which will drive them to develop, the university should also promote and provide support as follows:

(1) Educational Qualifications: Universities should focus on recruitment of faculty members and mainly select candidates with doctorate degrees. If candidates are hard to find for a particular subject, budget should be allocated for faculty members to further their education and do a PhD. Support for post-doctoral research should also be provided.

(2) Academic Position: When faculty members apply for academic positions, the university should provide full support to them in both resources and time. The faculty member's workload should be adjusted in order to allow them enough time to produce research work.

(3) Research Experience: Universities should develop a research network and provide regular assistance in seeking research grants to support research activities of faculty members. This will allow them to build up the skills and research experience as well as promote research teamwork in order to create an exchange of knowledge and collectively build up experience.

(4) Income: Universities should provide assistance and support to faculty members to secure research grants both from internal and external funding sources.

CHAPTER 5

SUMMARY AND RECOMMENDATIONS

In this chapter, a summary of this study is given, the discussion of this study is explained, and the researcher makes recommendations for action based on the researcher model of faculty members' research performance in National Research Universities. Finally, recommendations for further research of this study are suggested.

5.1 Research Summary

Due to the research objectives, the researcher can summarized the study results as follows.

5.1.1 To Explain Faculty Members' Qualifications, Their Perceptions of Transformational Leadership, HRM Practices, and Learning Organizations, and Faculty Members' Research Performance in National Research Universities.

From this objective, the results can be concluded as follows:

1) Faculty members' qualifications can be reported as 50.3 percent of respondents were female, the mean age was 45 years old, 35.1 percent of the respondents were assistant professors, more than half of the respondents were government officials, most of them had finished a doctoral degree, the mean of work experience was 17 years, the mean of research experience was 15 years, and average income per month was 51,805 baht.

2) Faculty members' perceptions of transformational leadership can be reported that its score was 3.62 (a good level).

3) Faculty members' perception of HRM practices can be reported that the highest average mean score was recruitment and performance management, followed by rewards, and training and development.

4) Faculty members' perception of learning organization can be reported that the highest average mean score was commitment to learn, followed by creating continuous learning opportunities, technology application, and organization transformation and knowledge management.

5) Faculty members' research performance was made up of two components. First, faculty members' research behaviors has a mean score 3.70. Second, faculty members' research outcomes in the three year before showed that the mean of the number of faculty members' domestic research publications was 3.87, international research publications was 4.08, research projects on which they were a major researcher was 3.70, research projects on which they were a co-researcher was 3.60, research awards received was .37, and patents granted domestically and internationally was .22.

5.1.2 To Examine the Effects on Faculty Members' Research Performance in National Research Universities Based on Their Qualifications and Their Perceptions of Transformational Leadership, Human Resource Management Practices, and Learning Organization.

From this objective, the results showed that organization transformation and knowledge management have the highest direct effects on faculty members' research performance in National Research Universities, followed by research experience, technology application, and creating continuous learning opportunities.

In the same way, transformation leadership has the highest indirect effect on faculty members' research performance in National Research Universities, followed by training and development, recruitment and performance management, and rewards. The results showed that transformational leadership has an indirect effect on faculty members' research performance through recruitment and performance management, rewards, organization transformation and knowledge management, technology application, and creating continuous learning opportunities. In addition, recruitment

and performance management has an indirect effect on faculty members' research performance through organization transformation and knowledge management, technology application, and creating continuous learning opportunities. Likewise, rewards have an indirect effect on faculty members' research performance through technology application.

From total effect analysis, it can be analyzed that transformational leadership has the highest total effect on faculty members' research performance in National Research Universities, followed by organization transformation and knowledge management, research experience, technology application, creating continuous learning opportunities, training and development, recruitment and performance management, and rewards.

From variance analysis, it can be concluded that academic position has a direct effect on faculty members' research performance. From Sheffe's analysis method, it can be determined that faculty members who were assistant professors, associate professors, and professors have significantly higher research performance than lecturers. In addition, income per month also has a direct effect on faculty members' research performance. From Sheffe's analysis method, it can be reported that faculty members who have more income per month will have higher research performance than faculty members who have lower income per month. In particular, faculty members who have income more than 80,000 baht per month will have higher research performance faculty members who have income less than 40,000 and faculty members who have income between 40,000 and 80,000 baht per month. Similarly, faculty members who have income between 40,000 and 80,000 baht per month will have higher research performance than faculty members who have income less than 40,000 baht per month.

The results of the in-depth interviews which explained the findings of the quantitative research above can be summarized into five main points as follows:

1) The effect of faculty members' qualifications on their research performance: It was found that educational qualifications, research experience, academic position, and income (especially research grants) have effects on research performance. Educational qualifications have an effect because faculty members with a PhD will have better research performance as they will have better understanding of

research methodology and tools, a better chance of success in applying for research grants, better capabilities to be research advisors, and have a better research network than their counterparts with only a Master's degree. As for research experience, faculty members with more experience will be better at identifying research questions, planning, and problem-solving when conducting research compared to those with less or no experience. In addition, academic positions affect performance because faculty members with academic positions usually have good knowledge and capabilities to do research, as they will need this expertise to apply for an academic position. In addition, these also act as a sign 'guaranteeing' research quality. Lastly, incomes have an effect because normally faculty members can receive grants from internal and external sources which can act as an incentive for faculty members to do research. Grants can also facilitate research and lead to high quality research, particularly in highly competitive grants.

2) The effect of faculty members' perception of transformational leadership on their perception of HRM practices. These can be concluded in four sub-points below.

(1) The effect of transformational leadership on recruitment and selection of faculty members. This consists of lifting up the vision and achieving acceptance from staff so they can perform accordingly to reach the objectives, encourage the staff to think and implement, and listen to the their opinions of them.

(2) The effect of transformational leadership on performance management of faculty members. This consists of lifting up the vision and achieving acceptance from faculty members so they can perform accordingly to reach the objectives, encouraging faculty members to think and implement, listen to the opinions of other faculty members, and understanding individual differences.

(3) The effect of transformational leadership on the setting of rewards. This consists of lifting up the vision and achieving acceptance from faculty members, so they can perform accordingly to reach objectives, understanding individual differences, and encouraging faculty members to think.

(4) The effect of transformational leadership on training and development support. This consists of a management vision which fully supports training and development, management policies on training and development from

their vision and that are announces to their faculty members, encouraging the faculty members to be insightful and keep themselves up-to-date, and understanding individual differences.

3) The effect of faculty members' perception of transformational leadership on their perception of learning organization. It was found that transformational leadership affected organization transformation and knowledge management. The attributes include the management vision to support the changes and knowledge management within the organization, the management vision, as accepted by the faculty members, was used to develop policies on implementing changes and knowledge management, providing encouragement to faculty members to keep themselves up-to-date, and understanding of individual differences.

4) The effect of faculty members' perception of HRM practices on their perception of learning organization. This can be concluded into 3 sub-points below.

(1) The effect of HRM practices on organizational transformation and knowledge management. It was found that faculty member recruitment, performance management, and training and development support have an effect. Faculty member recruitment should be more proactive with emphasis on capabilities, research abilities, adaptability to colleagues, obedience. Also performance evaluation after 6 month probation period should be conducted seriously and truthfully. Formal performance evaluations were found to be done transparently and fairly. Informal evaluation should be done by someone respectable and talk to faculty members in a friendly and unbiased way. Training and development support has been provided to faculty members to attend academic conference and present their research, as well as allowing faculty members to observe good practices in other organizations and support for scholarship and application for academic position.

(2) The effect of HRM practices on technology application. It was found that faculty member recruitment, performance management, and rewards, can affect the application of technology. Faculty member recruitment should be done more proactively, select people who are enthusiastic to learn. The interviews should ask about research, tools, and statistics in order to explore their research perspectives. As for performance evaluation, evaluation after 6 month probation period should be

conducted seriously and truthfully. Formal performance evaluations were found to be done transparently and fairly. Informal evaluation should be done by someone respectable and talk to faculty members in a friendly and unbiased way. Rewards should be appropriate to the needs and age of faculty members. Non-financial rewards, such as favorable work environment, should be provided as it allows faculty members to access technology more easily, and incentives should be provided to rewards creativity and innovation.

(3) The effect of HRM practices on creating continuous learning opportunities. It was found that faculty member recruitment, performance management, and support for training and development, can affect the creating continuous learning opportunities. Faculty member recruitment should be done in a proactive manner by accessing the appropriate labor pool more. Interviews with candidates should explore their insight by asking academic questions looking at willingness to learn, personal goals and attitude. Any work conditions, such as time to pursue PhD and/or academic positions should be clearly mentioned upfront. As for performance management, it was found that formal evaluations were conducted regularly and have clear KPI and reasonable criteria. There was no bias and reliable feedback was provided. Informal evaluation was done through informal talks and the evaluators need to be good role model in order to gain respect. For support on training and development, it was found that support has been provided for faculty members to attend training on new knowledge and tools, to further their study according to their expertise, to observe good practices in another organization, domestic or abroad, on regular basis.

5) The effect of faculty members' perception of learning organization on their research performance. It was found that organization transformation and knowledge management, technology application and creating continuous learning opportunities have effects on research performance. For organization transformation and knowledge management, it starts from the management vision to implement change and knowledge management in order to develop the organization into a National Research University, and focus on promoting environment for learning and creating knowledge, provision of academic services to external organizations, promote joint research with other organization, and establish

knowledge management and development of useful database. As for technology application, the university needs to provide 24-hour access to on-line database and computer software should be available according to the needs of department and faculty members. Lastly, creating continuous learning opportunities will start with faculty members who are generally interested and willing to explore new knowledge in order to further develop themselves. At the same time, the organization also provides full support to them to be able to access training which they are interested in. This will allow the faculty members to be able to improve their career prospects and conduct high quality research which aligns with the objectives of National Research University.

5.1.3 To Develop a Model of Faculty Members' Research Performance in National Research Universities.

From the statistical analysis and the in-depth interviews, the analysis results can be formed to the model of faculty members' research performance in National Research Universities as shown in figure 5.1.

