

ABSTRACT

Name: Hae-Young Lee

Department: Counseling, Adult and Higher
Education

Title: Department Chairs' Perceptions of Knowledge Management Strategies in
Colleges of Education: Measurement of Performance and Importance by
Organizational Factors

Major: Adult Higher Education

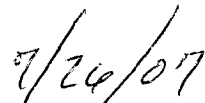
Degree: Doctor of Education

Approved by:

Date:



Dissertation Director



NORTHERN ILLINOIS UNIVERSITY

ABSTRACT

In order to address and overcome challenges that higher education institutions confront, it is critical for higher education institutions to embrace and recognize the applicability and implication of knowledge management. Knowledge management helps establish a comprehensive framework for developing leadership, creating an organizational culture, applying existing technologies to an organization, and increasing awareness of the importance of measurement for decision making.

The purpose of this study was to: (a) assess the perceptions of academic department chairs in colleges of education of performance of knowledge management strategies, (b) examine the perceptions of department chairs of the importance of knowledge management strategies, and (c) identify organizational factors that may differ in knowledge management strategies in perceptions of performance and perceptions of importance.

Two research questions guided this inquiry: (1) how academic department chairs in colleges of education differ in their perceptions of performance of their departments based on the applications of knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors, and (2) how academic department chairs in colleges of education differ in their perceptions of the importance of knowledge management strategies by organizational factors.

This research examined the differences in knowledge management strategies by organizational factors in colleges of education. Academic departments in colleges of education were selected from the National Council for Accreditation of Teacher Education. Data were collected through a web-based internet survey. Descriptive statistics, *t* tests, and analysis of variance based on indices and scales for the perceptions of the performance and the importance of knowledge management strategies were examined for differences by organizational factors.

This study strengthens the idea that knowledge management can play a key role in managing academic departments in higher education institutions. The findings suggest that knowledge management as a strategy for organizational change relies on: (a) strong leadership with the understanding about the value of knowledge and internal human resources, (b) an organizational culture that facilitates collaboration and learning, (c) technological infrastructure that supports research, teaching and service activities, and (d) a systematic evaluation mechanism that proves the investment to be worth it. Implications for practice and future research were drawn.

NORTHERN ILLINOIS UNIVERSITY

DEPARTMENT CHAIRS' PERCEPTIONS OF KNOWLEDGE MANAGEMENT
STRATEGIES IN COLLEGES OF EDUCATION: MEASUREMENT OF
PERFORMANCE AND IMPORTANCE
BY ORGANIZATIONAL FACTORS

A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE
DOCTOR OF EDUCATION

DEPARTMENT OF COUNSELING, ADULT AND HIGHER EDUCATION

BY

HAE-YOUNG LEE

© 2007 Hae-Young Lee

DEKALB, ILLINOIS

AUGUST 2007

UMI Number: 3292171

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI[®]

UMI Microform 3292171

Copyright 2008 by ProQuest Information and Learning Company.

All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

Certification: In accordance with departmental and Graduate School policies, this dissertation is accepted in partial fulfillment of degree requirements.



Dissertation Director



Date

ANY USE OF MATERIAL CONTAINED
HEREIN MUST BE DULY ACKNOWLEDGED.
THE AUTHOR'S PERMISSION MUST BE OBTAINED
IF ANY PORTION IS TO BE PUBLISHED OR
INCLUDED IN A PUBLICATION.

ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to my mentor and dissertation advisor, Professor Dr. Gene L. Roth. This dissertation would have not been completed without his guidance, encouragement, and patience. Since our first meeting in South Korea, he has nurtured me and helped me overcome challenges.

During my academic journey at Northern Illinois University, I became indebted to many professors for their teaching, research, and, most importantly, inspiration. Especially, I would like to extend my heartfelt appreciation to Professor Dr. Laurel Jeris and Professor Dr. Thomas Smith for their invaluable advice and comments on this project. Dr. Jeris has always been supportive, professionally and emotionally, throughout the entire course at Northern Illinois University. Dr. Smith not merely gave assistance in quantitative analysis but also inspired me to become familiar with the logic of statistics and play with them.

Although I know that I will never be able to find any type or form of words to express my gratitude, I would like to extend my sincere thanks to Dr. John A. Niemi. I am one of the many friends of his who have been inspired and believed that he was, is, and will be an exemplary of lifelong learner and student advocate. He had shown me what a lifelong learner ought to be like and what one needs to do to become one. I will cherish the memories and the conversations with him for a long time.

I am also grateful for my friend Barbara Wetzel. I have benefited from her friendship and professional help during my staying in the US and this project.

A special thanks goes to the anonymous participants in this project.

I want to thank my family for all their support, love, and faith in me. My parents, Jung-Soo Lee and Chun-Ja Kim, have always put me and my education first before them and providing a big tree where I always can lean for rest. My sisters, Young-Joo and Hyun-Ah, and my brother-in-law, Min-Soo, have always been supportive. My niece, Hey-In, and nephew, Jun-Ho, have always offered me a little moment of snug.

DEDICATION

In memory of my sister, Hyung-Kyung

Where have all the flowers gone? Pete Seeger

TABLE OF CONTENTS

	Page
LIST OF TABLES	x
LIST OF FIGURES	xvii
LIST OF APPENDICES	xviii
Chapter	
1. INTRODUCTION	1
Background	2
Problem Statement	5
Purpose of the Study	6
Significance of the Study	8
Conceptual Framework	10
Knowledge Management Strategies	11
Research Questions	15
Research Design	15
Limitations of the Study	16
Glossary	18
2. LITERATURE REVIEW	20
Contributions of Information and Communication Technologies	20
Definition of Knowledge	24

Chapter	Page
Evolution of Knowledge Management	33
Applications of Knowledge Management Strategies to Higher Education	38
Knowledge Management Strategies and the Functional Domains	44
Leadership	46
Culture	47
Technology	50
Measurement	52
Operationalization of Research Domains and Strategies	55
Leadership	55
Culture	58
Technology	61
Measurement	64
Summary	66
3. METHODS	67
Instrumentation	67
Pilot Study	69
Main Survey	73
Summary	85
4. DATA ANALYSIS	86
Research Questions and Hypotheses	86
Design of the Study	88

Chapter	Page
	viii
	88
	89
	90
	93
	99
	100
	107
	128
	149
5. FINDINGS, CONCLUSIONS, AND IMPLICATIONS	150
Review of the Design of the Study	150
Summary of the Findings	151
Perceptions of Performance Dimension	151
Perceptions of Importance Dimension	156
Conclusions	163
Perceptions of Performance Dimension	163
Perceptions of Importance Dimension	165
Summary	167
Reconnecting to the Literature	168
Leadership	171
Culture	173

Chapter	Page
Technology	174
Measurement	176
Summary	177
Implications for Practice	180
Implications for Future Research	183
REFERENCES	187
APPENDICES	200

LIST OF TABLES

Table		Page
1.	Summary of the Results of the Reliability Analyses of Pilot Study	72
2.	Summary of the Descriptions of the Strategies in Four Domains	78
3.	Summary of Organizational Factors	80
4.	Frequency Distribution of Responding Departments by Type of School .	90
5.	Frequency Distribution of Years of Experience	91
6.	Comparison of Responding and Nonresponding Departments	92
7.	Frequency Distribution of Educational Field of Responding Departments	95
8.	Frequency Distribution of Educational Group of Responding Departments	96
9.	Summary of Characteristics of the Respondents by Median Splits (Binned)	97
10.	Summary of Means (M) and Standard Deviations (SD) for Four Domains in the Perceptions of Performance and the Perceptions of Importance Dimensions with Composite Variables	104
11.	Summary of Means (M) and Standard Deviations (SD) for the Perceptions of Performance and the Perceptions of Importance Dimensions with Individual Variables	106
12.	Summary of <i>t</i> Tests of the Overall Leadership Domain (Composite) in the Perceptions of Performance Dimension	108
13.	Summary of <i>t</i> Tests of the Leadership Strategies by Organizational Factors in the Perceptions of Performance Dimension	109

Table	Page
14. Descriptive Statistics for Motivation by Educational Field of the Departments in the Perceptions of Performance Dimension	110
15. ANOVA Table for Motivation by Educational Field of the Departments in the Perceptions of Performance Dimension	110
16. Post-hoc Tests for Motivation by Educational Field of the Departments in the Perceptions of Performance Dimension	111
17. Descriptive Statistics for Strategic Alignment by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	112
18. ANOVA Table for Strategic Alignment by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	112
19. Post-hoc Tests for Strategic Alignment by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	113
20. Summary of <i>t</i> Tests of the Overall Culture Domain (Composite) by Organizational Factors in the Perceptions of Performance Dimension ..	114
21. Summary of <i>t</i> Tests of the Culture Strategies by Organizational Factors in the Perceptions of Performance Dimension	115
22. Summary of <i>t</i> Tests of the Overall Technology Domain (Composite) by Organizational Factors in the Perceptions of Performance Dimension ..	116
23. Descriptive Statistics for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	116
24. ANOVA Table for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	117
25. Post-hoc Tests for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	117

Table	Page
26. Summary of <i>t</i> Tests of the Technology Strategies by Organizational Factors in the Perceptions of Performance Dimension	118
27. Descriptive Statistics for Storing Knowledge by Educational Field of the Departments in the Perceptions of Performance Dimension	119
28. ANOVA Table for Storing Knowledge by Educational Field of the Departments in the Perceptions of Performance Dimension	120
29. Post-hoc Tests for Storing Knowledge by Educational Field of the Departments in the Perceptions of Performance Dimension	120
30. Descriptive Statistics for Synergy by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	121
31. ANOVA Table for Synergy by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	121
32. Post-hoc Tests for Synergy by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	122
33. Summary of <i>t</i> Tests of the Overall Measurement Domain (Composite) by Organizational Factors in the Perceptions of Performance Dimension	122
34. Descriptive Statistics for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	123
35. ANOVA Table for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	123
36. Post-hoc Tests for the Overall Measurement Domain (Composite) by the presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	124

Table	Page
37. Summary of <i>t</i> Tests of the Measurement Strategies by Organizational Factors in the Perceptions of Performance Dimension	124
38. Descriptive Statistics for Effectiveness and Decision Making by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	125
39. ANOVA Table for Effectiveness and Decision Making by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	126
40. Post-hoc Tests for Effectiveness and Decision Making by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension	126
41. Descriptive Statistics for Decision Making by Educational Field of the Departments in the Perceptions of Performance Dimension	127
42. ANOVA Table for Decision Making by Educational Field of the Departments in the Perceptions of Performance Dimension	127
43. Post-hoc Tests for Decision Making by Educational Field of the Departments in the Perceptions of Performance Dimension	128
44. Summary of <i>t</i> Tests of the Overall Leadership Domain (Composite) by Organizational Factors in the Perceptions of Importance Dimension	129
45. Summary of <i>t</i> Tests of the Leadership Strategies by Organizational Factors in the Perceptions of Importance Dimension	129
46. Descriptive Statistics for Vision by Educational Field of the Departments in the Perceptions of Importance Dimension	130
47. ANOVA Table for Vision by Educational Field of the Departments in the Perceptions of Importance Dimension	131
48. Post-hoc Tests for Vision by Educational Field of the Departments in the Perceptions of Importance Dimension	131
49. Summary of <i>t</i> Tests of the Overall Culture Domain (Composite) by Organizational Factors in the Perceptions of Importance Dimension	132

Table	Page
50. Summary of <i>t</i> Tests of the Culture Strategies by Organizational Factors in the Perceptions of Importance Dimension	133
51. Summary of <i>t</i> Tests of the Overall Technology Domain (Composite) by Organizational Factors in the Perceptions of Importance Dimension	134
52. Descriptive Statistics for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	135
53. ANOVA Table for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	135
54. Post-hoc Tests for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	136
55. Descriptive Statistics for the Overall Technology Domain (Composite) on the Educational Field of the Departments in the Perceptions of Importance Dimension	137
56. ANOVA Table for the Overall Technology Domain (Composite) by Educational Field of the Departments in the Perceptions of Importance Dimension	137
57. Post-hoc Tests for the Overall Technology Domain (Composite) by Educational Field of the Departments in the Perceptions of Importance Dimension	138
58. Summary of <i>t</i> Tests of the Technology Strategies by Organizational Factors in the Perceptions of Importance Dimension	139
59. Descriptive Statistics for Storing Knowledge by Educational Field of the Departments in the Perceptions of Importance Dimension	140
60. ANOVA Table for Storing Knowledge by Educational Field of the Departments in the Perceptions of Importance Dimension	140
61. Post-hoc Tests for Storing Knowledge by Educational Field of the Departments in the Perceptions of Importance Dimension	141

Table	Page
62. Descriptive Statistics for Problem Solving by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	141
63. ANOVA Table for Problem Solving by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	142
64. Post-hoc Tests for Problem Solving by the Presence of a Knowledge Statement in the Perceptions of Importance Dimension	142
65. Descriptive Statistics for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	143
66. ANOVA Table for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	143
67. Post-hoc Tests for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	144
68. Descriptive Statistics for Systemic Evaluation and Integrating Knowledge by Educational Field of the Department in the Perceptions of Importance Dimension	145
69. ANOVA Table for Systematic Evaluation and Integrating Knowledge by the Educational Field of the Department in the Perceptions of Importance Dimension	146
70. Post-hoc Tests for Systematic Evaluation and Integrating Knowledge by the Educational Field of the Department in the Perceptions of Importance Dimension	146
71. Descriptive Statistics for Decision Making, Systematic Evaluation, and Integrating Knowledge by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	147

Table	Page
72. ANOVA Table for Decision Making, Systematic Evaluation, and Integrating Knowledge by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	148
73. Post-hoc Tests for Decision Making, Systematic Evaluation, and Integrating Knowledge by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension	149
74. Summary of Frequencies on Organization Information	225

LIST OF FIGURES

Figure	Page
1. Conceptual Framework for a Knowledge Management Strategy Survey for Higher Education	11

LIST OF APPENDICES

Appendix	Page
A. PERMISSION TO USE KMAT INSTRUMENT FROM THE AMERICAN PRODUCTIVITY AND QUALITY CENTER	200
B. COPY OF THE WEB-BASED SURVEY INSTRUMENT	203
C. INSTITUTIONAL REVIEW BOARD APPROVAL	214
D. PRE-NOTICE E-MAIL FOR THE SURVEY	216
E. INVITATION E-MAIL FOR THE SURVEY	218
F. FOLLOW-UP E-MAIL FOR THE SURVEY	220
G. FINAL AND THANK YOU E-MAIL FOR THE SURVEY	222
H. SUMMARY OF FREQUENCIES ON ORGANIZATIONAL INFORMATION	224

CHAPTER 1

INTRODUCTION

Higher education institutions have realized the increasing demands of managing their resources. As a result of this awareness, they have attempted to explore and apply business strategies and technologies in order to improve administrative and academic activities (Metcalf, 2006; Organization for Economic Co-operation and Development, 2003; Serban & Luan, 2002). These strategies are intended to create new knowledge and to change organizational structure and culture as a means to compete in the so-called knowledge economy or knowledge-based society. The interests of economic inquiry have shifted from external sources such as tangible, natural resources to intangible, organizational, and individual capabilities to create new products and knowledge. Innovation has become a critical part of economic growth and the sustainable development of an organization. Such innovation does not occur in isolation and the strategies for achieving it involve various issues and, therefore, differ from one organization to another. Seeking a new management strategy and sustaining a competitive edge is an increasing interest of organizations in the current knowledge-based economy.

Although there are on-going debates on the nature and form of it, knowledge is viewed, from at least microperspectives of economic development, as a core

function of competitiveness that can help an organization survive. Knowledge becomes a strategic advantage for an organization competing with other organizations. In order for knowledge to become a competitive advantage, organizations must be able to locate and sustain knowledge and provide attention to it from both theoretical and practical perspectives. Knowledge management is a contemporary business strategy that is designed to improve organizational performance and competitiveness. The crux of knowledge management reflects the phenomena that are accompanied with the rapid pace and range of technological advancement.

Higher education institutions, one of the major sources of educating quality human resources and creating new knowledge, must be able to accrue benefits from advancements in information and communication technologies. Higher education institutions play important roles in the knowledge-based economy – they prepare individuals for the workforce and they fulfill significant social responsibilities and accountabilities.

Background

Higher education institutions are confronted with challenging social and economic demands. These challenges include limited financial support from the government, changes in student demographics, technology advances, obsolete curricula, and political demands for institutional reform. These trends have forced higher education institutions to identify strategic advantages that can help them

address emerging economic and social demands. Despite the fact that higher education institutions have been trying to change their cultures and organizational structures, some assert that a significant gap exists between what society wants from higher education institutions and what higher education institutions are providing (Rowley, Lujan, & Dolence, 1997).

In higher education contexts, the role of academic department chairs has been a contested research topic. These first-line leaders are uniquely positioned to interact with both the hierarchical administrative structure of a university and the highly independent professionals – college faculty. Immerwahr (1999) underlines that higher education institutions have contributed to economic growth and progress and universities are a crucial source of technological and scientific innovation. He explains, however, that professors are less likely to agree to the implantlike application of business management and technological innovation for increasing productivity. Faculty members are not likely to agree with business leaders who assert that these tactics would improve the performance of higher education institutions. Immerwahr asserts that new ideas and leadership support are needed for systematic evaluation and redesign of higher education cultures. His study indicates that higher education institutions should adopt a comprehensive approach to achieve beneficial and strategic changes.

The so-called knowledge-based economy has transformed many organizations over the last couple of decades. Most organizations greatly value the expertise of human resources. Given that the migration of its core human resources

is an important issue, for instance, the effective management of organizational knowledge plays a vital role in maintaining an organization's competitiveness and survival. Many organizations are seeking to obtain and maintain competitive advantage by embracing and promoting the value of knowledge for strategic development (Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995; Saint-Onge, 2003; Stewart, 1997). The knowledge-based economy requires quality human resources, and it suggests that higher education institutions need to be innovative, technologically competitive, and inclusive.

A fundamental assumption of knowledge management is that in order to survive in a rapidly changing economy, organizations need to recognize the significant role of internal and external forces, to maximize the utility of the resources, and to be able to transform their structures and cultures. Given that many higher education institutions suffer from budget constraints, cultural barriers, and resistance from their internal constituents, the application of knowledge management strategies in higher education contexts is not necessarily entitled to uncover external resources. Rather, management strategy is a tool for a higher education institution to assess its existing internal competitiveness. Compared to the previous business-oriented management strategies that had mainly focused on the outcome-based, performance-oriented, return on investment-type quality initiatives, knowledge management is more likely to shift the foci to human-centered or human resource-oriented strategies. Therefore, a knowledge management strategy is more involved with learning than most management strategies.

Goddard (1998) posits that higher education institutions must be seen as knowledge businesses. Higher education institutions have had a long history of knowledge-related activities, including various types of management to deal with knowledge production, repository, and sharing. Higher education institution leaders, and academic department chairs in particular, must recognize their changing roles. Their management approach and leadership must also change accordingly (Wolverton, Gmelch, & Sorenson, 1998). The leaders in higher education institutions, department chairs in particular, must solicit ideas regarding how to plan a curriculum, evaluate programs, and create an organizational atmosphere conducive to improving department performance.

One of the main challenges confronting higher education leaders is how to implement strategies for building culture, inculcating and promoting leadership, and applying technology and measurement. Another issue is how to identify and facilitate well-integrated processes of acquiring, integrating, and creating knowledge. Organizational capabilities of higher education institutions need to be analyzed and an entry strategy for knowledge management needs to be posited.

Problem Statement

Applications of knowledge management need to be explored in higher education contexts. Knowledge management may well provide a usable framework (both theoretically and practically) for developing leadership, creating an organizational culture, applying existing technologies to an organization, and

increasing awareness of the importance of measurement for decision making. However, little is known about how knowledge management might be applied to higher education institutional challenges, such as scarcer resources, new technological advances, and the need for human resources that possess flexible and creative skills. Furthermore, scant evidence exists in the literature regarding how university department chairs view knowledge management strategies in regard to these institutional challenges.

Higher education institutions have been reluctant to strategically respond to the aforementioned internal and external higher education challenges (Jeris, 1998; Thomson, 1997). Few higher education institutions have attempted to apply knowledge management strategies (Kidwell, Vander Linde, & Johnson, 2000). Higher education institutions are highly populated by professionals and intellectual activities are perceived as a daily routine by them, yet the so-called silo effect is pervasive in this work context. The problem of this study pertains to the perceptions of academic department chairs in colleges of education. The problem is focused on two issues: (a) the perceptions of department chairs of the performance of knowledge management strategies and (b) the perceptions of department chairs of the importance of knowledge management strategies.

Purpose of the Study

In the existing literature on knowledge management, a gap was found in applying and implementing knowledge management in higher education contexts.

Strategies for applying knowledge management may be clustered around leadership, culture, technology, and measurement. This study attempted to investigate how knowledge management strategies are applied in higher education and how important department chairs perceive knowledge management strategies to be in reaching performance objectives.

This study is rooted in two core assumptions. First, there is a disparate cadre of leaders managing academic departments in higher education institutions. These leaders, chairs of academic departments, practice their leadership based on their experiences and understandings about the context within higher education institutions. Academic department chairs may reveal various differences in understanding and perceiving knowledge management strategies. Second, academic departments in higher education institutions may vary in adopting and implementing new management strategies that are intended to improve organizational performance.

This study identified organizational factors such as private or public institutions, the seniority of a department chair, the size of the department (including the number of tenured and nontenured faculty and staff), the number of enrolled students, annual budget size, the allocation of the budget, the presence of knowledge management in a mission statement, the presence of online courses fostering the possibilities for timely knowledge transfer and technology-based instruction, and the use of an e-newsletter for enhancing a collaborative environment among faculty. These organizational factors were used to examine the differences in knowledge management strategies in two dimensions: perceptions of performance and

perceptions of importance. Academic departments in colleges of education are unique segments of higher education institutions because of the specific functions that they fulfill within the overall mission of the university.

Significance of the Study

Researchers have attempted to examine the implementation of knowledge management in a broad range of organizations. Most of the research on knowledge management has resided in information and communication technology enterprises or research and development units of organizations, particularly in the private sector (Comeau-Kirschner, 2000; Gupta & Gavdarajan, 2000). While many business management theories adapted to higher education settings are characterized as outcome-oriented (Bassi, 1997; Hope & Hope, 1997), knowledge management is depicted as a human-centered management strategy. Few researchers have examined knowledge management within higher education contexts, and minimal attempts have been made to apply knowledge management strategies to contexts of higher education.

A few studies examine why applications of knowledge management in education institutions are in their infancy. One of the plausible explanations is that it is difficult to understand the implications of applications of knowledge management because of the complexity of higher institutions (Thorn, 2001). Second, since academic departments vary in an epistemological and ontological orientation, it might be challenging to come up with a universal, feasible measure in order to apply

knowledge management to higher education settings. There is also a knowledge application gap between higher education institutions and information systems (Malhotra, 2003). Given these concerns, this study may contribute to the intellectual body of knowledge management by extending its research boundary to include higher education contexts.

This study employs department chairs as proxies that represent the overall academic department. Several studies have examined the role and responsibilities of academic department chairs, and debates exist regarding the extent of their autonomy. Some researchers assert that department chairs have limited autonomy in the decision-making process and operation of their department. These perspectives argue that department chairs are more likely to be regulated by external forces such as rules and laws imposed by the university administration and state and federal government (Creswell, Wheeler, Seagren, Egly, & Beyer, 1990; Seagren, Creswell, & Wheeler, 1993). However, this study assumes that the manner in which academic department chairs in higher education institutions perceive management strategies can be aligned with knowledge management strategies that are shaped and implemented in the private sector. Therefore, this study will contribute to the scholarly research within the field of academic leadership development and organizational change.

This study has three important components. First, in Chapter 2, the study examines knowledge management literature to understand the embedded concepts and historical background of knowledge management. Economic, social, and

technological factors are described to explain the intellectual underpinnings and the historical foundation of knowledge management. Second, management of organizational knowledge by academic departments is examined. The research methods and procedures and the results of the study are illustrated in Chapters 3 and 4. Third, this study attempts to identify organizational factors that affect knowledge management strategies used in the department and the perceptions of department chairs toward knowledge management strategies. Findings, conclusions, and implications for practice and research and practice are described in Chapter 5.

Conceptual Framework

The literature review revealed that knowledge management encompasses four distinct domains: leadership, culture, technology, and measurement. An assumption of this study was that the academic department chairs in colleges of education who adopted and used knowledge management strategies would effectively manage the department, make better decisions, and ultimately improve its overall performance.

The four domains of knowledge management strategies are illustrated in the model (see Figure 1). The framework in Figure 1 guided what this study measured and the statistical relationships that were examined. Brief descriptions of each concept and the variables of knowledge management strategies of the study are illustrated in the following sections of the chapter.