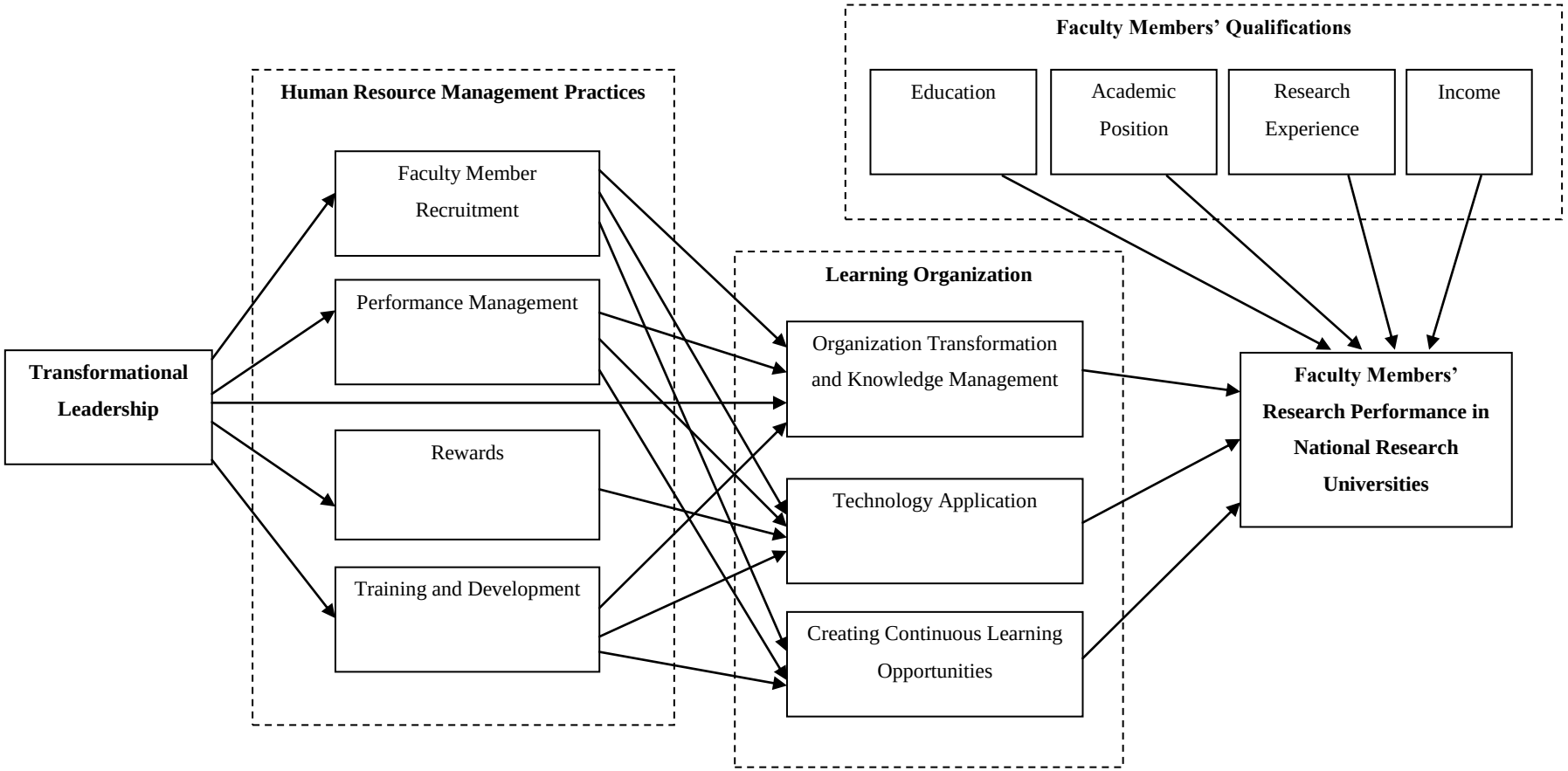

Figure 5.1 Model of Faculty Members' Research Performance in National Research Universities

From figure 5.1, the model of faculty members' research performance in National Research Universities can explain as below:

1) Transformational Leadership- To improve the research performance of faculty members, in addition to the research capabilities that the faculty members had already, leadership is also important. The management should have transformational leadership which includes the vision to improve the research performance of faculty members, bringing their own vision to subordinates and establishing practice to achieve the organization's goals, motivating subordinates to think and take action, listening to the opinions of faculty members, and understanding the differences between individuals. The transformational leadership of the executives can affect the human resource management of the university and it needs to be appropriate and aligned with the organization's objectives. It also helps to push for proper change and knowledge management in the university as well.

2) HRM practices- Importance should be given to HRM practices in four aspects as follows:

(1) Recruitment of Faculty Members: This should be done more proactively with emphasis on recruiting capable people who can do research well. During the interview, research matters should be discussed including statistical tools in order to assess the research perspectives of the candidates. Also, people with enthusiasm to learn, good attitudes, and good adaptability to work with colleagues and supervisors should be selected. Any conditions related to learning requirements or career advancement should be mentioned upfront, and the evaluation after the probation period should be done seriously and truthfully.

(2) Performance Management: Formal evaluation should be transparent and fair and done based on facts. This should be done regularly with clear KPIs and appropriate and flexible criteria. Reliable feedback should be provided to faculty members. Informal evaluation should be done by a respectable evaluator using 'friendly' talk without bias.

(3) Training and Development: Support should be provided for faculty members to attend academic conferences, to present their work, to observe good practices in other organizations, and to attend training. Support should be provided for learning new information and tools, and allowing faculty members to

further their careers by providing scholarship and/or support for applying for an academic position.

(4) Rewards: Rewards should encourage innovation. Rewards should be financial and non-financial in order to match the needs of different age groups and personal needs. Non-financial rewards include providing a good atmosphere and facilities for faculty members to easily access technology.

These 4 aspects of HRM practices, recruitment, performance management, training and development, and rewards, will provide motivation and drive organizational development toward becoming a learning organization.

3) Becoming a Learning Organization- Emphasis should be on the following three aspects:

(1) Organization Transformation and Knowledge Management: This should start from the management's vision to implement change and knowledge management in organizations in order to develop the organization into a National Research University. Focus should be on creating an atmosphere of learning and knowledge creation, supporting faculty members to provide academic services to external organizations, encouragement and support of faculty members in conducting joint research with other organizations, development of knowledge management through the establishment of a database which can respond to the faculty member needs, and organization of a research support team to provide help or consultation on research to faculty members.

(2) Technology Application: Support should be provided for good quality tools and equipment for experimentation, 24-hour access to on-line databases, and computer software for faculty members according to their needs.

(3) Creating Continuous Learning Opportunities: Organizations should provide as much support as they can within the budget for training in order to boost the capabilities of faculty members to conduct high quality research.

In order to become a learning organization, there are three aspects as mentioned above. This will allow faculty members to further develop themselves and be more productive in their research.

4) Individual Qualifications of Faculty Members- Faculty qualifications can influence the research performance and includes educational qualifications, academic positions, research experience, and income. Faculty members come to their positions with enthusiasm which will drive them to develop. Apart from that, the university should also promote and provide support as follows:

(1) Educational Qualifications: Universities should focus on the recruitment of faculty members and mainly select candidates with doctoral degrees. If for a particular subject, candidates are hard to find, budget should be allocated for faculty members to further their education and do a PhD. The budget should also provide support for post-doctoral research.

(2) Academic Positions: When faculty members apply for academic positions, the university should provide full support to them both in resources and time, and the faculty member's workload distribution should be adjusted in order to allow them enough time to produce research work.

(3) Research Experience: Universities should develop a network for doing research and on a regular basis, provide assistance in seeking research grants to support research activities of faculty members on. This will allow them to build up the skills and research experience and promote research teamwork in order to create knowledge sharing and collectively build up experience.

(4) Income: Universities should provide assistance and support to faculty members to secure research grants both from internal and external funding sources.

5.2 Discussion

The results of this study can be discussed based on the following hypotheses:

5.2.1 Faculty Members' Perception of Transformational Leadership has a Positive Effect on Their Research Performance.

The results showed that faculty members' perception of transformational leadership had no effect on their research performance which was statistically significant. The results disagreed with previous studies, such as Judge and Piccolo

(2004) which studied the influence of transformational leadership on the performance and showed that transformational leadership was associated with several factors, including staff satisfaction, incentives, leader satisfaction, performance of the organization, and leadership effectiveness. Similar to Piccolo and Colquitt (2006), our work revealed that transformational leadership has a significantly effect on task performance and organizational citizenship behavior. In addition, transformational leadership also has an effect on job characteristics which influence intrinsic motivation and goal commitment. Intrinsic motivation relates to task performance and organizational citizenship behavior, whereas goal commitment only relates to task performance. Tsai et al. (2009) investigated the relationship between transformational leadership and employee work outcomes. They collected data from employees and immediate supervisors in insurance companies in Taiwan. This study reported that transformational leadership has an effect on employee task performance and behavior in helping coworkers.

However, some academics found that transformational leadership has no direct positive effect on organizational performance, but rather there were some indirect effects which exerted themselves through other variables. For example, Aragon-Correa et al. (2007) found that transformational leadership has no direct effect on organization performance but transformational leadership could become influential through other ‘intermediaries’ including organizational learning and innovation. These two intermediaries added value to organizations and were difficult to duplicate. In the same way, Siripapun Leephaijaroen (2012) revealed that the dean’s transformational leadership behavior does not have a direct effect on lecturers’ research performance in Ubon Ratchathani Rajabhat University, but the research findings found that dean’s transformational leadership behavior has indirect effects on lecturers’ research performance through three factors which were: 1) perceived organizational compensation and benefits support; 2) perceived organizational stability of work support; and 3) perceived organizational knowledge about work and growth support.

Therefore, the study confirms that the faculty members’ perception of transformational leadership has no effect on their research performance, and clarifies the limitation of this knowledge on the association between transformational

leadership and research performance of faculty members that, in some cases involves a sample of faculty members in National Research Universities, shows no direct effect from transformational leadership on research performance. However, there is an effect through intermediaries which are faculty members' perception of HRM practices and their perception of becoming a learning organization that the researcher will discuss in 3) and 4) below. The findings are in line with some of the studies, including Aragon-Correa et al. (2007) and Siripapun Leephaijaroen (2012), but different to another group of studies which include Judge and Piccolo (2004), Piccolo and Colquitt (2006) and Tsai et al. (2009). The different conclusion from this study may be due to: 1) This study was conducted at an individual level through faculty members' perceptions; 2) This study focused only on research performance which was may not represent the overall performance as in this group of studies; and 3) Data collection was from National Research Universities in Thailand which may have different characteristics compared to the sampled organizations in other studies leading to a wrong hypothesis.

5.2.2 Faculty Members' Perception of Transformational Leadership has a Positive Effect on Their Research Performance through Their Perception of HRM Practices.

The study found that faculty members' perceptions of transformational leadership had no positive effect on their research performance through HRM practices with statistical significance. This is explained below.