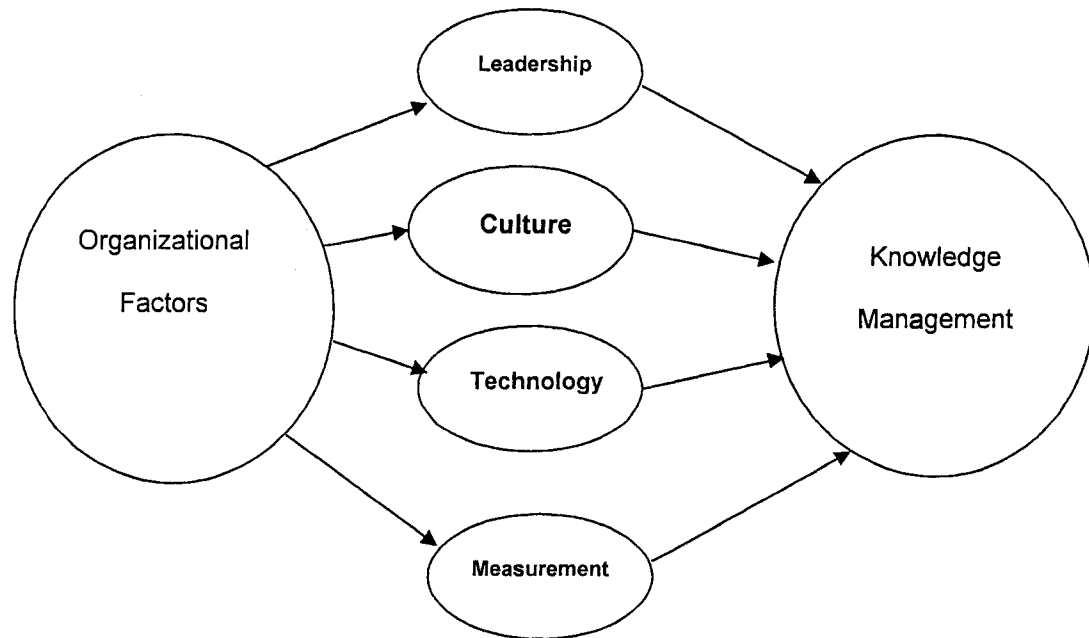


Figure 1. Conceptual framework for a knowledge management strategy survey for higher education.

Knowledge Management Strategies

A knowledge-based economy calls for an organization to identify appropriate strategies for sustainable growth and survival. Many researchers have attempted to determine what strategies lead to the successful implementation of knowledge management. For instance, Burton-Jones (2001) postulates that there are seven knowledge management strategies: developing a more accurate, comprehensive, and up-to-date information system; evaluating and comparing the level of knowledge; protecting and retaining key knowledge; assisting knowledge transfer; developing

cross-functional teams; developing training and research programs; and developing measurement and control systems. Skyrme (1999) underscores that there are six key strategies of the successful knowledge-based business as follows: leadership; environment; culture and structure; processes for managing organizational knowledge; measures; and supporting infrastructure such as technology, tools, and techniques.

Spec and Carter (2003) conducted a survey to identify the current state of knowledge management practice in organizations across Europe in which knowledge management practices are successfully implemented. They suggest, based on the results of the extensive survey, that there are eight issues to be examined: the general approach of knowledge management, strategies for knowledge management, enablers or tools for knowledge management, culture and motivation, leadership and management involvement, competency building, communication, and measurement.

Dierkes (2001) suggests that (organizational) structure, culture, leadership, and technology are key factors that ensure successful knowledge management in association with organizational learning. Depending on size, product, and tradition or maturity of the organization, knowledge management researchers suggest various knowledge management strategies – including leadership, culture (Tetrick & Da Silva, 2003), technology, and measurement (Boudreau, 2003). One of the most frequently used knowledge management strategies is the one developed by the American Productivity and Quality Center (APQC) and Arthur Andersen Consulting

in 1997. They identify the knowledge management strategies as culture, leadership, technology, and measurement.

The literature review suggests the following considerations for knowledge management strategies:

- (a) leadership
- (b) culture
- (c) technology
- (d) measurement

Leadership indicates the ability of the organization to align knowledge management behaviors with organizational strategies, identify opportunities, promote the value of knowledge management, communicate best strategies, facilitate organizational learning, and offer metrics for assessing the impact of knowledge. The examples are strategic planning, hiring knowledge workers, and evaluating human resources. This study recognizes the pivotal role of leadership, since leaders send a signal of organizational change adopting knowledge management across organization.

Culture refers to the organizational climate or pattern of sharing knowledge as related to organizational members' behaviors, perceptions, openness, and incentive. Various committees and professional development training programs are examples of the culture process. Shaping an adequate culture is the most significant and challenging obstacle to overcome for successful knowledge management (Davenport, DeLong, & Beers, 1998).

Technology refers to the infrastructure of devices and systems that enhance the development and distribution of knowledge across an organization. The literature review of this study reveals that most knowledge management researchers address the significant impact of technology and its role in effective knowledge management. However, it is notable that an overemphasis on technology might cause conceptual confusion between information management and knowledge management. Gold, Malhotra, and Sedars (2001) stressed that technology includes the structural dimensions necessary to mobilize social capital for the creation of new knowledge. The examples of this process are internal web-based networks, electronic databases, and so on.

Finally, measurement indicates the assessment methods of knowledge management and their relationships to organizational performance. Skyrme and Amidon (1998) suggest that knowledge management can be assessed in four dimensions: customer, internal process, innovation and learning, and financial. Although there has been skepticism regarding this type of measurement, they attempted to measure it in a way that included benchmarking and allocating organizational resources.

These four domains of knowledge management strategies are used to maximize organizational capabilities that have been embedded in an organization. These strategies are conducive to more effective knowledge management processes. The literature review of this study extends the discussion of knowledge management

strategies in Chapter 2 where key strategies of four knowledge management domains are identified.

Research Questions

In the context of academic departments within colleges of education, the following research questions guided this inquiry:

- Q1: How do academic department chairs in colleges of education differ in their perceptions of performance of their departments based on the applications of knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors?
- Q2: How do academic department chairs in colleges of education differ in their perceptions of the importance of knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors?

Research Design

This exploratory research was designed to examine the differences between academic departments in colleges of education that utilize knowledge management and its strategies. For the population of the study, 319 academic departments in colleges of education were selected from the National Council for Accreditation of Teacher Education. Sites were selected from seven north central states in the United States. Since its foundation in 1954, the National Council for Accreditation of Teacher Education has functioned as an independent accrediting institution. It is a

professional body focused on assuring the quality of teacher education programs and teaching.

Survey research was the method of choice for this study. The survey instrument for this study was modified from the original version of the Knowledge Management Assessment Tool (KMAT) developed by Arthur Andersen Consulting and the American Productivity and Quality Center with the permission of the American Productivity and Quality Center. (Permission to adapt the KMAT can be found in Appendix A). This adapted version was used to collect data from department chairs regarding the aforementioned research questions. Using the guidelines in Dillman's *Mail and Internet Surveys: The Tailored Design Method* (2000), a web-based survey was designed and conducted.

Using Statistical Package for the Social Sciences (SPSS) Graduate Version 15.0, data were analyzed. First, descriptive statistics based on indices and scales for the perceptions of performance and the perceptions of the importance of the strategies were calculated and presented in tables. Second, *t* tests and analysis of variance (ANOVA) tests were conducted to examine differences between and among groups.

Limitations of the Study

This study had several recognized limitations. They are as follows:

- (a) Achieving adequate response rates to the survey was a challenge. Although the sample size of 159 cases was adequate for the survey, a larger sample

might have allowed more exploratory investigation. The discriminatory power of the survey instrument would be improved with a larger sample size.

- (b) Although chairs were given more than four weeks to complete a web-based survey, some chairs did not participate in the survey. Through telephone contacts, this researcher learned that the chairs could not spare the time for the survey. These nonrespondents explained that a heavy work load, their unfamiliarity with knowledge management, and/or their lack of confidence and experience as a new chair prevented them from participating in the study.
- (c) This study gathered data only from academic department chairs in colleges of education accredited by the National Council for Accreditation of Teacher Education in the Midwest region of the United States. Therefore, the results of the study do not represent all teacher training programs or academic departments outside of colleges of education.
- (d) The level of analysis of this study is the department. Therefore, this study did not examine the cognitive dimensions and processes of how knowledge is created, transferred, and shared between and among people in an academic department.

This study is organized into five chapters. The following chapter illustrates the review of existing literature on knowledge management and reform efforts in higher education institutions. Chapter 3 demonstrates in more detail the research design, including the research questions, the survey instrument, and data analysis.

Chapter 4 explores the results of data analyses and findings. Chapter 5 provides concluding observations, reconnecting to literature, and implications.

Glossary

In this section, the operational definitions of key concepts for this study are described.

- (a) dimension: refers to a research parameter of the study that shares common characteristics of phenomena. For the purpose of this study, there are two dimensions to be investigated: the perception of performance and the perception of importance.
- (b) the perception of performance: indicates the degree to which academic department chairs perceive the use or application of knowledge management strategies in their department.
- (c) the perception of importance: indicates the degree to which academic department chairs perceive the importance of knowledge management strategies.
- (d) domain: represents the constellation of knowledge management strategies that share a common function, theoretically or practically. As the review of the existing literature on knowledge management in Chapter 2 reveals, there are four domains of knowledge management strategies in this study: leadership, culture, technology, and measurement.

- (e) (knowledge management) strategies: refers to the enablers that enhance various activities in achieving any given tasks related to knowledge management (Davenport & Prusak, 1998). The literature review for this study identifies several strategies in each domain that enable knowledge management to be successful.

CHAPTER 2

LITERATURE REVIEW

Literature reviewed in this chapter provides a background of knowledge management and critical concepts of knowledge management. Literature sources in the field of knowledge management and relevant areas such as economics and business management were scanned to identify key issues in knowledge management and to clarify various concepts. This process was followed by illustrating the four functional domains and knowledge management strategies that were briefly introduced in Chapter 1. An extensive search based on key words and authors was conducted on the Internet, Business Source Elite, ERIC First Search, ERIC via EBSCO, and EconLit.

Contributions of Information and Communication Technologies

The emergence of the new economy has been epitomized by recent advancements in information and communication technologies. Researchers have given considerable attention to the impacts of information and communication technologies on the structure and growth of this new economy (Barney, 1991; Davenport & Prusak, 1998; Zack, 1998). For example, they have examined how economic change, ignited by the advancement and global dissemination of information and communication technology, has influenced the economics of

organizations and the economic behaviors of individuals and organizations.

According to them, in order to leverage and manage knowledge within organizations, organizations adopt knowledge management strategies and invest in information and communication technologies. Knowledge management centers on building the organization's capability to acquire, organize, and disseminate the knowledge throughout the organization with the objective of improving its competitiveness. Researchers in this school of thought recognize that information and communication technologies play a critical role in the organization's ability to apply the existing knowledge effectively and efficiently and to create new knowledge.

Stiglitz (2000) argues that vis-à-vis technological development, the key questions of economics are: (a) how the economy creates knowledge; (b) how it adapts information and technology; and (c) how knowledge is disseminated, absorbed, and used across the economy. The basic assumption of his study is that information is transacted not just by prices in the market; it is also influenced by other economic factors such as individuals and firms. This assumption implies that the behaviors of such economic actors are affected by the various types of knowledge creation and transfer between and among individuals and firms. Therefore, how economists link the significance of human factors such as human capital to economic growth is discussed in the following paragraphs.

Pavitt (1992) suggests that technology plays a pivotal role in institutional innovation. By focusing on individual large firms instead of a broad societal level, he attempts to identify factors and organizational processes that characterize an

innovating firm. In an effort to examine the causal variables of how a so-called innovating large firm happens to survive over years, his study delineates several key factors of innovative activities of such firms as follows:

- (a) Competence is largely firm-specific, cumulative in nature, and tacit in nature so that it is a central source to organizational success.
- (b) These firms are highly differentiated so that technology used in one industry is unlikely to be used by another industry.
- (c) There is continuous and intense collaboration among professionally and functionally specialized groups for specific innovation and technology development.
- (d) The firms tolerate high uncertainty in relation to their commercial outcome.

The two main foci that knowledge management brings into discussions, according to Pavitt, are: (a) internal (rather than external) resources, including tangible and intangible, must be used to fuel development and innovation, and (b) collaboration must occur between members of an organization.

Pavitt attempts to identify and discuss organizational factors and external factors that have influenced organizational survival in the face of technological discontinuity and constant organizational innovation. In order for a firm to survive in an ever-changing world, learning might be a solution. He implies that organizational learning might enable firms to enhance specific competencies as a result of reflecting on collective organizational experiences and responding to environmental changes.

Nelson and Winter (1982) recognize the dramatic changing of technology in association with economic change. They view a business organization as a repository of knowledge emphasizing the significant role of employees in an organization. By using the term “routine,” they attempt to illustrate how business organizations deal with information-related problems. This implies that innovation could be derived from ordinary activities of people, instead of being derived from investments in research and development. For Nelson and Winter, routine is composed of individual and organizational behaviors and experiences. Eventually, this routine activity constitutes a firm’s competencies by storing specific operational knowledge within the firm. They view knowledge, based on a tacit knowledge perspective, as an organizational competency. This perspective of knowledge and knowledge management focuses on the process of knowledge that may enhance organizational ability to learn and adapt (Nielsen, 2005). This perspective emphasizes interorganizational relationships or collaborative networks in creating and transferring knowledge (Argyris & Schön, 1980; Nelson & Winter, 1982).