1) Faculty members' perception of transformational leadership has a positive influence on their perception of HRM practices with statistical significance. This was found to be consistent with the results of Zhu et al. (2005) who revealed that CEO transformational leadership has an indirect effect on subjective assessment of organizational outcomes and absenteeism through human-capital-enhancing human resource management. Based on in-depth interviews, this research found that faculty members' perception of transformational leadership has a positive effect on their perception of HRM practices. The in-depth interviews' results showed that

(1) The attributes of transformational leadership which have an effect on the recruitment of faculty members are exactly the same attributes which

impact the understanding that individual differences affect performance management and include:

a. presenting the vision and achieving the acceptance of the staff so that they can perform to reach objectives

b. encouraging staff to think and implement the vision

c. listening to the opinions of faculty members

(2) The attributes of transformational leadership which affect rewards setting include:

a. presenting the vision and achieving the acceptance of staff so they can perform accordingly to reach the objectives

b. understanding individual differences

c. encouraging faculty members to be creative

(3) The attributes of transformational leadership which impact training and development include:

a. the management vision to fully support training and development

b. presenting the vision and achieving the acceptance of faculty members so that they can perform accordingly and reach the objectives

c. encouraging faculty members to keep themselves up-to-date

d. understanding individual differences

2) Faculty members' perception of HRM practices has no influence on their research performance with statistical significance. The findings are not consistent with the results of previous studies. For example, Challis et al. (2005) found that HRM practices can explain the increasing fluctuation on research performance of staff. The organization with high performance will be more aware of or focus on HRM practices compared to those with lower performance. In the same way, Vlachos (2008) investigated the effect of human resource practices on organizational performance in Greece. The findings reported that selective hiring is an important factor that enhances organizational performance, while compensation policy, information sharing, decentralization of decision making, and extensive training have effects on organizational performance. Similar to Baloch et al. (2010), they investigated the influence of human resource practices on perceived bankers'

performance in Pakistan. They found that compensation practices, promotion practices, and performance evaluation practices have effects on perceived bankers' performance. In addition, Lee et al. (2010) examined the effect of human resource management practices on steel firms' performance in Taiwan. They revealed that HRM practices including training and development, teamwork, compensation, human resource planning, performance appraisal, and employment security have effects on firms' performance. Moreover, Boohene and Asuinura (2011) reported that HRM practices including recruitment and selection, and performance appraisal have positive effects on organizational performance. Furthermore, Sohail et al. (2011) found that HRM practices which are recruitment and selection, training and development, and employee participation are positively correlated with organizational performance of telecom sector in Pakistan.

However, some academics found that the HRM practices did not have an effect on performance which aligns with the findings of this study. Lopez et al. (2005) showed that HRM practices, including recruitment, selection, training, compensation and participation, did not affect business performance as HRM practices did not directly create any competitive advantages. However, the advantage came from the ability of the organization to motivate the staff to put in more knowledge and effort into work and therefore creating better performance. This is consistent with the researcher's results which found that there was no direct effect but an indirect influence through the perception of becoming a learning organization. As Lopez et al. (2005) described that HRM practices can act as a catalyst for staff to apply their knowledge to work, or in other words, the staff have more skills and capabilities to help the organization improve performance. In addition, there could be further explanation on why the hypothesis was incorrect which include: 1) The study was conducted from the individual level through faculty members' perceptions; 2) This study focused only on research performance which may not represent the overall performance as in this group of studies; and 3) Data collection was from National Research Universities in Thailand which may have different characteristics compared to the organizations sampled in other studies.

5.2.3 Faculty Members' Perception of Transformational Leadership has a Positive Effect on Their Research Performance through Their Perception of Becoming a Learning Organization.

The study found that faculty members' perceptions of transformational leadership have a positive effect (with statistical significance) on their research performance through their perception of becoming a learning organization related to organization transformation and knowledge management. The results can be described in two separate issues below.

1) Transformational leadership has a positive effect on becoming a learning organization in the areas of organization transformation and knowledge management, which are statistical significant. This is consistent with Lussier and Achua (2001) who outlined the roles of a transformational leader in creating a learning organization, as gathered from research papers, theories, and actual implementation, and concluded that the roles were as follows: 1) Encouraging creativity; 2) Creating an atmosphere that encourages learning curiosity and experimentation; 3) Setting incentives for learning and innovation; 4) Building confidence that people have the capacity to learn and improve themselves; 5) Encouraging systematic ways of thinking; 6) Creating a culture of learning at both individual and team levels; 7) Creating tools as a creative channel for innovation; 8) Creating a vision for shared learning; 9) Widening the horizon of staff; and 10) Creating an atmosphere of learning from previous mistakes**.** In the same way, Chang and Lee (2007) reported that transformational leadership has a positive effect on the operation of learning organizations. They suggested that to increase the number of knowledge workers in Taiwan, the administrators should enhance their transformational leadership skills such as being a role model, encouraging innovation and learning activities, developing employees' competency, and supporting employees' training and education. In addition, Singh (2008) investigated the relationship between transformational leadership and learning organization in India's banking organizations. The study found that transformational leadership including articulating the vision and intellectual stimulation roles enhance the development of learning organization. Similarly, Somnuk Ueajirapongphan and Pennapa Praphawat (2009) found that transformational leadership in which the hospital management was

committed to the vision of the hospital and beyond by leading, motivating, and coaching the staff. Leadership can build confidence and unity within the organization, and when the management empower the staff and develop good coordination, it can lead to flexibility in the workplace and confidence in the leader as the leader also trusts and respects the staff. All of these were strongly related with statistical significance in a learning organization and consistent with the results of in-depth interviews in this research which found that transformational leadership, related to the vision to promote and support change and knowledge management, bringing out the vision and achieving acceptance from faculty members so they can perform accordingly to reach objectives, encouraging faculty members to keep themselves up-to-date, and understanding individual differences, all have an effect on becoming a learning organization through organization transformation and knowledge management.

2) Becoming a learning organization with organizational transformation and knowledge management has a positive effect on faculty members' research performance in National Research Universities with statistical significance. These findings were consistent with Kontoghiorghes et al. (2005) who reported that learning organization characteristics influence on organizational performance. Similarly, Yeung et al. (2007) revealed that factors to enhance organizational learning, such as being valued by senior management, and supported appropriate learning infrastructure and culture have effects on organizational efficiency. In the same way, Yang et al. (2007) studied the relationship between organizational learning and organizational performance in Taiwan's industries. They found that applying organizational learning has an effect on organizational performance. In addition, Davis and Daley (2008) revealed that learning organization behaviors have positive direct effects on business performance, such as return on investment (ROI), return on equity (ROE), earnings per share (EPS), net income per employee and percentage of sales from new products. The results of in-depth interviews showed that change and knowledge management in organizations, which started from a vision to change and establish knowledge management in organizations and focused on promoting an atmosphere of learning and knowledge creation, supporting faculty members to do academic service activities for external organizations, supporting faculty members to

do research with other organizations, and developing knowledge management in organizations by preparing the database so it can truly meet the needs of faculty members, had an effect on research performance of faculty members in National Research Universities.

5.2.4 Faculty Members' Perception of Transformational Leadership has a Positive Effect on Their Research Performance through Their Perceptions of HRM Practices and Becoming a Learning Organization.

The study found that faculty members' perception of transformational leadership has a positive effect on their research performance through their perception of HRM practices with statistical significance which is explained below.

1) Faculty members' perception of transformational leadership has a statistically significant positive effect on their perception of HRM practices. The research findings on this issue conform to previous academic's findings. For example, Zhu et al. (2005) revealed that CEO transformational leadership has an indirect effect on subjective assessment of organizational outcomes and absenteeism through human-capital-enhancing human resource management. This previous research was reported in the same way as this research finding which revealed that: 1) Faculty members' perception of transformational leadership including bringing out the vision and achieving acceptance from members so they can perform accordingly to reach objectives, encouraging subordinates to think and implement, and listening to the opinions of faculty members has a positive effect on their perception of HRM practices (faculty member recruitment); 2) Faculty members' perception of transformational leadership including the vision of the management as accepted by faculty members, encouragement for faculty members to think and implement, faculty members opinions were taken into consideration, and understanding of individual differences has positive effect on their perception of HRM practices (performance management); 3) Faculty members' perception of transformational leadership including vision was brought to faculty members to gain acceptance so they can perform accordingly to achieve the objectives, understanding the differences between individuals, and encouragement for faculty members to think creatively has positive

effects on their perception of HRM practices (reward setting); and 4) Faculty members' perception of transformational leadership including the management vision which fully supports training and development, the management vision must be accepted by faculty members so they can perform to achieve the target, encouraging to faculty members to keep themselves up-to-date, and understanding the differences between individuals has a positive effect on their perception of HRM practices (training and development support).

2) Faculty members' perception of HRM practices has a statistically significant positive effect on their perception of learning organizations. The research findings on this issue conform to previous academics' findings. For example, Lopez et al. (2005) reported that HRM practices such as recruitment and selection, training, compensation, and participation have a positive effect on learning in an organization, and Wang et al. (2011) reported that performance appraisal systems have a positive effect on organizational learning. All of this previous research was reported in the same way as these research findings which revealed that: 1) Faculty members' perceptions of HRM practices including recruitment, performance management, and training and development have positive effects on their perception of learning organizations (organization transformation and knowledge management); 2) Faculty members' perceptions of HRM practices including recruitment, performance management, and rewards has a positive effect on faculty members' perception of learning organizations (technology application); and 3) Faculty members' perceptions of HRM practices including recruitment, performance management, and training and development has a positive effect on faculty members' perceptions of learning organizations (creating continuous learning opportunities).

3) Faculty members' perception of learning organizations has a statistically significant positive effect on their research performance. The research findings on this issue conform to the previous academics' findings. For example, Kontoghiorghes et al. (2005) reported that learning organization characteristics influenced organizational performance. In the same way, Yang et al. (2007) studied the relationship between organizational learning and organizational performance in Taiwan's industries, and they found that applying organizational learning has an effect on organizational performance. In addition, Walumbwa et al. (2009)

investigated the integrative model of voluntary learning behavior and collected data from 398 employees from a large automobile dealership, and they revealed that effective learning behavior is a factor that enhances job performance. Moreover, Som et al. (2010) found that learning organization elements including individual learning practices, organizational learning practices, and team problem-solving have effects on organizational performance of non-profit organizations (NPOs) in Singapore. Furthermore, Tahir et al. (2011) reported that organizational learning significantly influences employee performance, and Garcia-Morales et al. (2012) found that organizational learning has a direct positive effect on organizational performance. All of this previous research was reported in the same way as this research finding which revealed that faculty members' perception of learning organizations such as organizational transformation and knowledge management, technology application, and creating continuous learning opportunities significantly has a positive effect on their research performance in National Research Universities.

5.3 Recommendation

The model of faculty members' research performance in National Research Universities (Figure 5.1), is a model developed from the integration of quantitative and qualitative results from this research which has not gone deep into the finer details, and from the in-depth interviews which some key informants emphasized on the self-drive within the faculty as factors equally as critical as the external factors which the organization supports. So the model of faculty members' research performance can be further developed in Figure 5.2 according to Siripapun Leephaijaroen.