Another approach to knowledge management involves consideration of the content of knowledge. In this view, a critical source of economic growth is embedded or internalized within an organization in the form or type of knowledge (Nielsen, 2005). Therefore, an effective management of knowledge that yields a competitive advantage is essential for collecting, exploiting, and disseminating internal knowledge. In addition, this perspective focuses on knowledge creation

(Nonaka, 1994; Nonaka & Takeuchi; 1995), community of practice (Brown & Duguid, 1991), and transfer of knowledge (Cohen & Levinthal, 1990).

In summary, this portion of the literature review led to these beliefs:

- (a) knowledge is determined by the uniqueness of the organization's competence;
- (b) implementation of knowledge management requires multidisciplinary, functional, and cross-divisional cooperation within an organization;
- (c) the improvement of the organizational competencies, given the notions of cumulative development and uncertainty, requires continuous and collective learning within the organization; and
- (d) systematic approaches are needed to evaluate processes and to allocate organizational resources.

Definition of Knowledge

Confusion in understanding the nature of knowledge existed long before the inception of knowledge management. In this section of this chapter, various perspectives on knowledge are gleaned from the literature review. Readers should recognize the limitations of the works cited as they consider the contextual and operational role of knowledge management.

The definition of knowledge has been controversial due to its complex nature, historically and epistemologically. Exploring the definition of knowledge is important because it lays out the wide spectrum of knowledge that is aligned to the

development of knowledge management strategies. The review of the existing knowledge management literature suggests that various definitions of knowledge can be categorized into three groups: semantic distinction, economic aspect, and cognitive process.

First, a most frequently used and seemingly simple way of distinguishing and identifying knowledge is to compare it with other similar, but confusing, concepts such as data and information. Burton-Jones (2001) attempts to make distinctions between data, information, and knowledge. This comparison is critical to clarify semantic confusions and gain consistency in the definitions of knowledge. He attempts to differentiate definitions of relevant concepts as follows:

Data are defined as any signals which can be sent by an originator to a recipient – human or otherwise. Information is defined as data which are intelligible to the recipient. Finally, knowledge is defined as the cumulative stock of information and skills derived from use of information by the recipient. (p. 5)

According to Davenport and Prusak (1998), data are sets of discrete, objective, and raw materials about events. They suggest that data have little relevance and purpose and do not offer any important grounds for making decisions, even though data are essential facts for the construction of information. Information is a message that typically is represented in a document or an audible or visible communication that can be influential to a decision and/or behavior. Data become information when meaning is added by people in various ways: contextualization, categorization, calculation, correction, and condensation. Knowledge offers a framework to examine, evaluate, and link new experiences.

[Knowledge is] a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. (p. 5)

The assumption of Davenport and Prusak's argument is that the more organizations and individuals know about a subject, the better they can evaluate and use new data about it. This type of definition is mostly used in the area of knowledge management; however, it lacks epistemological perspectives that delve into whether or not an objective reality exists.

Second, another commonly employed approach is the economic aspect of knowledge (Albert & Bradley, 1997; Wiig, 2000). This approach emanated from the traditional notion of economic resources: labor, land, and capital. Albert and Bradley underscore that knowledge is one of the integral parts of how intellectual capital is linked to production. This link results in the form of a source in the business and work environment – the expert employee. They explain the foundation of human-related capital by looking at the history of measuring and valuing human input based upon concepts such as human resource accounting and human resource management. They explore how organizations adjust their accounting practices to acknowledge the increasingly important value of its human resources. Wiig posits that knowledge is “a part of intellectual capital” (p. 3). He suggests that the knowledge in knowledge management should be located in the workplace so that people and organizations have the abilities to understand and act effectively. He explains that knowledge in knowledge management has two major functions in

organizations: it and other intellectual capital “form the fundamental resources for effective functioning and provide valuable assets for sale or exchange” (p. 3). In his view, knowledge is managed by managers, coworkers, and proactive individuals within the organization.

Similarly, Drucker (1999) argues that knowledge is the dominant economic resource that yields comparative advantage within markets of the new economy. This economic perspective has had an impact on traditional management routines and has caused a reconsideration of existing management structures. Consequently, this perspective creates an abundance of definitions and approaches: for instance, intellectual capital, human capital, structural capital, and organizational competence.

Third, the scholars in this group focus on the cognitive process of knowledge creation at the individual and organizational levels. Put another way, they are interested in knowledge as an organizational resource, but they also acknowledge that it is created, transformed, and shared between and among individuals of the organization. Nonaka and Takeuchi (1995) delve into how knowledge is created at the individual level by examining the notion of tacit knowledge. They describe how tacit knowledge is transformed into explicit knowledge so that others can understand it. To them, knowledge is a cognitive process of individual thoughts and experiences that are to be justified through social interaction between tacit and explicit knowledge.

Similarly, Teece (1998) suggests that knowledge is a resource that can be readily transferred between people and collective entities. It is also a means to gain

competitive advantage in market competition. Teece focuses on knowledge management in terms of transmission, organizational dynamics, and transaction costs to sense, exploit, seize, reconfigure, and protect knowledge in order to achieve sustainable competitive advantage at the organizational level. According to him, the more a given item of knowledge or experience has been codified, the more economically it can be transferred. Therefore, in this regard, codified or explicit knowledge heavily depends on the ready availability of channels of communication suitable for the transmission of well-codified information. He claims that codified forms of communication reduce ambiguity and offer better structured communications than uncoded, tacit knowledge. Teece also posits that tacit knowledge can be slow and costly to transmit. Ambiguities may exist and face-to-face communication may be the best way to resolve them.

Based upon the literature review on the definition of knowledge thus far, the following observations may be drawn:

- (a) A common approach for depicting the nature of knowledge in knowledge management is to draw distinctions between the definitions of data, information, and knowledge. Some scholars use the terms “knowledge” and “information” interchangeably. If this notion is accepted, then differences between knowledge management and information management would be negligible. If knowledge management merely complements information management, then knowledge management becomes no more than a computer-based information processing system.

- (b) Several scholars argue that knowledge is a key element for increasing productivity and effectiveness. They view knowledge as a commodity or a resource that can be attained, controlled, measured, and freely transferred by an organization and an individual workforce. Knowledge can be a final product, a process, or an input resource.
- (c) All of the definitions emphasize scarce organizational resources and human factors. In particular, human factors play an essential role in creating, transferring, and sharing knowledge. Stated another way, they all highlight that knowledge is inseparably relative to the individual knower who attains, interprets, transforms, and shares it. Therefore, recognizing the significance of knowledge sources within an organization – the human resources – becomes a focal point of knowledge management.

For this study, knowledge can be viewed as a resource that is a combination of individual experiences, skills, and know-how in association with teaching, research, and other service activities that might have potential to improve individual and organizational performance. In order to better understand the essence of knowledge in knowledge management, it is important to compare it with commonly used concepts such as intellectual capital and human capital because these latter terms have often been used interchangeably without clear theoretical distinctions.

Intellectual Capital

According to current economic literature, there are three broad forms of capital:

- (a) physical forms such as machines, buildings, and raw materials;
- (b) monetary forms such as stocks, bonds, and bank accounts; and
- (c) labor or human capital.

Chatzkel (2003) notes that “intellectual capital is the stock, or content of knowledge” (p. 4). This aspect is influenced by economic theories that view capital as an accumulated form used to produce goods and services. Saint-Onge (2003) claims that there are three types of intellectual capital: human capital (the individual capabilities of the member of the organization), structural capital (organizational capabilities), and customer capital (customer relationship). Intellectual capital is an intangible organizational resource that is connected and grows based on the exchange of knowledge among the individuals, the organizations, and the customer.

Albert and Bradley (1997) define intellectual capital:

It represents individuals’ accumulated knowledge and know-how, coupled with the ability to decant this into a system, predicated upon information technology, which will facilitate its speedy dissemination while protecting its quality (p. 64).

Edvinsson and Malone (1997) assert that intellectual capital “is the possession of the knowledge, applied experience, organizational technology, customer relationships and professional skills” (p. 44). To them, intellectual capital is human capital and structural capital combined that provides the organization with

a competitive edge in the market. Edvinsson and Malone suggest that structural capital includes the customer database, concession, information system, and so on. According to Teece (1998), depending on how knowledge and innovation are defined and analyzed, the concept and dimension of intellectual property varies. The key dimension to be identified is whether or not the knowledge has protection under the laws. With this regard, patents, trade secrets, trademarks, and so on provide protection. In association with knowledge management, different knowledge media qualify for different types of intellectual property protection. This view underscores the importance of internal assets, such as intellectual capital, that provide and ensure competitive advantage against other competitors in the market. However, this perspective might limit communication to create new knowledge within the environment and also overlook the individualized and cognitive processes of knowledge creation and sharing between people (Nielsen, 2005).

Human Capital

In this study, human capital refers to the investment embodied in the individual workforce in the form of education and training. Human capital theory attempts to explain the nature of human resources and recognize the significance of human resources as a key factor of economic growth (Becker, 1975; Kendrick, 1976; Schultz, 1971). The premise of human capital theory is that individuals are the active investor, not the subject of investment. Put another way, it is assumed that in

order to earn higher incomes, individuals will invest in education or training that might have high costs.

According to Mincer (1989), human capital theory sheds light on its dual role in the process of economic growth: (a) as a stock of skills that is produced by education and training and coordinated with physical capital and with unskilled labor and (b) as a stock of knowledge that is a source of innovation and a basic cause of economic growth. Empirical studies indicate that training programs can have a positive impact on productivity at the organizational level as well as the individual level (Bartel & Lichtenberg, 1987; Kendrick, 1976). Bartel and Lichtenberg explain that technological innovation alters demand in favor of better educated workers because they have a competitive advantage in implementing new technologies. These researchers seem to agree that investment in training is profitable for organizations, even though salaries of workers may increase.

Like other physical and financial assets, the human resource in human capital theory is viewed as an asset. In human capital theory, since the human resource is believed to be a major factor in production, it contributes to the increase in productivity. In addition, human capital theory provides a viewpoint of how investment in people affects the competitiveness of an organization. For instance, the level of literacy may be used to predict the rate of investment and economic growth of an organization and a nation. Education is one example of investment that fosters the efficient acquisition and transmission of knowledge through motivation for and mobilization of human resources.

However, a chasm exists between human capital theory and knowledge management in terms of how to view the human resources. While human capital theory focuses on the quality and background of the human resources (such as training and educational experience of existing human resources), knowledge management is inclined to address the issue with a more comprehensive approach. Knowledge management takes tangible and intangible variables into consideration, including human interaction, culture, technology, and so on. In addition, while human capital theory assumes that the quality of work and the human resources can be quantified in terms of time and monetary form, knowledge management is not dominated by the perspective of neo-classical economic theory. This latter perspective might prevail because of the limits of attempting to quantify intangible assets.

Evolution of Knowledge Management

A comprehensive, descriptive characterization of knowledge management might help readers understand what is to be managed and what external factors influence knowledge management. Since the advent of scientific management by F. W. Taylor, the underlying principles epitomized by notions such as efficient productivity and cost minimization have been applied across various management strategies. Although some management strategies, such as total quality management, have addressed quality issues, most scientific management strategies focus on quantity problems by using various technologies and structural changes (Drucker,

2002). These technological-based management perspectives remain prevalent in the knowledge management literature (Grover & Davenport, 2001). In the following section, literature is highlighted that depicts organizational benefits of knowledge management.

In efforts to identify the intellectual roots and historical background of knowledge management, most researchers seem to agree that knowledge management emerged because organizations have struggled to cope with rapidly changing markets (Chatzkel, 2003; Davenport, Harris, De Long, & Jacobson, 2001; Drucker, 2002; Nonaka & Takeuchi, 1995; Saint-Onge, 2003; Wiig, 2000). Drucker investigates the historical background of knowledge management and the so-called knowledge work or knowledge economy. In the historical review of management strategies and practices over decades, he attempts to illustrate how knowledge has played a role in innovating organizational structure and increasing productivity. Unlike a knowledge-based organization, he claims, “on the assembly line, greater skill on the part of an individual worker is a threat to coworkers and to the entire system” (pp.124-125). He explains that in scientific management and the total quality management system individual workers are not required to possess much knowledge or skill. In these systems, workers serve the system, whereas the system is expected to serve the workers in knowledge-based organizations. Although Drucker does not offer an exact definition of knowledge management, he argues that in knowledge-based organizations the underlying assumption is that the organization needs workers more than they need the organization and workers should be treated

accordingly. In addition, the organization has to provide proper and continuous learning and training programs, to share organizational authority with workers, and to allow them to make decisions in their own area.

According to Wiig (2000), in a broad sense, knowledge management is “the systematic and explicit management of knowledge-related activities, practices, programs, and policies within the enterprise” (p. 6). Wiig (1994) also suggests “the purpose of knowledge management is to foster and promote intelligent behavior” (p. 14). Based upon his experiences in practice and research, Wiig (1994) offers various aspects of knowledge: forms and types (public, shared, personal knowledge) and proficiency levels (ranging from “ignorant” to “grand master”). He attempts to build a framework of knowledge management in terms of practice. He is one of many scholars who recognize organizational learning as a means to successfully accomplish goals by learning from experiences, research, and observations. However, his descriptive framework lays out strategies of knowledge management, but it fails to illustrate how these strategies and dimensions of knowledge and knowledge management can be cohesively integrated at the levels of the individual and the organization. This fragmentation of Wiig’s argument is not an isolated case; rather, it is a common problem in knowledge management literature.

Davenport et al. (2001) emphasize that although organizations are well equipped to access data, “all too rarely is that data shifted into the sort of knowledge that can inform business decisions and create positive results” (p. 117). They focus on designing a human-based business strategy and its implementation. One of the

basic assumptions of knowledge management, according to them, is that individual workers need a sense of ownership of their human capital and they need to take responsibility for improving their value through continuous learning. Davenport and associates explore the process of knowledge formation in organizations. According to them, information exists in the form of raw material. Data and people transform raw data into information by acting and adding data and value to it. Therefore, the role of knowledge management is to help organizations and people transform information into intelligence by analyzing causes and trends and drawing conclusions about what to do next with the results.

Chatzkel (2003) states, "Knowledge management deals with the flow of knowledge" (p. 4). According to him, knowledge management is important because without being able to access, share, or capture value from knowledge, intellectual capital can be costly and wasteful. In this regard, knowledge management by nurturing, leveraging, and sharing knowledge in an organization is an action-based organizational strategy. The organization is responsible for cultivating usable knowledge resources and making them readily accessible and actionable, putting the organization and its people in the best position to create and capture the value of knowledge. Similarly, Saint-Onge (2003) claims that knowledge management, as a business strategy, should be to build the capabilities and the relationships that constitute the intangible assets so that those assets result in the economic performance of the organization.

Alvesson and Kärreman (2001) propose that knowledge management includes information systems, organizational learning, strategic management and innovation. They suggest that knowledge management consists of two oxymoronic characters: knowledge and management. They argue, “The more management, the less knowledge to manage, and the more knowledge matters, the less space there is for management to make a difference” (p. 996). Basic premises of their position are that knowledge is ontologically incoherent, vague, objective, function-oriented, and robust, whereas management is designed to supervise and control workers’ behaviors and mindsets. This type of management purports to minimize the cost, effort, and skill associated with the workforce.

The review of the existing knowledge management literature shows that organizations tend to view knowledge management as a solution, at least partially to improve job performance, increase productivity, promote communication, and so on. According to Skyrme (2000), the benefits of having a knowledge management strategy in an organization are: (a) avoidance of costly organizational mistakes, (b) sharing of best practices within the organization, (c) faster and timely problem solving, (d) faster development and innovation, (e) better customer solutions and relations, and (f) gaining new business.

Some researchers focus on how knowledge is created and transferred between people in an organization. Despres and Chauvel (2000), for instance, suggest that knowledge management has four dimensions: the process of cognition, the type of knowledge (tacit and explicit), the level of activity (individual and

organization), and the context in which the knowledge is used. In addition, some scholars, such as Nonaka and Takeuchi (1995), focus on how knowledge is created at the individual level by stressing the notion of tacit knowledge. This perspective on knowledge management posits that even though it is true that knowledge management benefits from the development and use of information technology and other information management processes, people are the key factors that actually converge, create, and share knowledge and information.

The literature review suggests that the purpose of knowledge management is to attain and sustain organizational competence and to develop competitive knowledge workers for organizational survival in a competitive market. In other words, knowledge management can be viewed as: (a) an emerging management and marketing strategy to facilitate the interactions of people and of people and environment and (b) an organizational process to create and share knowledge and information – a strategic, intangible asset to organizations. In respect to this, knowledge management has two primary factors to consider: human involvement and information technology. Knowledge management includes all personnel, facilities, and services associated with the creation, processing, and distribution of knowledge that an organization or its members possess and obtain.

Applications of Knowledge Management Strategies to Higher Education

The fundamental purpose of higher education, its processes, and its end products differ from those of business organizations. Acknowledging these

differences, researchers and administrators in higher education have tried to examine and adopt business management theories and strategies (Jeris, 1998). They have done so in order to effectively and efficiently implement strategic changes and achieve higher education goals: delivering the best possible instruction and teaching practices, improving research capabilities, and responding to social demands (Fecher, 1985). This section of the chapter reviews the existing knowledge management literature related to higher education institutions. The review was segmented into four categories: information or library systems, instruction and curriculum development, institutional reform strategies, and the role of department chairs.

First, information and library system workers have been early adopters of knowledge management in the field of education. The studies in this category delve into the magnitude of the influence of technological advances and their use for instruction and administration in education institutions. These studies explore how to maximize the benefits of information technologies and how to leverage and reinforce organizational reform by using knowledge management technologies. Some researchers seem to agree that knowledge management with assistance of information technologies can facilitate collaboration between people and departments in a higher education institution (Koenig, 1999; Metcalfe, 2006; Roberts, 2001). In this regard, knowledge management technology can be seen as a tool for coordination. Researchers in this category contend that organizational structure and environmental factors must be considered in the design of effective

knowledge management systems (Chaudhry & Higgins, 2001; Hawkins, 2000; Metcalfe, 2006; Reardon, 1998; Thorn, 2001).

Second, some researchers try to investigate how knowledge management is embraced and how it affects various practices in higher education institutions such as the development of curriculum and instruction. Ruth, Theobald, and Frizzell (1999) note that the top 25 MBA programs in the United States (according to the *US News and World Report* in 1998) offered knowledge management classes or its content in courses. They predict that knowledge management courses will become more than elective courses. Aligned with this study, Kidwell, Vander Linde, and Johnson (2000) focus on the possible contributions of emerging technologies to higher education processes, such as instructional and curriculum development, research activities, and administration practices. Kelly and Murnane (2005) investigate whether and how knowledge as a product can be used to evaluate the performance of people in a university. However, despite the efforts in applying the notion and strategies of knowledge management to higher education settings, the studies in this category fail to offer empirical evidence of how knowledge management strategies can be applied and actually used in higher education settings. So far, minimal research has been conducted that examines knowledge management studies related to the development of curriculum and instruction within higher education institutions.

Third, knowledge management is viewed as a comprehensive strategy to reform a higher education institution. Researchers in this category attempt to find

strategies for organizational reform within institutions of higher education. Rowley (2000) suggests that higher education institutions are increasingly exposed to market competition. Higher education institutions are critical institutions where human capital and intellectual capital are highly valued. They are expected to recognize and respond to the increasing demands of the knowledge-based society. Higher education institutions are key learning and education systems – they are crucial sources for preparing quality human resources and generating new ideas and technologies. Higher education institutions have contributed to the generation of new knowledge and technologies that are demanded by society while simultaneously being pressured by society to change.

The study by Wolfe and Lucas (2001), for instance, investigates how to effectively transfer knowledge from for-profit firms to universities. They explore how collaboration between business organizations and universities is critical to creating new knowledge. In order to overcome various barriers between these two entities, the two organizations must study and understand each other. Another example of this category is the work of Serban and Luan (2002). In this study, the authors focus on the possibilities of technologies for instruction and administration, such as Intranet, search engines for data mining, and data storage and access technologies. They note that technologies have significant implications for implementing knowledge management: (1) project management, (2) skills update, (3) managing the office, (4) resource planning, (5) outsourcing, and (6) promoting and advocating for institutional research. However, these authors do not address

how academic departments and the constituents of these departments implement and understand knowledge management. Moreover, by focusing on the role and use of technology, the studies in this area limit their views of knowledge management strategies to technology and, consequently, they overlook other factors that shape and constitute the success of knowledge management.

Metcalf (2006) explores various issues that higher education institutions face in association with university and business relationships, university policy and administration, technological change and its application, and other issues. One of the contributions of this book is that some of the case studies indicate the difficult nature of introducing and implementing knowledge management systems and strategies in higher education settings. Likewise, the challenge of initiating and implementing any innovative policy and practice is stressed, knowledge management being featured in this case. This book also addresses social, economic, and political issues: social demand on higher education institutions, fatigue syndrome by the constituents, and resistance by traditional bureaucrats. However, most of the authors in this edited book interchangeably use the terms “knowledge management” and “information management.” In addition, the book lacks empirical research regarding the implementation of knowledge management strategies and practices, although it does provide several case studies on instructional technology development and application in classroom and administration routines.

Fourth, the roles and responsibilities of academic leaders are becoming more important. Department chairs play a critical role in establishing governance and

improving performance of departments. Carrol and Gmelch (1994) identify four key roles of department chairs: faculty developer, manager, leader, and scholar. Gmelch and Miskin (1995) pose that personal effort, information dissemination, autonomy, knowledge creation, solitude, and receiving services affect the chair's performance. Gmelch and Parkay (1999), based on a qualitative study of the Beginning Department Chair Study, claim that fostering teamwork, focusing on teaching, committing to quality, and guiding purposeful leadership are critical actions for department change and renewal. They also noted the importance of institutional support systems that foster collaboration and knowledge sharing between experienced chairs and new chairs. Gmelch and Parkay (1999) identify the following keys to success for department chairs:

- (a) restructuring the position with proper support system,
- (b) purging unnecessary administrivia,
- (c) reversing the hierarchy through ensuring support and leadership of chair,
- (d) protecting scholarship interests, and
- (e) providing department chairs training for leadership.

Understanding more about the role of department chairs plays an important role in preparing higher education institutions for future challenges.

In summary, despite the recognition of the potential benefits of knowledge management by many researchers and practitioners, little empirical research has been conducted that examines how knowledge management is accepted and used in higher education institutions. Given that debates on the nature of knowledge and the

theoretical foundation of knowledge management still continue, this study will contribute to the understanding of knowledge management and the expansion of its intellectual territory beyond the business arena.

Knowledge Management Strategies and the Functional Domains

This section explores the accounts of the four key domains of knowledge management strategies that are featured in this investigation. In each domain, descriptions are provided of the functional domains that were gleaned from the existing knowledge management literature.

In knowledge management literature, many researchers suggest that knowledge management strategies – including leadership, culture (Tetrick and Da Silva, 2003), technology, and measurement (Boudreau, 2003) – improve organizational capabilities as a means to sustain a competitive edge in the market. Spec and Carter (2003) created a survey instrument to identify the current state of knowledge management practice across Europe and in organizations where knowledge management practices are successfully implemented. They suggest, based on the results of the extensive survey, that eight issues should be examined: general approach of knowledge management, strategies for knowledge, enablers or tools for knowledge management, culture and motivation, leadership and management involvement, competency building, communication, and measurement.

Skyrme (1999) states that there are six key factors of the successful knowledge-based business: leadership, environment, culture and structure, processes

for managing organizational knowledge, measures, and supporting infrastructure (technology, tools, and techniques). Dierkes (2001) suggests that (organizational) structure, culture, leadership, and technology are key enablers that ensure successful knowledge management in association with organizational learning. Burton-Jones (2001) lists seven knowledge management strategies: developing a more accurate, comprehensive, and up-to-date information system; evaluating and comparing the level of knowledge; protecting and retaining key knowledge; assisting knowledge transfer; developing cross-functional teams; developing training and research programs; and developing a measurement and control system. One of the most frequently used knowledge management instruments is the one developed by the American Productivity and Quality Center and Arthur Andersen Consulting in 1997. They identified knowledge management strategies and classified them into four domains: culture, leadership, technology, and measurement. The review of the existing knowledge management literature suggests the following domains for knowledge management strategies:

- (a) leadership,
- (b) culture,
- (c) technology, and
- (d) measurement.

These domains are intended to maximize the existing organizational capabilities that have been embedded in an organization and that are conducive to more effective knowledge management strategies.

Leadership

A key factor of successful management is leadership. Leadership is essential for knowledge management systems in matters such as decision making, assigning tasks, and integrating and communicating with people. Desouza and Vanapalli (2005) claim that a leader as a knowledge champion initiates and promotes knowledge management. This present study recognizes the pivotal role of leadership in driving organizational change and adopting and implementing knowledge management. Leaders need to address the complicated, yet urgent issues through strategic planning processes, implementation, and transformation of the institution. To adequately and successfully respond to social demands, developing quality leadership is critical at all levels (Seagren et al., 1993). They specifically stress that department chairs must pay attention to human resources, the structure, and the cultural and political climate of the department.