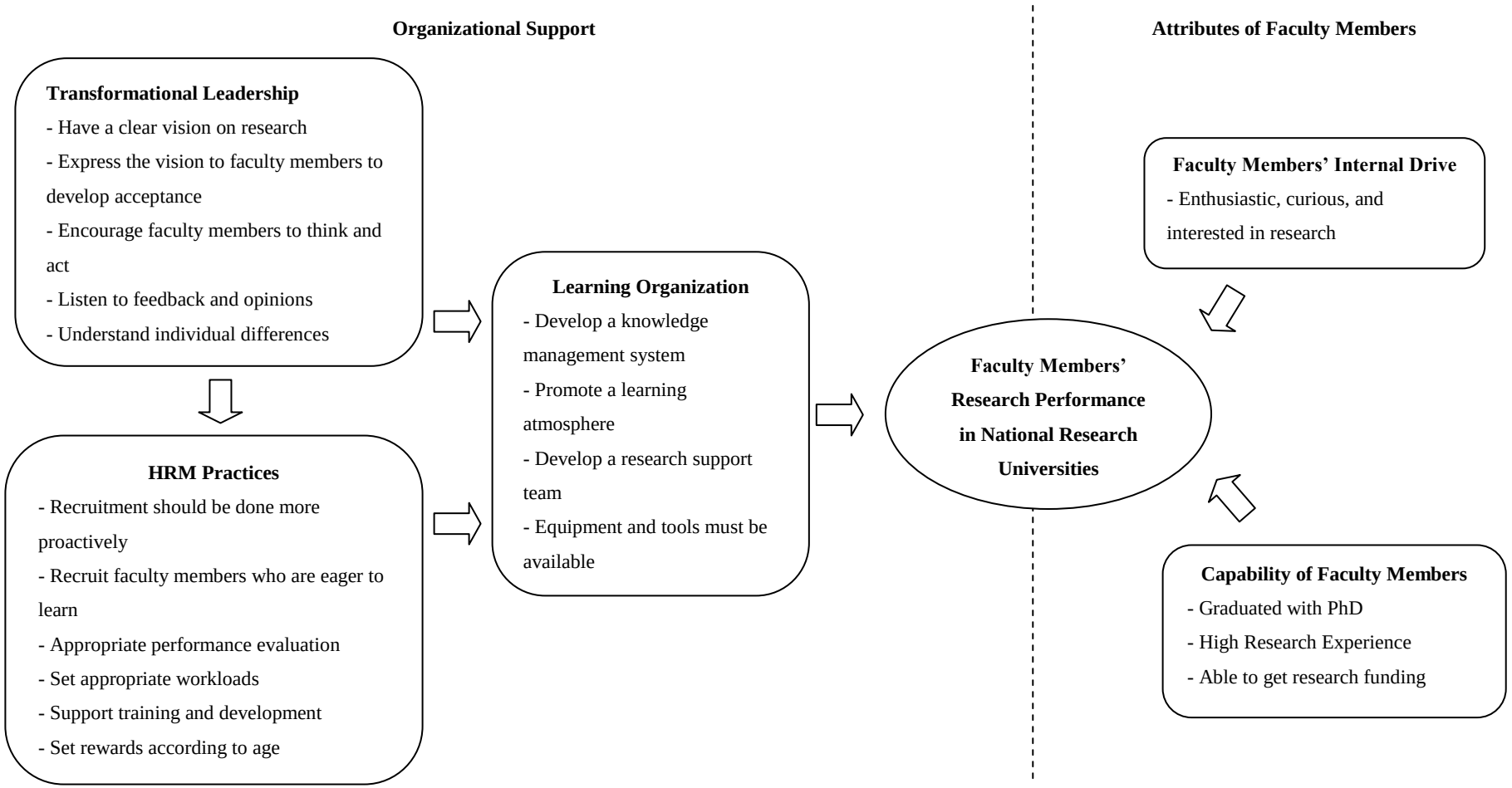

Figure 5.2 Model of Faculty Members' Research Performance in National Research Universities from Siripapun Leephaijaroen's Viewpoint

From Figure 5.2, it can be explained that the development of research performance of faculty members in National Research Universities consists of two main factors: 1) Attributes of faculty members which include internal drive and capabilities; and 2) Organizational support which starts from the management possessing transformational leadership that lead to appropriate HRM practices that are consistent with organizational objectives that include becoming a learning organization, and eventually resulting in better research performance. Based on this, from Siripapun Leephaijaroen's Model, we can develop the following recommendations:

1) The Attributes of Faculty Members- In order to improve the research performance, faculty members need to develop the following:

(1) Faculty Members' Internal Drive: Faculty members must have the enthusiasm, curiosity, and interest to do research from the start. So if the university can select faculty members with these attributes and retain them, it will improve the research performance of the university and allow for the objective of becoming a National Research University to be achieved.

(2) Capabilities of Faculty Members: Knowledge in research methodology is important and ideal candidates would be those with a PhD, much research experience, and success in applying for research grants. If universities can select these candidates and retain them, then it would have a positive effect on performance and allow the university to achieve its objective.

2) Organizational Support- In order to recruit, develop and retain faculty members who have the attitude and capabilities to do research, organizations will need to provide support for them. This should start from the management who should demonstrate transformational leadership, as explained below.

(1) Transformational Leadership: The management should demonstrate transformational leadership in order to manage the human resources of the university appropriately and according to the organizational objectives which will affect the research performance. The important characteristics of transformational leadership which the management should express are as follows:

a. Have a clear vision about how to improve research performance of faculty members.

b. The management vision has been expressed to faculty members who accept it and perform to achieve the objectives

c. Management encourages faculty members to think and act according to their responsibilities.

d. Management is open-minded and listens to faculty members' opinions.

e. Management understands the difference between individuals.

If management exhibits transformational leadership as mentioned above, it will help in setting up HRM practices and development of the university into a learning organization according to the university objectives and the needs of the faculty members.

(2) HRM Practices- The following are HRM practices which are deemed appropriate:

a. Faculty member recruitment should be proactive. Job announcement should be made from various educational institutions by focusing on approaching candidates who meet the criteria from an appropriate source.

b. Selected candidates should be eager to learn which reflects their internal drive, enthusiasm, curiosity, and desire to do research. This should be done by developing a standardized test to measure the enthusiasm and curiosity of the candidates together with the interview which explores their ability to learn. The interview should last no less than 30 minutes in order to fully assess the candidates.

c. Proper performance evaluation, especially formal performance evaluation, should be conducted and take into account the differences between social sciences and hard science subjects which need different evaluation criteria. Informal performance evaluation should be done by evaluators who are sincere and friendly. Evaluation for the probation period should be done seriously in order to keep only those with sufficient quality with the university.

d. Workloads for faculty members should be assigned at an appropriate level. An inappropriate portion of a workload devoted to academics can prevent them from doing research.

e. Support for training and development should be fully provided so that faculty members can attend academic conferences, observe good

practices, and attend training for new knowledge and tools for research according to their expertise. Also, faculty members should be supported to advance their careers. For example, support for PhD scholarships and application for academic positions should be provided.

f. Rewards and incentives are set according to the age and needs of faculty members. For example, younger faculty members may not have been with the university for long and their income may still be relatively low so that financial rewards may be more suitable. For more senior faculty members whose income may already be quite high, non-financial rewards may be more appropriate.

(3) Learning Organization- The university should develop to become a learning organization in order to increase the research performance as follows:

a. A knowledge management system should be developed in the organization by setting up a knowledge database which is useful, easily accessible and convenient.

b. An atmosphere which promotes learning should be created with the focus on promoting the sharing of ideas without prejudice, encouraging faculty members to do collaborative research with external organizations or networks, providing support for organization of university's academic conference every year, and promoting technical cooperation between departments, faculties, or universities.

c. A research support team should be provided to assist and advise the faculty members on research matters, especially on research methodology, in order to facilitate research and increase both productivity and quality of work. This will also reduce research mistakes and increase reliability.

d. Equipment, tools, and technology must be available, the quality must be sufficient, and the accuracy must be high when conducting experiments. 24-hour internet access should be provided with both basic and advanced software for faculty members to use in research.

5.4 Recommendations for Further Research

From the results of this study, the followings have been suggested for future research.

1) This study found that some variables have relatively little power in predicting the dependent variables. Therefore, there should be other variables included in future studies.

2) This study was conducted at the individual level through faculty members' perception and the study sample included only faculty members in National Research Universities. Therefore, future studies should conduct research at the organizational level and look at other universities as well.

3) In this study, overall university research performance of faculty members was examined without sub-dividing the faculties and therefore did not take into account the differences between faculties. Future research should separately examine the performance of faculty members in science faculties and social science faculties because they have different ways of doing research and different timelines leading to different measures of productivity. The subgroup analysis will provide clearer explanations and recommendations.

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APPENDICES

APPENDIX A

LIST OF EXPERTS WHO REVISED THE QUESYIONNAIRE

List of Experts Who Revised the Questionnaire

The questionnaire of "Model of Faculty Members' Research Performance in National Research Universities" was approved by 3 experts as follows:

1. Associate Professor Dr. Chindalak Vadhanasindhu
   Faculty of Public Administration, National Institute of Development Administration (NIDA)
2. Assistant Professor Dr. Kasemsarn Chotchakornpant
   Faculty of Public Administration, National Institute of Development Administration (NIDA)
3. Dr. Phayat Wuttirong
   Business Planning Manager, Siam Cement Group (SCG)

APPENDIX B

INDEX OF ITEM-OBJECTIVE CONGRUENCE (IOC) ANALYSIS

Index of Item-Objective Congruence (IOC) Analysis

Title: Model of Faculty Members' Research Performance in National Research Universities

Section 1 Perception of Transformational Leadership

No.	Item	Expert			Total	IOC
		1	2	3		
1.	You are proud to work with your direct supervisor.	+1	+1	+1	3	1
2.	Your direct supervisor is a good example for your work.	+1	+1	+1	3	1
3.	You have great respect for your direct supervisor.	+1	+1	+1	3	1
4.	You feel comfortable working with your direct supervisor.	+1	+1	+1	3	1
5.	Your direct supervisor frequently gives you work encouragement.	+1	+1	+1	3	1
6.	Your direct supervisor stimulates you so that you are enthusiastic about your work.	+1	+1	+1	3	1
7.	Your direct supervisor can motivate you to achieve your work objectives.	+1	+1	+1	3	1
8.	Your direct supervisor helps you understand about your work objectives.	+1	+1	+1	3	1
9.	Your direct supervisor always has a good logical solution to a problem.	+1	+1	+1	3	1
10.	Your direct supervisor always gives you good advice in your work.	+1	+1	+1	3	1

Section 1 (Continued)

No.	Item	Expert			Total	IOC
		1	2	3		
11.	Your direct supervisor always encourages you to think and find your own solution in your work.	+1	+1	+1	3	1
12.	Your direct supervisor always encourages you to think and find new ways to work.	+1	+1	+1	3	1
13.	Your direct supervisor cares about your needs.	+1	+1	+1	3	1
14.	Your direct supervisor acknowledges your problem when it arises.	+1	+1	+1	3	1
15.	Your direct supervisor gives your assistance when you have a problem.	+1	+1	+1	3	1
16.	Your direct supervisor cares about your safety.	+1	+1	+1	3	1