Skyrme (1999) emphasizes the roles of leadership in knowledge management by illustrating his definition of Chief Knowledge Officer. The Chief Knowledge Officer's roles are to help the organization formulate strategy for development and exploitation of knowledge, support implementation by introducing knowledge management techniques, provide coordination for knowledge specialists, oversee the development of a knowledge infrastructure, and facilitate and support knowledge communities. He suggests ten characteristics of a successful leader cited from his previous study with Debra. M. Amidon (1997): clear vision, enthusiasm, holistic perspective, systemic framework, "bet on knowledge," effective internal and external

communication, extensive interaction, good teamwork, openness and inquisitiveness for innovation and learning, and incentive and sanctions. As seen in this section, there are a number of factors that contribute to the role of leadership in knowledge management practices. Based on this literature review, in this present study, leadership refers to the ability of a leader to align knowledge management behaviors with organizational strategies, offer an opportunity and a direction, identify and recognize best practices and performances, and facilitate the organizational learning in order to achieve the established goals. The review of the existing literature suggests that there are four key characteristics of leadership that are vitally important to knowledge management:

- (a) vision,
- (b) strategic planning (economic benefit),
- (c) value of learning, and
- (d) motivation.

Culture

Organizational culture provides the context within which organizational strategies and policies are decided. A shift of organizational culture is a precondition to successfully implementing knowledge management. Knowledge management must be synthesized with an existing culture of an organization (Lam, 2005). Shaping an adequate culture is the most significant obstacle to be compromised for successful knowledge management (Davenport et al., 1998). Culture is a multi-

faceted, complex process in nature. Sackman (1997) asserts that culture in an organization is complex, pluralistic, diverse, and often contradictory. Although this study does not intend to explore how culture is interpreted in research and practice, it might be important to briefly illustrate the nature of culture, especially in organizational settings. Culture is reflected in values, norms, and practices. Values are embedded, tacit in nature, and, hence, difficult to articulate and change. Values inspire people to do something. Norms are formulated by values but are more visible than values. If members in an organization believe that sharing knowledge would benefit them, they are more likely to support the idea of sharing their skills and knowledge. Practices are the most tangible form of culture. These three forms of culture influence the behaviors of members in an organization (Trice & Beyer, 1993).

Culture or cultural factors have a significant impact on generating and leveraging knowledge (Brown & Duguid, 1991; De Long & Fahey, 2000; Sackman, 1991). This present study reviewed several studies that linked cultural influences and knowledge management. Kermally (2002) suggests that shaping an organization involves a vision and value. He further states that creating a knowledge-driven organization involves several factors: tolerance, empowerment, trust, networking, open communication, recognition, diversity, and talented individuals. He emphasizes, in particular, that the role of the leader is critical to creating such an organization.

In examining what leverages organizational knowledge capability, Tetric and Da Silva (2003) emphasize an organizational culture that promotes sharing knowledge and organizational learning. Hurley and Hult (1998) list several cultural characteristics: market focus, learning and development, status differentials, participative decision making, support and collaboration, power sharing, communication, and tolerance for conflict and risk. Along with these processes, responsiveness and flexibility are critical to converting individual knowledge into explicit knowledge so that it may be shared with others within the organization (Kidwell et al., 2000). Skyrme (1999) suggests that the characteristics of culture in knowledge-enriching organizations are openness of organizational culture; empowered individuals; active learning; constant improvement and innovation; intense, open, and widespread communications; organizational slack – time to experiment, reflect, and learn; interaction and boundary crossing; encouragement of experiment; aligned goals and performance measures; and willingness to share knowledge among colleagues. Culture defines the organizational environment within which strategy is developed.

Based on the literature review, this present study defines culture as an organizational environment and a behavioral pattern that enables people to share their ideas and knowledge.

The existing knowledge management literature, thus far, suggests five strategies that are most significant in shaping a culture conducive to knowledge management:

- (a) community-oriented,
- (b) trust/openness,
- (c) collaboration,
- (d) entrepreneurship, and
- (e) responsiveness.

Technology

Technology supports knowledge management in many ways - it enhances the organizational capability in storing, retrieving, transferring, sharing, and creating knowledge (Coakes, Willis, & Clarke, 2002; Kermally, 2002; Smith, McKeen, & Singh, 2006). The advent of information and communication technology and its extensive applications to business processes have contributed significantly to the development of knowledge management. These applications include customer relationships, training and development, and internal communications. The literature of the early developmental stages of knowledge management mainly concentrated on capturing, storing, codifying, and distributing knowledge, and it mainly emphasized the role of technology (McElroy, 2003). However, technology alone cannot dictate the success of knowledge management (Serban & Luan, 2002). Technology is more than a mechanical and physical supplementary artifact. Technology refers to the infrastructure of devices and systems that enhance the development and distribution of knowledge across an organization. The literature review of this study reveals that most knowledge management researchers address the significant impact of

technology and its role in effective knowledge management. However, the over-emphasis on technology might cause conceptual confusion between information management and knowledge management. Technology includes critical strategies of the structural dimension necessary to mobilize social capital for the creation of new knowledge: web-based networks, electronic databases, and so on (Gold et al., 2001).

Pavitt (1992) suggests that technology is a tool for organizational innovation. In a study of successful large companies, he concludes that technology used in one company or industry may not necessarily be successfully applied to another firm or industry. Further, he claims that innovative activities and technology development require select professional skills and knowledge.

Technology is more than a mechanical, physical supplementary artifact. Technology (system-centered in particular) is an important factor that shapes organizational vision (Dierkes, 2001). The Organization for Economic Co-operation and Development (2004) reports that information technology is a critical factor that facilitates knowledge dissemination and integration in organizations. This international and cross-industry study concludes that technology affects knowledge management in multiple ways: it reduces the cost and physical proximity of learning activity, it increases accessibility of learning, it enhances creative interactions across a wide range of professional communities, and it facilitates knowledge sharing. However, although technologies facilitate knowledge sharing and dissemination, applying technologies does not guarantee the successful implementation of knowledge management. Other factors such as organizational culture and inter-

personal relations can affect knowledge sharing and transfer in organizational contexts.

Additional review of knowledge management literature suggests that up-to-date information technology plays a significant role in capturing, storing, and transferring organizational knowledge (Pfeffer & Sutton, 1999); training (Beckman, 1999; Roth, 1995); communication (Wiig, 1999); coordination (Baek, Liebowitz, Prasad, & Granger, 1999); and flexible combination and integration (Fiol, 2003). Based on the literature review, this present study defines technology as tools and processes that foster, facilitate, and sustain collective and individual activities that help share, transfer, and create knowledge.

This literature review suggests six strategies that are most significant in shaping a culture congenial to knowledge management:

- (a) training,
- (b) synergy,
- (c) communication,
- (d) problem solving oriented,
- (e) up-to-date technology, and
- (f) storing knowledge.

Measurement

Knowledge management is an ongoing process that involves many activities and processes: diagnosis, design, implementation, knowledge creation, knowledge

transfer, knowledge sharing, and so on. The primary goal of knowledge management, like other management theories or models, is to identify and leverage organizational and individual knowledge for the organization and its members to perform better and, consequently, sustain competitive advantage. Measurement, as a strategy of knowledge management, serves to identify knowledge assets and capabilities of an organization and to align the measurement activities with organizational strategies (Freeze & Kulkarni, 2005). The fundamental assumption of most measurement models and practices adopted in higher education is that measurement must play a critical role in diagnosing the various problems, offering suggestions on planning and implementation, and utilizing the results to improve academic programs as a whole. Through these efforts, some measurement approaches attempt to identify optimal conditions and factors such as standardized test scores of students, financial resources, institutional performance, the role of governments and legislations and the autonomy and involvement of faculty (Brown & Glasner, 1997; Palomba & Banta, 1999).

Measuring intangible assets, such as intellectual capital or knowledge, with a traditional accounting or financial practice and method might produce distorted indications and costly errors. Although the means to measure knowledge and the achievement of knowledge management practices are yet to be perfected, measurement in this present study refers to the assessment methods of knowledge management and their relationships to organizational performance. In particular, measuring organizational performance might include a multitude of factors related to

organizational culture and politics vis-à-vis financial operations and budget allocations (Gumport & Pusser, 1995; Leslie & Rhoades, 1995).

Skyrme and Amidon (1998) suggest that knowledge management can be assessed in four dimensions: customer, internal process, innovation and learning, and financial. Although there has been skepticism of this type of measurement, this present study attempts to measure it in a way that benchmarking and allocating organizational resources are examples of these measurement methods. Pavitt (1992) states that systematic approaches are needed to evaluate processes and to allocate organizational resources. Boudreau (2003) stresses that measurement of knowledge management provides a scientific ground to make a better decision and reinforces links between knowledge and the competitive advantage of an organization. His study on knowledge management measurement focuses on the use of knowledge to create value by aggregating individual and organizational levels. He suggests that there are three anchor points in knowledge management measurement: impact, effectiveness, and efficiency. The role of measurement is growing in tandem with teaching and learning relationships in higher education institutions, and measurement is seen as an integral part of the learning process (Strassmann, 1997). A new management approach with rigid measurement may be more likely to lead to strategic planning, program improvement, and quality assurance (Kaplan & Norton, 1996). After the review of the existing literature, this present study defines measurement as an instrument to find appropriate metrics for effective and efficient knowledge management.

The review of the literature on knowledge management measurement suggests that there are four key useful measurement strategies:

- (a) effectiveness,
- (b) data-based decision making,
- (c) systemic evaluation, and
- (d) integration.

Operationalization of Research Domains and Strategies

Based on the literature review of knowledge management for the purpose of this study, the following is the operationalization of knowledge management domains and strategies pertaining to this study. The four domains of the strategies include leadership, culture, technology, and measurement. A set of strategies is identified that represents the four domains of knowledge management strategies. The strategies are described here to avert possible confusion between terms used in this study and those used in other knowledge management literature.

Leadership

The literature review on knowledge management associated with the role of leadership, as illustrated in Chapter 2, suggests four key strategies that establish successful leadership in implementing knowledge management strategies: vision, motivation, value of learning, and strategic planning. The following section illustrates each strategy of the leadership domain.

Vision

Vision is a leading factor in leadership that transforms organizations, both in terms of culture and structure. There are various perspectives of understanding the concept and function of vision in the leadership literature. Dierkes (2001) suggests that organizations in an uncertain environment require visionary leadership. This present study sees vision as an individual characteristic that enables leaders to set a standard, facilitate coordination of organizational activities and systems, and guide organizational members to achieve goals. Visionary leaders address uncertainty that an organization faces. In a knowledge-creating organization, Nonaka (1991) also points out that managers with vision are to provide a sense of direction that helps its members to create new knowledge.

Motivation

By offering vision and incentives, leadership can promote knowledge sharing and encourage people to participate in creating knowledge (Nonaka, 1991; Smith et al., 2006). One of the contributing factors of visionary leadership is to motivate people (Dierkes, 2001). In this regard, motivation is a precondition to continuously justify the vision. Incentives designed to encourage people to share their knowledge seem to have a more positive relation with the cumulative nature of knowledge (Cohen & Levinthal, 1990; OECD, 2004). A key to the success of knowledge management is to understand how members in an organization come to believe that they can better perform and contribute to continuous improvement.

Value of Learning

Hamel (1991) posits that core competencies of organizations reside in collective learning. The literature review of this present study confirms that learning is widely recognized as critical to the successful implementation of knowledge management strategies. The development of technology reinforces innovation efforts such as facilitating collaboration as well as organizational learning (OECD, 2004). Learning or organizational learning described in most knowledge management literature converts individual, uncodified, irrelevant information or knowledge to organized, codified and therefore sharable and relevant knowledge, respectively (Dierkes, 2001; Nonaka & Takeuchi, 1995).

Strategic Planning

Long-term, comprehensive strategic planning involves integrating expectations and technology into a vision that enables an organization to prepare for the future (Kermally, 2002). In an uncertain environment, it is difficult to predict specific preferences for the future. Sanchez (2001) stresses the importance of developing future scenarios and preparing responses for them. In his view, organizational learning plays a pivotal role in identifying organizational capabilities, shaping effective strategies, and creating new knowledge with benefits.

In summary, leadership plays a key role in encouraging and motivating people in order to achieve organizational goals. Through effective leadership,

continuous learning opportunities that are aligned with a cogent, strategic plan are provided for employees.

Culture

The review of the existing knowledge management literature reveals that five key strategies underpin organizational culture: community-oriented, trust/openness, collaboration, entrepreneurship, and responsiveness. The following section describes the accounts for each strategy of the culture domain.