Section 2 Perception of Human Resource Management Practices

No.	Item	Expert			Total	IOC
		1	2	3		
1.	Your organization recruits faculty according to organizational objectives.	+1	+1	+1	3	1
2.	Your organization is able recruit staff with educational qualifications specified in the job opportunity announcement.	+1	+1	+1	3	1
3.	During the interview, the interviewer panel mainly asks the applicant about work.	+1	+1	+1	3	1
4.	Work experiences (especially in research) were considered when accepting you for your position.	+1	+1	+1	3	1

Section 2 (Continued)

No.	Item	Expert			Total	IOC
		1	2	3		
5.	Your organization has an evaluation system for successful applicants when they start working in their positions.	+1	+1	+1	3	1
6.	Your performance was formally evaluated.	+1	+1	+1	3	1
7.	Your performance is evaluated in a consistent manner.	+1	+1	+1	3	1
8.	Your organization has criteria for performance evaluation and clear key performance indicators.	+1	+1	+1	3	1
9.	Your performance is evaluated in a fair and transparent manner.	+1	+1	+1	3	1
10.	The result of your performance evaluation is useful for work improvement.	+1	+1	+1	3	1
11.	Your current wage is suitable to your roles and responsibilities.	+1	+1	+1	3	1
12.	Total compensation (include salary and other income) that you receive is consistent with your performance.	+1	+1	+1	3	1
13.	Your total compensation is considered to be high when compared with similar roles in other institutions.	+1	+1	+1	3	1
14.	Your organization gives you social recognition, compliments, and good reputations for staff with exceptional output.	+1	+1	+1	3	1
15.	You receive sufficient financial support for your training needs.	+1	+1	+1	3	1

Section 2 (Continued)

No.	Item	Expert			Total	IOC
		1	2	3		
16.	The training that you have done was consistent with organizational objectives.	+1	+1	+1	3	1
17.	You receive good support (time and resources) when applying for a higher academic position.	+1	+1	+1	3	1
18.	You have a clear training and development plan for each year.	+1	+1	+1	3	1

Section 3 Perception of Learning Organizations

No.	Item	Expert			Total	IOC
		1	2	3		
1.	You receive sufficient financial and resource support for your learning.	+1	+1	+1	3	1
2.	You feel that the problems you encounter in your work are an opportunity to learn.	+1	+1	+1	3	1
3.	You realize the skills that you need in your future work.	+1	+1	+1	3	1
4.	Your continuous learning is important to your organization.	+1	+1	+1	3	1
5.	You are expected to manage your learning and development.	+1	+1	+1	3	1
6.	Senior management supports the vision of being a learning organization.	+1	+1	+1	3	1
7.	Your organization has a positive environment which encourages learning and creates awareness of its importance.	+1	+1	+1	3	1

Section 3 (Continued)

No.	Item	Expert			Total	IOC
		1	2	3		
8.	Your organization has a developed process for knowledge sharing and promotional activities on learning, such as academic conferences and an academic journal.	+1	+1	+1	3	1
9.	You have the opportunities to learn from your work and other projects initiated by your organization.	+1	+1	+1	3	1
10.	You feel attached to continuous learning which can lead to work improvement and development.	+1	+1	+1	3	1
11.	You are well aware of the importance of learning.	+1	+1	+1	3	1
12.	Learning is an important factor in producing exceptional work.	+1	+1	+1	3	1
13.	You feel that learning is an investment.	+1	+1	+1	3	1
14.	Learning which can lead to work improvement is part of the basic values of your organization.	+1	+1	+1	3	1
15.	Learning is an important factor considered during performance audits and quality assurance in your organization.	+1	+1	+1	3	1
16.	Your organization looks for information which can improve organizational performance (especially in research).	+1	+1	+1	3	1
17.	You can access an information storage system from inside and outside the organization.	+1	+1	+1	3	1

Section 3 (Continued)

No.	Item	Expert			Total	IOC
		1	2	3		
18.	You are aware of the necessity for knowledge storage for future sharing with others.	+1	+1	+1	3	1
19.	Your organization fully supports the department and projects which generate new knowledge, including workshops, research, and academic services	+1	+1	+1	3	1
20.	You consistently receive training in skills related to research and creativity.	+1	+1	+1	3	1
21.	Your organization has database systems which are efficient, effective, and convenient for learning.	+1	+1	+1	3	1
22.	You can access the 'information highway' from a LAN and the internet and intranet with ease.	+1	+1	+1	3	1
23.	You can access the information that you need in order to work efficiently and effectively.	+1	+1	+1	3	1
24.	IT support within your organization helps you to learn and work better.	+1	+1	+1	3	1

Section 4 Research Performance

No.	Item	Expert			Total	IOC
		1	2	3		
1.	You have developed your knowledge in research to continuously increase your capacity in research.	+1	+1	+1	3	1

Section 4 (Continued)

No.	Item	Expert			Total	IOC
		1	2	3		
2.	You have consistently produced research output which improves existing knowledge or helps solve problems at societal/community/national levels.	+1	+1	+1	3	1
3.	You consistently supervise research projects for students and other researchers.	+1	+1	+1	3	1
4.	You are consistently involved in research as a partner with other researchers, organizations, or research networks.	+1	+1	+1	3	1
5.	You have consistently disseminated your research in acceptable source/media at the national or international level.	+1	+1	+1	3	1
6.	The number of domestic research publications you have had within the last 3 years_____	+1	0	+1	3	0.67
7.	The number of international research publications you have had within the last 3 years_____	+1	0	+1	3	0.67
8.	The number of research projects in which you were a major researcher in the last 3 years_____	+1	+1	+1	3	1
9.	The number of research projects in which you were a co-researcher in the last 3 years _____	+1	+1	+1	3	1
10.	The number of research awards that you received in the last 3 years_____	+1	+1	+1	3	1

Section 4 (Continued)

No.	Item	Expert			Total	IOC
		1	2	3		
11.	The number of patents granted you domestically and in other countries_____	+1	0	+1	3	0.67
12.	How do you rate your previous research performance? (Please rate between score 1-10) _____	+1	+1	+1	3	1

APPENDIX C

QUESTIONNAIRE IN THAI VERSION

แบบสอบถาม

เรื่อง ตัวแบบผลการปฏิบัติงานด้านการวิจัยของอาจารย์มหาวิทยาลัยวิจัยแห่งชาติ

ด้วยข้าพเจ้า น.ส.สิริภาพรรณ ลี้ภัยเจริญ นักศึกษาระดับปริญญาเอก สาขาวิชาการบริหารทรัพยากรมนุษย์ คณะรัฐประศาสนศาสตร์ สถาบันบัณฑิตพัฒนบริหารศาสตร์ ได้รับการอนุมัติให้ทำวิทยานิพนธ์เรื่อง ตัวแบบผลการปฏิบัติงานด้านการวิจัยของอาจารย์มหาวิทยาลัยวิจัยแห่งชาติ โดยมี รองศาสตราจารย์ ดร. จินดาลักษณ์ วัฒนสินธุ์ และผู้ช่วยศาสตราจารย์ ดร. เกษมศานต์ โชติชาครพันธุ์ เป็นคณะกรรมการควบคุมการทำวิทยานิพนธ์ ซึ่งข้าพเจ้ามีความจำเป็นที่จะต้องเก็บข้อมูลเพื่อใช้ในการวิจัยจากหน่วยงานของท่าน จึงใคร่ขอความอนุเคราะห์จากท่านช่วยกรุณาตอบแบบสอบถามที่แนบมานี้ โดยผลที่ได้จากแบบสอบถามจะนำไปใช้ในการทำวิจัยเท่านั้น และจะไม่มีผลกระทบเสียหายใด ๆ ต่อตัวท่านหรือหน่วยงานของท่านแต่อย่างใด

ผู้วิจัยขอขอบพระคุณท่านที่กรุณาสละเวลาในการตอบแบบสอบถามมา ณ โอกาสนี้

สิริภาพรรณ ลี้ภัยเจริญ

หมายเหตุ: ขอความอนุเคราะห์ท่านส่งแบบสอบถามกลับคืนภายในวันที่ 20 กุมภาพันธ์ 2556

ID_____

แบบสอบถาม

คำชี้แจง: แบบสอบถามชุดนี้มีทั้งหมด 5 หน้า โดยมีวัตถุประสงค์เพื่อต้องการทดสอบอิทธิพลของการรับรู้ภาวะผู้นำการเปลี่ยนแปลง การรับรู้วิธีปฏิบัติด้านการบริหารทรัพยากรมนุษย์ และการรับรู้การเป็นองค์การแห่งการเรียนรู้ ที่มีต่อผลการปฏิบัติงานด้านการวิจัยของอาจารย์มหาวิทยาลัยวิจัยแห่งชาติ มิได้มีวัตถุประสงค์เพื่อทำการประเมินความสามารถของตัวบุคคลหรือหน่วยงานแต่อย่างใด ดังนั้นการตอบคำถามอย่างถูกต้องตามความเป็นจริงจึงไม่ส่งผลใด ๆ ต่อตัวบุคคลหรือหน่วยงาน ซึ่งผู้วิจัยขอรับรองว่าคำตอบของท่านจะถูกรักษาเป็นความลับและไม่สามารถระบุตัวตนหรือหน่วยงานของท่านได้ และจะทำการรายงานผลในภาพรวมเท่านั้น

ตอนที่ 1 ข้อมูลส่วนบุคคล

คำชี้แจง โปรดทำเครื่องหมาย ✓ลงในช่อง ☐ หรือเติมคำในช่องว่างที่กำหนดให้

1. เพศ ☐ ชาย ☐ หญิง
2. อายุ _____ ปี
3. สถานการณ์จ้างงาน ☐ ข้าราชการ ☐ พนักงานในสถาบันอุดมศึกษา (วิชาการ)
4. อายุงาน (ระยะเวลารวมที่ปฏิบัติงาน ณ หน่วยงานต้นสังกัดในปัจจุบัน) _____ ปี
5. วุฒิการศึกษาสูงสุดของท่าน ☐ ปริญญาตรี ☐ปริญญาโท ☐ ปริญญาเอก
6. ประสบการณ์การทำวิจัย _____ ปี
7. ตำแหน่งทางวิชาการ ☐อาจารย์ ☐ ผู้ช่วยศาสตราจารย์
   ☐รองศาสตราจารย์ ☐ ศาสตราจารย์
8. รายได้รวมเฉลี่ยต่อเดือน (เงินเดือนหลัก รายได้พิเศษจากการสอน วิจัย และบริการวิชาการ) _____ บาท

ตอนที่ 2 การรับรู้ภาวะผู้นำการเปลี่ยนแปลง

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงในช่องคำตอบที่ตรงกับความคิดเห็นของท่าน

การรับรู้ภาวะผู้นำการเปลี่ยนแปลง	ระดับความคิดเห็น				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1. ท่านภูมิใจที่ได้ร่วมงานกับผู้บังคับบัญชาของท่าน					
2. ผู้บังคับบัญชาของท่านเป็นตัวอย่างที่ดีในการทำงาน					
3. ผู้บังคับบัญชาของท่านทำให้ท่านเกิดความนับถือศรัทธา					
4. ผู้บังคับบัญชาทำให้ท่านเกิดความรู้สึกสบายใจเมื่อได้ร่วมงานด้วย					
5. ผู้บังคับบัญชาให้กำลังใจในการทำงานแก่ท่านเสมอ					

ตอนที่ 2 (ต่อ)

การรับรู้ภาวะผู้นำการเปลี่ยนแปลง	ระดับความคิดเห็น				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
6. ผู้บังคับบัญชากระตุ้นให้ท่านทำงานด้วยความกระตือรือร้นเสมอ					
7. ผู้บังคับบัญชาสามารถพูดจูงใจให้ท่านทำงานได้สำเร็จตามเป้าหมาย					
8. ผู้บังคับบัญชาทำให้ท่านเข้าใจถึงเป้าหมายของการทำงาน					
9. ผู้บังคับบัญชามีแนวทางแก้ปัญหาด้วยเหตุและผลที่ดีเสมอ					
10. ผู้บังคับบัญชาให้คำปรึกษาชี้แนะแนวทางที่ดีในการทำงานแก่ท่านเสมอ					
11. ผู้บังคับบัญชากระตุ้นให้ท่านหาวิธีแก้ไขปัญหาในการทำงานเสมอ					
12. ผู้บังคับบัญชากระตุ้นให้ท่านใช้ความคิดและหาวิธีการใหม่ ๆ ในการทำงานเสมอ					
13. ผู้บังคับบัญชาใส่ใจรับรู้ความต้องการของท่าน					
14. ผู้บังคับบัญชารับรู้ปัญหาของท่านเมื่อท่านมีปัญหา					
15. ผู้บังคับบัญชาให้ความช่วยเหลือแก้ปัญหาเวลาที่ท่านมีปัญหา					
16. ผู้บังคับบัญชามีความห่วงใยต่อสวัสดิภาพของท่าน					

ตอนที่ 3 การรับรู้วิธีปฏิบัติด้านการบริหารทรัพยากรมนุษย์

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงในช่องคำตอบที่ตรงกับความคิดเห็นของท่าน

การรับรู้วิธีปฏิบัติด้านการบริหารทรัพยากรมนุษย์	ระดับความคิดเห็น				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1. องค์การของท่านคัดเลือกบุคลากรได้สอดคล้องกับเป้าหมายขององค์การ					
2. องค์การของท่านรับบุคลากรที่มีวุฒิการศึกษาตรงตามที่ประกาศรับสมัครงาน					
3. ในการสัมภาษณ์งาน กรรมการผู้สัมภาษณ์ถามคำถามที่เกี่ยวข้องกับเรื่องงานเป็นหลัก					
4. ประสบการณ์ในการทำงาน (โดยเฉพาะการทำวิจัย) รวมอยู่ในการพิจารณาให้ท่านเข้าดำรงตำแหน่ง					
5. องค์การมีระบบการประเมินผลให้ผู้สมัครเข้าดำรงตำแหน่งอย่างเป็นทางการ					
6. ท่านได้รับการประเมินผลการปฏิบัติงานอย่างเป็นทางการ					

ตอนที่ 3 (ต่อ)

การรับรู้วิธีปฏิบัติด้านการบริหารทรัพยากรมนุษย์	ระดับความคิดเห็น				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
7. ท่านได้รับการประเมินผลการปฏิบัติงานอย่างสม่ำเสมอ					
8. องค์การมีเกณฑ์การประเมินผลการปฏิบัติงานและมีตัวชี้วัดที่ชัดเจน					
9. ท่านได้รับการประเมินผลการปฏิบัติงานด้วยความโปร่งใสและเป็นธรรม					
10. ข้อมูลจากการประเมินผลการปฏิบัติงานช่วยให้ท่านพัฒนาการทำงานได้ดียิ่งขึ้น					
11. เงินเดือนที่ท่านได้รับมีความเหมาะสมกับหน้าที่และความรับผิดชอบ					
12. ค่าตอบแทนโดยรวม (เงินเดือนหลักและค่าตอบแทนอื่น ๆ) ที่ท่านได้รับสัมพันธ์กับผลการปฏิบัติงานของท่าน					
13. ท่านได้รับค่าตอบแทนโดยรวมจากองค์การอยู่ในระดับที่สูง เมื่อเปรียบเทียบกับงานลักษณะเดียวกันของมหาวิทยาลัยอื่น ๆ					
14. องค์การให้การยอมรับทางสังคม คำชมเชย และชื่อเสียง สำหรับบุคลากรที่มีผลงานดีเด่น					
15. ท่านได้รับการสนับสนุนงบประมาณการฝึกอบรมอย่างเพียงพอกับความต้องการในการฝึกอบรม					
16. ท่านได้รับการฝึกอบรมที่สอดคล้องกับเป้าหมายขององค์การ					
17. ท่านได้รับการสนับสนุนด้านเวลาและทรัพยากรในการขอตำแหน่งทางวิชาการเป็นอย่างดี					
18. ท่านมีการกำหนดแผนการฝึกอบรมในแต่ละปีอย่างชัดเจน					

ตอนที่ 4 การรับรู้การเป็นองค์การแห่งการเรียนรู้

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงในช่องคำตอบที่ตรงกับความคิดเห็นของท่าน

การรับรู้การเป็นองค์การแห่งการเรียนรู้	ระดับความคิดเห็น				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1. ท่านได้รับการสนับสนุนด้านการเงินและทรัพยากรอย่างเพียงพอสำหรับการเรียนรู้					
2. ท่านมองว่าปัญหาในการทำงานคือโอกาสในการเรียนรู้					
3. ท่านทราบว่าตนเองต้องมีทักษะที่จำเป็นอะไรบ้างสำหรับการทำงานในอนาคต					

ตอนที่ 4 (ต่อ)

การรับรู้การเป็นองค์การแห่งการเรียนรู้	ระดับความคิดเห็น				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
4. การเรียนรู้อย่างต่อเนื่องของท่านมีความสำคัญต่อองค์การเป็นอย่างยิ่ง					
5. ท่านถูกคาดหวังให้บริหารการเรียนรู้และพัฒนาตนเอง					
6. ผู้บริหารระดับสูงสนับสนุนวิสัยทัศน์ในการเป็นองค์การแห่งการเรียนรู้					
7. องค์การมีบรรยากาศที่สนับสนุนและตระหนักถึงความสำคัญของการเรียนรู้					
8. องค์การมีการออกแบบวิธีการแบ่งบันความรู้และส่งเสริมการเรียนรู้ เช่น การจัดประชุมวิชาการ และการจัดพิมพ์วารสารวิชาการ เป็นต้น					
9. ท่านมีโอกาสในการเรียนรู้จากการปฏิบัติงานและจากโครงการต่าง ๆ ที่องค์การจัดขึ้น					
10. ท่านมีความผูกพันต่อการเรียนรู้อย่างต่อเนื่องเพื่อการปรับปรุงและพัฒนา					
11. ท่านตระหนักดีว่าการเรียนรู้มีความสำคัญเป็นอย่างยิ่ง					
12. การเรียนรู้เป็นปัจจัยสำคัญในการผลิตผลงานที่ดีเลิศ					
13. การเรียนรู้ของท่านถือเป็นการลงทุน ไม่ใช่ค่าใช้จ่ายที่เปล่าประโยชน์					
14. การเรียนรู้เพื่อการปรับปรุงผลการปฏิบัติงานเป็นส่วนหนึ่งของค่านิยมพื้นฐานขององค์การ					
15. การเรียนรู้เป็นปัจจัยที่สำคัญในการรับประกันคุณภาพผลการปฏิบัติงานขององค์การ					
16. องค์การมีการแสวงหาข้อมูลที่จะทำให้ผลการปฏิบัติงาน (โดยเฉพาะด้านการวิจัย) ขององค์การดีขึ้น					
17. ท่านสามารถเข้าสู่ระบบการจัดเก็บข้อมูลจากภายนอกและภายในองค์การได้ง่าย					
18. ท่านตระหนักถึงความจำเป็นในการเก็บรักษาและแบ่งปันความรู้กับผู้อื่น					
19. องค์การให้การสนับสนุนหน่วยงานและโครงการที่สร้างสรรค์ความรู้ เช่น การฝึกอบรม การวิจัย การบริการวิชาการ เป็นต้น อย่างเต็มที่					
20. ท่านได้รับการฝึกอบรมทักษะที่เกี่ยวข้องกับการทำวิจัยหรือการคิดสร้างสรรค์อย่างสม่ำเสมอ					
21. องค์การมีระบบฐานข้อมูลที่มีประสิทธิภาพและประสิทธิผลสำหรับอำนวยความสะดวกในการเรียนรู้					

ตอนที่ 4 (ต่อ)

การรับรู้การเป็นองค์การแห่งการเรียนรู้	ระดับความคิดเห็น				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
22. ท่านสามารถเข้าถึงทางด่วนข้อมูลได้โดยผ่านทาง LAN อินเตอร์เน็ต อินทราเน็ต ได้อย่างสะดวก รวดเร็ว					
23. ท่านสามารถเข้าถึงข้อมูลที่ท่านต้องการเพื่อให้สามารถปฏิบัติงานได้อย่างมีประสิทธิภาพ					
24. ระบบสนับสนุนการปฏิบัติงานอิเล็กทรอนิกส์ขององค์การ ช่วยทำให้ท่านสามารถเรียนรู้และทำงานได้ดียิ่งขึ้น					

ตอนที่ 5 ผลการปฏิบัติงานด้านการวิจัย

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงในช่องคำตอบที่ตรงกับความคิดเห็นของท่าน และเติมคำในช่องว่าง

ผลการปฏิบัติงานด้านการวิจัย	ระดับการปฏิบัติ				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1. ท่านมีการพัฒนาความรู้เกี่ยวกับการวิจัยเพื่อเพิ่มขีดความสามารถในการทำวิจัยอย่างต่อเนื่อง					
2. ท่านมีผลงานวิจัยที่ให้ความรู้ใหม่ที่ช่วยพัฒนาองค์ความรู้ หรือช่วยแก้ปัญหาของสังคม/ชุมชน/ประเทศ อย่างสม่ำเสมอ					
3. ท่านเป็นที่ปรึกษางานวิจัยให้กับนักศึกษาหรือบุคคลทั่วไปอย่างสม่ำเสมอ					
4. ท่านมีส่วนในการดำเนินการวิจัยร่วมกับบุคคล องค์การ หรือเครือข่ายนักวิจัย อย่างสม่ำเสมอ					
5. ท่านได้เผยแพร่ผลงานวิจัยที่ทำในแหล่งที่เป็นที่ยอมรับทั้งในระดับชาติหรือนานาชาติอย่างสม่ำเสมอ					