Community-Oriented

The term “community-oriented” is similar to the concept of “community of practice” by Wenger, McDermott, and Snyder (2002). To them, people in this community of practice create a work environment in which they may build and share their identities. Although the knowledge base of a community is not formed by its boundaries, interdependency emerges among community members. Academic communities also present the dynamics of sharing identities (Sapsed, Bessant, Partington, Tranfield, & Young, 2002). An academic department within a college of education may also be viewed as a community of practice, based on common functional interests and disciplines. This community-oriented pertains to how members share their skills and knowledge with other members in the department.

Trust/Openness

Given norms and conditions that require interpersonal and interprofessional knowledge-related activities, the issue of trust or openness among members of an organization is an important issue (OECD, 2004). In order to identify and solve the problems within an organization, trust building is critical to the success of knowledge management. Organizational culture established on trust may prove to be an effective and powerful catalyst to organizational change (Kermally, 2002; Wolverton et al., 1998).

Collaboration

Collaboration in this study refers to interaction between the members or groups in an organization. Grant (1996) describes teamwork as a collaborative activity among the members of an organization. It involves sharing ideas and special knowledge that are critical to sustaining a competitive advantage. Collaboration creates new organizational capabilities by sharing knowledge. It creates or is based upon a relationship of reciprocal trust between people who share a common goal in an organization – such as members of academic departments in higher education institutions. Collaborative activities through various mechanisms (e.g., mentoring, coaching) may be used to accelerate organizational performance and individual development (Gmelch & Parkay, 1999; Gupta & Bostrom, 2006; Van Tiem, Moseley, & Dessinger, 2000).

Entrepreneurship

This study conceptualizes entrepreneurship as an organizational process as well as a personal characteristic that contributes to creating and discovering new knowledge. A person with entrepreneurial spirit may identify, explain and justify new ideas so as to create new knowledge and add value to a professional community and society in general. Most organizations recognize these knowledge pioneers and promote entrepreneurship as an alternative to focusing on what is already known (Coulson-Thomas, 2003).

Responsiveness (to Training and Professional Development)

Continuous learning systems are used to create and support a culture of inquiry. These systems help to identify and shape the tenor of knowledge management and to help diagnose organizational problems (Petrides, 2002). Timely responses to the demand for training and professional development support the value of learning required for new knowledge creation and sharing. Hence, responsive training and professional development are indicators of the awareness needs and problems within the organizational context.

In summary, although it is difficult to define culture in absolute terms, this study notices that in order to successfully implement knowledge management strategies, an organization and its members should engage in creating a culture that embraces the notion of community of practices and collaboration. The entrepreneurial spirit of its members must be recognized and promoted. In addition,

successful knowledge management comes from building trust among members and offering timely opportunities for training and professional development.

Technology

Technology is a major enabler that facilitates knowledge management. This study reviewed the relevant literature and identified six roles of technology in fostering and implementing successful knowledge management strategies: training, integration, communication, problem-solving orientation, up-to-date technology, and local networking. The following section illustrates the roles and functions of technology.

Training

Without proper training of members, organizations cannot expect technology applications to be effective (Pickett & Hamre, 2002; Serban & Luan, 2002). Information technology can be used to facilitate individual and team learning (Roth, 1995). On-line and off-line training for technology applications may be used to reinforce existing practices and to offer effective means for creating new knowledge. Technologies may be used in several ways to enhance learning opportunities and learning environments for members of an organization (Coakes et al., 2002).

Synergy

Professionals in higher education institutions have a wide range of resources and capabilities that can be strategically used. One of the benefits of technology, information and communications technology in particular, is that it offers an effective and efficient tool to capture and share internal and external knowledge (Kermally, 2002). It helps overcome the differences in time and distance and facilitates networking between people within and beyond one's own professional territory and department.

Communication

Communication is critical to successful implementation of knowledge management. Technology facilitates communication between people and it can help people work together and share their ideas and knowledge. Communication supported by technology disseminates the values of an organization and shapes organizational behaviors (Petrides, 2002; Ross, 2005; Thomas, Kellogg, & Erickson, 2001). Technology plays a critical role in promoting innovative thinking and building social capital by sharing and transferring the ideas and knowledge that organization members might possess.

Problem-Solving Orientation

A technology that is successfully served to solve one problem might not offer the same advantage or solution to another problem. The selection of technology

needs to be focused. The selection should be connected to the organizational vision as a means to maximize the benefit of the technology and to bring solutions to an organization (Lam, 2005; Smith et al., 2006).

Up-to-Date Technology

Technology, as repeatedly stated in this chapter, is an enabler of knowledge sharing, transfer, and creation. Specific activities require a certain type of technology that can be uniquely applied to facilitate the activity. Technology selection involves strategic decisions that affect organizational performance (Coulson-Thomas, 2003; Kermally, 2002).

Storing Knowledge

Storing knowledge is a type of integration practice that involves capturing new ideas and knowledge inside of the organization. Once a best practice is identified and captured, it is important to spread it to those who may benefit from it in the organization. Technology, for example, an intranet-type system, may be used to facilitate this type of collaboration among members in the organization (Coakes et al., 2002).

In summary, technology is affected by individual and collective behavior patterns and activities. In other words, unless individual members in an organization understand the benefit of a technology application, they are unlikely to embrace it and use it to achieve organizational goals.

Measurement

Knowledge management is an on-going process that involves many activities and processes, such as diagnosis, design, implementation, knowledge creation, knowledge transfer, and knowledge sharing. Once knowledge management is implemented, the effectiveness or success needs to be examined. However, measuring knowledge management strategies may take time and may not occur in the early stages of implementing knowledge management (American Productivity and Quality Center, 2001). The review of the literature on knowledge management measurement suggests four key strategies: effectiveness, scientific (data-based) decision making, systemic evaluation, and integration. The following section illustrates the accounts of each strategy.

Effectiveness

Turban and Aronson (2001) suggest three key reasons for evaluating the implementation of knowledge management: (1) providing a basis for organization valuation, (2) forcing management to focus on important issues, and (3) justifying investments in knowledge management. In order to gain and reinforce the support for implementing knowledge management, the investment must be shown to be cost-worthy (Kermally, 2002; Truch, 2004).

Scientific (Evidence-Based) Decision Making

Measuring knowledge management helps to identify the tenor and current status of an initiative. Measuring provides justification for modifying knowledge management initiatives and aligning them with strategic priorities of the organization (Smith et al., 2006).

Systemic Evaluation

Jennex and Olfman (2004), in comparing various frameworks for assessing the implementation of knowledge management, suggest that assessing knowledge management provides a tool for validating those factors responsible for successful implementation. Researchers have attempted to identify factors that have the potential to impact the implementation of knowledge management (Kermally, 2002; Wenger et al., 2002). Systemic evaluation includes the on-going assessment of learning and innovative activities, relationships with the external community, and human factors within the organization.

Integration

Effective measurement identifies opportunities for knowledge-based performance improvement. Measurement can be used to support people and/or activities that have potential for improvement. This type of constructive use of measurement can help people improve performance and increase their job satisfaction (Coulson-Thomas, 2003).

Summary

In this chapter, current discussions relating to the main elements of the research topic and conceptual background of knowledge management were identified and outlined. In addition, existing literature associated with the survey instrument of this study was reviewed.

The results of the literature review suggest that organizations of both public and private sectors, including higher education institutions, are facing increasing complexity and uncertainty for a number of reasons: (a) knowledge and technology advancements in the so-called knowledge-based society are altering the source and mode of competition and social accountability; (b) these phenomena in turn lead to the development of new strategies including new management practices. This study is a quantitative approach intended to provide general ideas that may help shape knowledge management strategies in higher education institutions.

In Chapter 3, based on an in-depth literature review on the main domains and strategies of the survey instrument in this chapter, the research questions and hypotheses, the design of the survey instrument based on existing instruments, and development of a new instrument suitable for this study with academic departments in colleges of education are described.

CHAPTER 3

METHODS

This study used a descriptive design that is primarily quantitative. For data analysis, descriptive statistics, *t* tests, and analysis of variance (ANOVA) were used. For assessing the differences associated with several organizational factors when two levels of variables were observed, *t* tests were conducted. A series of ANOVA analyses were conducted to identify the differences when three or more levels of variables were compared.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) Graduate Version 15.0. Indices were calculated and scales were derived for the opinions of academic department chairs on the perception of performance and perception of the importance of the knowledge management strategies. Inferential statistics included tests of difference and association.

Instrumentation

A survey method (a web-based survey, in particular) was designed and used for the study. The benefits that survey method may bring to this study are listed as follows (Fowler, 2002; Rea & Parker, 2005):

- (a) in a non-threatening environment, survey offers what the respondent thinks is important,
- (b) survey method provides an opportunity to communicate with respondents about a research topic that can shed light on topics related to the research in a larger context,
- (c) survey method may help researchers gather objective information in order to make sound data-driven decisions,
- (d) survey method provides a snapshot of the target population of the study and their perceptions and attitudes toward the problem of study. This snapshot helps researchers establish a foundation to analyze whether target population attitudes and perceptions relative to the survey problem are different or changing over time.

A pre-existing instrument, the Knowledge Management Assessment Tool, was revised with permission of the original designer of the tool, the American Productivity and Quality Center (APQC). With the benefit of experts' advice and a pilot study, the original tool was modified to better fit the interests of the sample population: department chairs in higher education institutions. This web-based survey was designed to collect data on four domains: leadership, culture, technology, and measurement. The number of survey items was the same as the original assessment tool; however, the content of the items was revised in order for the department chairs in colleges of education to better understand knowledge

management strategies and help them reflect on their management practices and perceptions on the survey.

Pilot Study

The original assessment tool, Knowledge Management Assessment Tool, designed by the American Productivity and Quality Center and the Arthur Andersen Consulting, was targeted toward for-profit business organizations. An important goal of the pilot study was to revise the original assessment tool so as to develop an appropriate tool for the target population. Another goal of the pilot study was to check the reliability and validity of the revised instrument. A field study was conducted with department chairs who are managing departments associated with teacher training programs at public universities within the regional states.

Instrument

For the pilot study, a Survey for Knowledge Management Strategies in Higher Education was modified from the original assessment tool, KMAT. A panel of three experts was formed. These members were all actively participating in teaching, research, and other professional activities. Two of the experts had their academic background in human resource development and adult education. Both were familiar with research methodologies, especially quantitative approaches, and they had numerous publications in the areas of human resource development and adult education. The other expert in the panel was invited to oversee and supervise

the overall process of data collection and statistical analyses of the study. With this panel of three experts, a series of reviews was conducted on the content of the survey questionnaires. The following changes were made to the initial survey instrument based on the input of the expert panel:

- (a) naming the target respondents “academic chairs in higher education institutions,”
- (b) identifying words and terms that needed clarification,
- (c) making grammatical corrections,
- (d) rewording of scales, and
- (e) providing organizational enhancements.

The survey instrument for the pilot study was divided into two dimensions of knowledge management strategies: perception of performance and perception of importance. Each dimension included four domains: leadership, culture, technology, and measurement. In total, the pilot instrument contained 52 items: four items for leadership, five for culture, six for technology, and four for measurement in each dimension of two, and fourteen items for organizational factors. The editing of the pilot instrument was based on the suggestions of the review panel, which resulted in the instrument identified as A Survey for Knowledge Management Strategies in Higher Education (see Appendix B).

The pilot survey instrument was sent to 22 academic department chairs at a university located in the north central region of the United States. These participants were not involved in the development of the instrument. For the pilot study, instead

of a web-based survey, a paper-pencil survey was conducted over two weeks. Through meetings in person with the respondents, in-depth interviews were conducted and, consequently, helpful suggestions, both written and verbal, were obtained. The suggestions contained several key considerations: editorial improvements to help academic chairs better understand knowledge management and its strategies, formatting recommendations, and layout suggestions for a web-based survey.

Variables were measured with a four-point Likert-type scale that provided a means to quantify and standardize the results. The scale ranged from a low of 1 to a high of 4. Respondents were asked to score each dimension on a four-point Likert-type scale. For the perception of performance dimension, the scales ranged from strongly agree, agree, disagree, strongly disagree. For the perception of importance dimension, the scales ranged from very important, important, somewhat important, not important. The responses don't know/not applicable were treated as missing values. Cronbach's alpha tests were compared to assess the reliability of the pilot study instrument. Respondents were encouraged to comment on wording and clarity of questionnaire items to remove ambiguity.

Results of the Pilot Study

Response rate. Ten out of 22 academic department chairs responded for a response rate of 45%. Due to the timing of the pilot study, summer semester, some of the chairs were on leaves of absence for personal reasons.

Reliability of the data. The statistical results of the pilot study were based on the methodological recommendations made by Bontis (1998). First, Cronbach's alpha was used to examine the reliability of data as suggested by Nunnally (1994). Nunnally suggests that this calculation be the first measure to assess the quality of the scores. Cronbach's alpha can be considered an index of the inter-item consistency. A reliability of .70 is considered adequate for comparing groups (Field, 2005). The results in Table 1 indicate that the Cronbach's alpha values for each domain in two dimensions are relatively acceptable for the study.