6. จำนวนผลงานตีพิมพ์ระดับชาติของท่านในระยะเวลา 3 ปีที่ผ่านมา _____ชิ้น

7. จำนวนผลงานตีพิมพ์ระดับนานาชาติของท่านในระยะเวลา 3 ปีที่ผ่านมา_____ชิ้น

8. จำนวนผลงานที่ท่านเป็นนักวิจัยหลักในระยะเวลา 3 ปีที่ผ่านมา _____ชิ้น

9. จำนวนผลงานที่ท่านเป็นนักวิจัยร่วมในระยะเวลา 3 ปีที่ผ่านมา _____ชิ้น

10. จำนวนผลงานวิจัยที่ได้รับรางวัลของท่านในระยะเวลา 3 ปีที่ผ่านมา _____ชิ้น

11. จำนวนสิทธิบัตรที่ได้รับสิทธิ์แล้วทั้งในและต่างประเทศของท่าน _____ชิ้น

12. ถ้าให้คะแนนความพึงพอใจในผลการปฏิบัติงานด้านการวิจัยของท่าน ระหว่าง 0 – 10 คะแนน ท่านจะให้คะแนน_____คะแนน

****ขอขอบพระคุณสำหรับความร่วมมือและการสละเวลาอันมีค่าของท่านในการตอบแบบสอบถาม****

APPENDIX D

QUESTIONNAIRE IN ENGLISH VERSION

Questionnaire

Model of Faculty Members' Research Performance in National Research Universities

I, Miss Siripapun Leephaijaroen, have been approved for a dissertation on "Model of Faculty Members' Research Performance in National Research Universities" as monitored by Associate Professor Dr. Chindalak Vadhanasindhu and Assistant Professor Dr. Kasemsarn Chotchakornpant who are part of the Dissertation Monitoring Committee. It is necessary for me to collect primary data from your organization for the purpose of conducting research and I would like to ask for your assistance in answering this questionnaire. The information that you provide will only be used for this research and it will not be used in any way to create negative impact on you or your organization.

The researchers would like to thank you for taking the time to answer this questionnaire.

Siripapun Leephaijaroen

Notes: Please kindly return the questionnaire that you complete by 20 February 2013.

ID_____

Questionnaire

Instruction: The questionnaire consists of eight pages and aim to test the effect of faculty members' qualifications, their perception of transformational leadership, human resources management practices and learning organization on their research performance in National Research Universities. The questionnaire is not intended for evaluating any individual or organization. Therefore, by truthfully completing this questionnaire, the respondents or the organization will not be affected and the researcher will keep the information provided confidential and no individual or organization will be identifiable in the research.

Section 1 Personal Information

Instruction Please tick ✓ in the box as appropriate or fill in the blank

1. Gender
   ☐ Male ☐ Female
2. Age _____ years
3. Employment Status
   ☐ Civil Servant ☐ University Employee (Academic)
4. Years with current university _____ years
5. Education Qualifications
   ☐ Bachelor Degree ☐ Master Degree ☐ Doctoral Degree
6. Research Experience _____ Years
7. Academic Position
   ☐ Lecturer ☐ Assistant Professor
   ☐ Associate Professor ☐ Professor
8. Total Monthly Income (Basic wage, Additional income from teaching, research and academic service) _____ baht.

Section 2 Perception of Transformational Leadership

Instruction Please tick ✓ in the box according to your opinion

Perception of Transformational Leadership	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. You are proud to work with your direct supervisor.					
2. Your direct supervisor is a good example for your work.					
3. You have great respect on your direct supervisor.					
4. You feel comfortable working with your direct supervisor.					
5. Your direct supervisor frequently gives you work encouragement.					
6. Your direct supervisor stimulates you so that you are enthusiastic about your work.					
7. Your direct supervisor can motivate you to achieve your work objectives.					
8. Your direct supervisor makes you understand about your work objectives.					
9. Your direct supervisor always has good logical solution to a problem.					
10. Your direct supervisor always gives you good advice in your work.					
11. Your direct supervisor always encourages you to think and find your own solution in your work.					
12. Your direct supervisor always encourages you to think and find new ways to work.					
13. Your direct supervisor care about your needs.					

Section 2 (Continued)

Perception of Transformational Leadership	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
14. Your direct supervisor acknowledges your problem when it arises.					
15. Your direct supervisor gives your assistance when you have a problem.					
16. Your direct supervisor cares about your safety.					

Section 3 Perception of Human Resources Management Practices

Instruction Please tick ✓ in the box according to your opinion

Perception of Human Resources Management Practices	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. Your organization recruits faculty according to organizational objectives.					
2. Your organization is able recruit staff with educational qualifications specified in the job opportunity announcement.					
3. During the interview, the interview panel mainly asks the applicant about work.					
4. Work experience (especially in research) was considered when accepting you for your position.					
5. Your organization has an evaluation system for successful applicants when they start working in their position.					

Section 3 (Continued)

Perception of Human Resources Management Practices	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
6. Your performance was formally evaluated.					
7. Your performance is evaluated in a consistent manner.					
8. Your organization has criteria for performance evaluation and clear key performance indicators.					
9. Your performance is evaluated in a fair and transparent manner.					
10. The result of your performance evaluation is useful for work improvement.					
11. Your current wage is suitable to your roles and responsibilities.					
12. Total compensation (include salary and other income) that you receive is consistent with your performance.					
13. Your total compensation is considered to be high when compared with similar roles in other institutions.					
14. Your organization gives you social recognition, compliments, and supports a good reputation for staff with exceptional output.					
15. You receive sufficient financial support for your training needs.					
16. The training that you have done was consistent with organizational objectives.					
17. You receive good support (time and resources) when applying for a higher academic position.					

Section 3 (Continued)

Perception of Human Resources Management Practices	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
18. You have a clear training and development plan for each year.					

Section 4 Perception of Learning Organization

Instruction Please tick ✓ in the box according to your opinion

Perception of Learning Organization	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. You receive sufficient financial and resource support for your learning.					
2. You feel that the problems you encounter in your work are an opportunity to learn.					
3. You realize the skills that you need in your future work.					
4. Your continuous learning is important to your organization.					
5. You are expected to manage your learning and development.					
6. Senior management supports the vision of being a learning organization.					
7. Your organization has positive environment which encourages learning and creating awareness on its importance.					

Section 4 (Continued)

Perception of Learning Organization	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
8. Your organization has developed a process for knowledge sharing and promotional activities on learning, such as academic conferences and an academic journal.					
9. You have the opportunities to learn from your work and other projects initiated by your organization.					
10. You feel attached to continuous learning which can lead to development and work improvement.					
11. You are well aware of the importance of learning.					
12. Learning is an important factor in producing exceptional work.					
13. You feel that learning is an investment.					
14. Learning which can lead to work improvement is part of the basic values of your organization.					
15. Learning is an important factor considered during performance audits and quality assurance in your organization.					
16. Your organization looks for information which can improve organizational performance (especially in research).					
17. You can access an information storage system from inside and outside the organization.					
18. You are aware of the necessity for knowledge storing for future sharing with others.					

Section 4 (Continued)

Perception of Learning Organization	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
19. Your organization fully supports the department and projects which generate new knowledge, such as workshops, research, and academic services.					
20. You consistently receive training in skills related to research and creativity.					
21. Your organization has database systems which are efficient, effective, and convenient for learning.					
22. You can access the 'information highway' from a LAN, the internet, and intranet with ease.					
23. You can access the information that you need in order to work efficiently and effectively.					
24. IT support within your organization helps you to learn and work better.					

Section 5 Research Performance

Instruction Please tick ✓ in the box according to your opinion

Research Performance	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. You have developed your knowledge in research to continuously increase your capacity in research.					

Section 5 (Continued)

Research Performance	Opinion				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
2. You have consistently produced research output which improves existing knowledge or helps in solving problems at societal/community/national levels.					
3. You consistently supervise research projects for students and other researchers.					
4. You are consistently involved in research as a partner with other researchers, organizations, or research networks.					
5. You have consistently disseminated your research in acceptable sources/media at national or international levels.					

6. The number of your domestic research publications within the last 3 years _____

7. The number of your international research publications within the last 3 years_____

8. The number of research projects on which you were a major researcher in the last 3 years_____

9. The number of research projects on which you were a co-researcher in the last 3 years _____

10. The number of research awards that you have received in the last 3 years _____

11. The number of patents granted you domestically and in other countries_____

12. How do you rate your previous research performance? (Please rate between score 1-10) _____

Thank You Very Much

APPENDIX E

EXPLORATORY FACTOR ANALYSIS

Exploratory Factor Analysis (EFA)

The researcher collected data on the perceptions of transformational leadership, HRM practices, learning organization, and research performance from 390 respondents in 9 National Research Universities. The collected data was examined by Exploratory Factor Analysis (EFA) and using Principal Component Extraction in order to determine number of components in each factor which must have an eigenvalue more than 1. In general, the first time, factor extraction is always ambiguous in what variable is a member of what component (Suchart Prasit-Rathsint, 2008). Therefore, the researcher used Varimax Rotation Principal Component Extraction technique to clearly classify about what variable is a member of what component, and factor loading in each variable is accepted when it is 0.4 or higher. The results are shown in Table E1 – E4.

Table E.1 EFA Results of Perception of Transformational Leadership

Items	Mean	S.D.	Component
			1
IDEAL2	3.76	.82	.878
INSPIR2	3.62	.87	.872
IDEAL3	3.68	.81	.871
INTELL2	3.56	.91	.869
INSPIR3	3.52	.88	.868
INTELL3	3.47	.87	.865
INDIV3	3.63	.90	.855
INSPIR1	3.65	.87	.847
INTELL1	3.64	.85	.846
INDIV1	3.50	.93	.839
INTELL4	3.44	.90	.838
IDEAL1	3.83	.78	.834
INDIV2	3.52	.91	.820
INDIV4	3.64	.89	.818
IDEAL4	3.75	.83	.816
INSPIR4	3.68	.80	.800
Eigenvalue	-	-	11.460
% of Variance	-	-	71.626
Cumulative %	-	-	71.626

From Table E1, it can be reported that if a number of components were not determined before, all items in this analysis can be combined to one component called transformational leadership component. This component included 16 items which were 1) your direct supervisor is a good example for your work (IDEAL2), 2) your direct supervisor stimulates you so that you are enthusiastic about your work (INSPIR2), 3) you have great respect for your direct supervisor (IDEAL3), 4) your direct supervisor always gives you good advice in your work (INTELL2), 5) your direct supervisor can motivate you to achieve your work objectives (INSPIR3), 6)

your direct supervisor always encourages you to think and find your own solutions in your work (INTELL3), 7) your direct supervisor gives your assistance when you have a problem (INDIV3), 8) your direct supervisor frequently gives you work encouragement (INSPIR1), 9) your direct supervisor always has good logical solutions to a problem (INTELL1), 10) your direct supervisor cares about your needs (INDIV1), 11) your direct supervisor always encourages you to think and find new ways to work (INTELL4), 12) you are proud to work with your direct supervisor (IDEAL1), 13) your direct supervisor acknowledges your problem when it arises (INDIV2), 14) your direct supervisor cares about your safety (INDIV4), 15) you feel comfortable working with your direct supervisor (IDEAL4) and 16) your direct supervisor helps you understand about your work objective (INSPIR4). In conclusion, transformational leadership components can explain all items at 71.627 percent.

Table E.2 EFA Results of Perception of HRM Practices

Items	Mean	S.D.	Components		
			1	**2**	**3**
P_MANAG1	4.11	.80	.845	.158	.117
P_MANAG2	4.14	.80	.837	.167	.133
P_MANAG3	3.92	.90	.810	.144	.223
R_SELEC5	3.92	.81	.727	.225	.063
P_MANAG4	3.79	.91	.719	.228	.312
R_SELEC2	4.05	.74	.580	.220	.128
R_SELEC1	3.58	.78	.560	.328	.190
P_MANAG5	3.50	.84	.546	.284	.363
TRAIN1	3.51	.93	.206	.815	.264
TRAIN2	3.56	.89	.318	.809	.210
TRAIN4	3.23	.95	.219	.722	.249
TRAIN3	3.46	.93	.301	.708	.332
R_COMP1	3.38	.94	.227	.286	.876
R_COMP2	3.45	.94	.224	.292	.874
R_COMP3	3.31	.97	.199	.300	.847
Eigenvalue	-	-	7.554	1.825	1.023
% of Variance	-	-	50.361	12.165	6.823
Cumulative %	-	-	50.361	62.526	69.349

From Table E2, it can be reported that if a number of components were not determined before, all of 15 items in this analysis can be combined to three components which can explain these items at 69.349 percent. Three components can explain below:

Recruitment and performance management was composed of eight items which were 1) your performance was formally evaluated (P_MANAG1), 2) your performance is evaluated in a consistent manner. (P_MANAG2), 3) your organization has criteria for performance evaluation and clear key performance indicators. (P_MANAG3), 4) your organization has an evaluation system for successful

applicants when they start working in their position (R_SELEC5), 5) your performance is evaluated in a fair and transparent manner. (P_MANAG4), 6) your organization is able recruit faculty with educational qualifications specified in the job opportunity announcement (R_SELEC2), 7) your organization recruits faculty according to organizational objectives (R_SELEC1) and 8) the result of your performance evaluation is useful for work improvement. (P_MANAG5). In conclusion, recruitment and performance management components can explain the variance of these items at 50.36 percent.

Training and development was composed of four items which were 1) you receive sufficient financial support for your training needs (TRAIN1), 2) the training that you have done was consistent with organizational objectives (TRAIN2), 3) you have a clear training and development plan for each year (TRAIN4) and 4) you receive good support (time and resource) when applying for a higher academic position (TRAIN3). In conclusion, training and development components can explain the variance of these items at 12.17 percent.

Rewards was composed of three items which were 1) your current wage is suitable to your roles and responsibilities (R_COMP1), 2) total compensation (including salary and other income) that you receive is consistent with your performance (R_COMP2) and 3) your total compensation is considered to be high when compared with similar roles in other institutions (R_COMP3). In conclusion, rewards component can explain the variance of these items at 6.82 percent.

Table E.3 EFA Results of Perception of Learning Organization

Items	Mean	S.D.	Components			
			1	2	3	4
O_TRAN2	3.62	.86	.779	.253	.086	.190
O_TRAN1	3.80	.85	.764	.121	.174	.281
O_TRAN3	3.83	.85	.764	.197	.105	.184
O_TRAN4	3.72	.78	.712	.204	.217	.130
K_MANAG4	3.93	.83	.662	.339	.248	.143
K_MANAG5	3.65	.86	.620	.384	.318	-.010
K_MANAG1	3.87	.83	.543	.270	.530	-.032
O_TRAN5	3.88	.74	.495	.261	.376	.264
T_APPLI3	3.86	.81	.189	.870	.122	.148
T_APPLI2	4.05	.82	.151	.815	.099	.198
T_APPLI4	4.06	.81	.242	.744	.144	.160
T_APPLI1	3.68	.84	.437	.652	.181	.054
K_MANAG2	3.54	.87	.374	.617	.316	-.033
COMMIT5	4.11	.72	.246	.096	.829	.108
COMMIT4	4.05	.78	.278	.106	.718	.177
K_MANAG3	4.15	.67	.176	.266	.633	.240
COMMIT3	4.46	.63	-.033	.174	.617	.492
C_LEARN4	4.27	.63	.185	.065	.277	.775
C_LEARN3	4.10	.62	.161	.221	.132	.727
C_LEARN5	3.93	.73	.463	.077	.102	.600
Eigenvalue	-	-	8.815	1.761	1.442	1.167
% of Variance	-	-	44.077	8.807	7.211	5.835
Cumulative %	-	-	44.077	52.884	60.095	65.930

From Table E3, it can reported that if a number of components were not determined before, all of the 20 items in this analysis can be combined to four components which can explain these items at 65.93 percent. Four components can explain below:

Organizational transformation and knowledge management was composed of eight items which were 1) your organization has a positive environment which encourages learning and creates awareness of its importance (O_TRAN2), 2) Senior management supports the vision of being a learning organization (O_TRAN1), 3) your organization has developed a process for knowledge sharing and promotional activities on learning, such as academic conferences and an academic journal (O_TRAN3), 4) you have the opportunities to learn from your work and other projects initiated by your organization (O_TRAN4), 5) your organization fully supports the department and projects which generate new knowledge, such as workshops, research, academic services (K_MANAG4), 6) you consistently receive training in skills related to research and creativity (K_MANAG5), 7) your organization looks for information which can improve organizational performance (especially in research) (K_MANAG1) and 8) you feel attached to continuous learning which can lead to work improvement and development (O_TRAN5). In conclusion, organization transformation and knowledge management component can explain the variance of these items at 44.08 percent.

Technology application was composed of five items which were 1) you can access the information that you need in order to work efficiently and effectively (T_APPLI3), 2) you can access the 'information highway' from a LAN, the internet, and intranet with ease (T_APPLI2), 3) IT support within your organization helps you to learn and work better (T_APPLI4), 4) your organization has database systems which are efficient, effective, and convenient for learning (T_APPLI1) and 5) you can access an information storage system from inside and outside the organization (K_MANAG2). In conclusion, the technology application component can explain the variance of these items at 8.81 percent.

Commitment to learning was composed of four items which were 1) learning is an important factor considered during performance audits and quality assurance in your organization (COMMIT5), 2) learning which can lead to work improvements is part of the basic values of your organization (COMMIT4), 3) you are aware of the necessity for knowledge storage for future sharing with others (K_MANAG3) and 4) you feel that learning is an investment (COMMIT3). In conclusion, commitment to learning component can explain the variance of these items at 7.21 percent.

Creating continuous learning opportunities was composed of three items which were 1) your continuous learning is important to your organization (C_LEARN4), 2) you realize the skills that you need in your future work (C_LEARN3) and 3) you are expected to manage your learning and development (C_LEARN5). In conclusion, creating continuous learning opportunities component can explain the variance of these items at 5.84 percent.

Table E.4 EFA Results of Faculty Member's Research Performance

Items	Mean	S.D.	Component
			1
R_PERF2	3.66	.81	.866
R_PERF4	3.66	.84	.850
R_PERF5	3.56	.90	.834
R_PERF3	3.72	.88	.766
R_PERF1	3.88	.75	.751
Eigenvalue	-	-	3.318
% of Variance	-	-	66.369
Cumulative %	-	-	66.369

From Table E4, it can be reported that if a number of components were not determined before, all items in this analysis can be combined to one component called faculty member's research performance component. This component included five items which were 1) you have consistently produced research output which improves existing knowledge or helps in solving problems at societal/community/national level (R_PERF2), 2) you are consistently involved in research as a partner with other researchers, organizations or research networks (R_PERF4), 3) you have consistently disseminated your research in acceptable source/media at the national or international level (R_PERF5), 4) you consistently supervise research projects for students and other researchers. (R_PERF3) and 5) you have developed your knowledge in research to continuously increase your capacity in research (R_PERF1). In conclusion, faculty

member’s research performance component can explain the variance of these items at 66.37 percent.

APPENDIX F

INTERVIEW OUTLINE

Interview Outline

Issue 1 The effect of faculty members' qualifications on their research performance

1.1 Why do faculty members' qualifications, such as education, research experience, academic position, and income have effects on their research performance?

Issue 2 The effect of faculty members' perceptions of transformational leadership on their perceptions of human resource management practices

2.1 Why does transformational leadership have an effect on faculty recruitment?

2.2 Why does transformational leadership have an effect on rewards?

2.3 Why does transformational leadership have an effect on performance management?

2.4 Why does transformational leadership have an effect on training and development?

Issue 3 The effect of faculty members' perceptions of transformational leadership on their perceptions of learning organization

3.1 Why does transformational leadership have an effect on organization transformation and knowledge management?

Issue 4 The effect of faculty members' perceptions of human resource management practices on their perceptions of learning organization

(Factors affecting organizational transformation and knowledge management)

4.1 Why does faculty recruitment have an effect on organizational transformation and knowledge management?

4.2 Why does performance management have an effect on organizational transformation and knowledge management?

4.3 Why does training and development have an effect on organizational transformation and knowledge management?

(Factors affecting technology application)

4.4 Why does faculty recruitment have an effect on technology application?

4.5 Why does performance management have an effect on technology application?

4.6 Why do rewards have an effect on technology application?

4.7 Why does training and development have an effect on technology application?

(Factors affecting the creation of continuous learning opportunities)

4.8 Why does faculty recruitment have an effect on creating continuous learning opportunities?

4.9 Why does performance management have an effect on creating continuous learning opportunities?

4.10 Why does training and development have an effect on creating continuous learning opportunities?

Issue 5 The effect of faculty members' perceptions of learning organizations on their research performance

5.1 Why does organizational transformation and knowledge management have an effect on faculty members' research performance?

5.2 Why does technology application have an effect on faculty members' research performance?

5.3 Why does the creation of continuous learning opportunities have an effect on faculty members' research performance?

BIOGRAPHY

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