Table 1

Summary of the Results of the Reliability Analyses of Pilot Study

Dimension	Domains	Cronbach's Alpha
Perceptions of Performance	Leadership	.659
	Culture	.741
	Technology	.856
	Measurement	.739
Perceptions of Importance	Leadership	.685
	Culture	.765
	Technology	.806
	Measurement	.675

Validation of the instrument content. In order to validate the content of the instrument, this study conducted two different processes: expert panel meetings and a field test. The expert panel consisted of three members in the fields of statistics and human resource development. A series of panel meetings was held to evaluate the revised version of the original Knowledge Management Assessment Tool developed by the American Productivity and Quality Center and to clarify the questionnaire items to ensure that the modified survey instrument was appropriate for higher education settings, colleges of education in particular. After agreement among the expert panel, a field test was conducted at a university in the north central region of the United States. Department chairs selected for the field test were from academic departments associated with teacher training programs.

The chairs were requested to answer all the questionnaire items and to offer feedback and suggestions that were related to the content of the instrument. The feedback and suggestions were examined in order to further develop the instrument. The revised version of the instrument (after the field test with the department chairs) was reviewed and finalized with the experts.

Main Survey

Before the main survey was posted and sent to the target sample, the intended study (including the web-based format of the survey instrument) was approved by the Institutional Review Board (IRB) of Northern Illinois University (see Appendix C). The potential benefits and possible harm of the study were clarified. As advised

by the IRB guidelines, a consent form was posted on the web-based survey. A technical logic was created so that unless a respondent agreed to the conditions of the consent form, the respondent was blocked from answering the questionnaire items. In the consent form, the purpose and benefit of the study, confidentiality of the respondents, and contact information of the researcher were included for the respondents.

Survey Instrument Design

Suggestions for a web-based survey by Dillman (2000) were adopted for the main survey of this study. The tailored design method (TDM) designed by Dillman makes it possible to obtain relatively higher response rates. In addition, the benefits of a web-based survey are as follows:

- (a) time constraints are minimized,
- (b) faster speed of responses,
- (c) speedy and efficient data collecting and analyses,
- (d) cost effective, and
- (e) enhances the possibility for respondents to be more honest to sensitive questions.

TDM, according to Dillman, may well serve speed and efficiency of a web-based survey, create trust and perceptions of increased rewards, and reduce costs.

The TDM that this study employed included five steps:

- (a) pre-notice communication through email,

- (b) sending an email message with a hyperlink that led to a web-based questionnaire,
- (c) follow-up email contact,
- (d) personal telephone contact and sending the follow-up email message with a hyperlink that led to a web-based questionnaire,
- (e) final contact and thank you email.

Appendices D, E, F, and G contain copies of the email communication.

This web-based survey was sent through email communications with the hyperlink attached to the academic department chairs within the selected sample frame. The web-based survey was designed and distributed through SurveyMonkey.com. A cover page included the brief operational definition of knowledge management. SurveyMonkey.com helped the researcher simplify compilation and analysis of the data collected. An individual telephone contact was made in order to increase the response rate. In this telephone contact, no survey was conducted. The telephone contact was initiated to encourage those who had yet to respond to attend to the web-based survey.

Organization of the Variables

This survey instrument includes a revised version of KMAT and demographic organizational variables. The revised survey instrument has four knowledge management domains (culture, leadership, technology, and measurement) that can be used to develop and promote organizational knowledge. Each of the four

domains has a set of knowledge management strategies that constitute the domain. In total, 19 knowledge management strategies over four domains as dependent variables were constructed as identified and illustrated in Chapter 3.

There are fourteen organizational factors as independent variables that were considered for this study:

- (a) type of institution,
- (b) years as a chair,
- (c) educational field of department,
- (d) the total number of faculty, tenured and non-tenured, and staff,
- (e) the total number of enrolled students, undergraduates and graduates,
- (f) the amount of the annual budget of the department,
- (g) allocation of the budget to salary and non-salary areas,
- (h) inclusion of knowledge management in the department mission statement,
- (i) publishing e-newsletter in the department,
- (j) offering online courses in the department, and
- (k) the presence of co-teaching practice in the department..

This study examines data on the perception of performance and perception of importance of knowledge management strategies in association with the aforementioned organizational factors: type of institution, size of department, financial practice, technology-involved practices, and collaborative activities. It is assumed that differences might exist between public and private universities. Factors associated with department size include the number of faculty and staff and

number of enrolled students (undergraduate and graduate). Budget size and financial allocation to salaried and non-salaried are examined in order to investigate how financial practices might influence knowledge management strategies. Whether or not departments publish an e-newsletter is examined as a means of investigating how departments share and transfer knowledge. The offering of online courses is included as a topic to be examined. Co-teaching courses is included to examine how collaborative relationships between people in a department can make a difference in the use and understanding of KM strategies.

Tables 2 and 3 show a summary of the questionnaires, including the four key domains, the strategies of each domain, and actual questions of the instrument. A copy of the web-based instrument is in Appendix B.

Population

The population of interest for this study was comprised of academic department chairs in colleges or schools of education in seven states in the north central region of the United States. The unit of analysis of this study is at the organization level; therefore, respondents were expected to answer the questionnaire as a representative of the department or program over which they preside. The title for an academic department leader varies across the target departments: some use chair; others use director, coordinator, or dean. This study used department chairs to represent those different titles for a department leader. Department chair

Table 2

Summary of the Descriptions of the Strategies in Four Domains

Knowledge Management Strategies		
Domains	Strategies	Definition
Leadership	Vision	Your department views sharing best practices and experiences (organizational knowledge) with others as a strategic asset.
	Strategic Planning	When developing organizational strategies, your department considers the effectiveness and efficiency of organizational knowledge.
	Value of Learning	Your department creates an environment that supports and facilitates a learning organization.
	Motivation	Your department recognizes faculty and staff for their contributions to the development of best pedagogical practice, scholarship, and service.
Culture	Community	Your department encourages faculty (or staff) to work together and to share their experience and knowledge.
	Trust/Openness	Problems or errors are openly discussed and solutions are shared in the department.
	Collaboration	Faculty in the department frequently mentor each other to develop best teaching and research practices and other scholarship.
	Entrepreneurship	Faculty and staff with an entrepreneurial spirit are recognized in the department.
	Responsiveness	Your department offers opportunities for professional development to faculty and staff.

(continued on following page)

Table 2 (continued)

Domains	Variable	Definition
Technology	Training	Faculty and staff in the department are trained to use new technology.
	Synergy	Your department uses technology to capture internal and external best teaching and research practices.
	Communication	Technology is used to reduce communication barriers in the department.
	Problem-Solving Oriented	Your department has adopted technology with a clear vision to solve problems.
	Up-to-Date Technology	Your department continually upgrades information technology and hardware.
	Storing Knowledge	Technology is used to capture and store knowledge.
Measurement	Effectiveness	Your annual report includes recommendations of cost-effective strategies to achieve department goals.
	Decision-Making	Annual indicators are refined to reflect changes in the (knowledge) management priorities of the department.
	Systematic Evaluation	Your department systematically uses evaluation processes to provide evidence of knowledge development.
	Integration	Your department allocates resources toward efforts that increase its knowledge capability.

Table 3
Summary of Organizational Factors

Organizational Factors	
Variable	Definition
Background Information	Educational field Seniority as a chair
Environment	Type of institution: public or private university Size of department: the number of tenured and nontenured faculty and staff, the number of enrolled students, the budget size Financial practice: budget allocation Technology-involved practices: e-newsletter and on-line courses Collaborative activities: co-teaching

are important leaders within colleges of education who oversee work that is performed at the department level. Examination of the literature on the roles and responsibilities of the chair position reveals that chairs interpret other management strategies through their own experience (Creswell et al., 1990; Gmelch & Parkay, 1999; Seagren et al., 1993; Stark, Briggs, & Rowland-Poplowski, 2000). The chairs most likely have a more comprehensive understanding of their respective departments than anyone else.

The population for this study consists of academic department chairs in colleges of education in the north central regional states in the United States. The total of 319 department chairs from 122 colleges of education in the region was collected from a list of accredited colleges of education compiled by the National Council for Accreditation of Teacher Education. Based on the information from its

official web site, the National Council for Accreditation of Teacher Education is a national accreditation organization for schools, colleges, and departments of education authorized by the United States Department of Education. The Council has a commitment to support teacher training programs in higher education institutions. The National Council for Accreditation of Teacher Education (n.d.) official web site defines a teacher education program as follows:

The sequence of courses and experiences in general and professional studies required by a college/university for the preparation of professional education candidates to teach a specific subject or academic area, to provide professional education services (e.g., school psychology), or to administer schools. A program can be a major in education; it can also be a major, minor, or endorsement in an academic area with professional education requirements for licensing.

The National Council for Accreditation of Teacher Education established the Professional Standards for the Accreditation of Schools, Colleges, and Departments of Education in order to examine and ensure the preparation of high-quality teacher education students on a regular basis (a five- to seven-year visit cycle). Its member programs and schools are obligated to submit their program reports and the reports are posted on the National Council for Accreditation of Teacher Education web site.

The participants for the study only included those in charge of the academic departments in colleges of education. The study focuses on the department chairpersons of colleges of education, 319 total, who are carrying out various management responsibilities. Some departments use chair for head of the department while others use different titles such as director, coordinator, dean, and so on. However, to avert the possible confusion with the title, this study uses the

term “chair” even though the title of the person who is in charge of the department varies across the target departments.

Data Collection Procedures

Data were collected through a web-based survey and email communications with academic chairs at the colleges of education in the north central region of the United States. The list of the colleges of education was identified from the web site of the National Council of Accreditation for Teacher Education. Data were collected over a five-week period from October 10, 2006, to November 17, 2006, following approval from the Institutional Review Board. For individual contact, email accounts and telephone numbers of the chairs and the departments were collected from the official web site of the departments.

For pre-notice contact, email messages were sent with a brief explanation about an upcoming web-based survey of the study through a group emailing tool from the web-based host, SurveyMonkey.com. In this pre-notice email, a hyperlink contained the operational definition of knowledge management. This definition was attached to the email message and it provided an opportunity for the respondents to become familiar with the web-based format of the survey and to consider knowledge management.

At this time, an unexpected technical challenge occurred: a number of the initial email contacts through SurveyMonkey.com were returned. Many of the target colleges and universities rejected or blocked unidentified group contact through

SurveyMonkey.com. Therefore, the researcher used personal email accounts to contact and communicate with the chairs. The emails were sent to the chairs with the hyperlink attached in the message throughout the entire process of this web-based survey. This technical problem also caused another challenge: it was impossible to identify who responded and who did not. This problem was solved by adding another question to the end of the original questionnaire that asked respondents to identify their email account or school name with a notice of robust confidentiality. Participants were assured confidentiality and were given an opportunity to decline to participate in the study on a web-based survey before the main survey began.

Outliers were determined by inspecting raw scores and descriptive statistics. On a few occasions, a follow-up contact was made to those responses that appeared to be an extreme outlier; for instance, the amount of one department's annual budget went over \$50,000,000 for a relatively small department. The responses to this follow-up contact were reflected on the data set.

Data Analysis Procedures

The goal of the study was to examine the extent to which the academic department chairs in colleges of education perceive the use and importance of knowledge management strategies. Data were analyzed with the assistance of Microsoft Excel spreadsheet and the Statistical Package for Social Sciences (SPSS) Graduate Version 15.0. Descriptive statistics and inferential statistics including *t*

tests and one-way analysis of variance (ANOVA) were employed. The data were initially screened to confirm compliance with assumptions that underlined specific statistical analysis procedures and to remove outliers where justified.

In order to appropriately answer the research questions, this study primarily employed independent-samples *t* tests. Using a median score and a visual binning function of SPSS, this study separated the organizational factors provided by the respondents into two groups. The visual binning function helps researchers create new variables based on grouping values of existing variables into a limited number of distinct categories. Limiting the number of cases can save time. This process ensured adequate and appropriately equal sample sizes. A web-based version of the SPSS manual indicates that the use of the visual binning function of SPSS helps researchers with effective and automated data cleansing and may yield more predictive power (see <http://www.spss.com/PDFs/SDP15SPChr.pdf>).

The educational field of the department and the existence of knowledge management in the department mission statement factors were separated into multiple groups. This separation was because there are more than two groups in the factors Educational Field and the Existence of Knowledge Management in the Mission Statement. ANOVA analyses were used to compare the organizational factors with more than two categories.

Summary

This chapter described the study methods used for analyzing the perception of performance and the perception of importance of academic department chairs in colleges of education with regard to knowledge management strategies. A population was selected from the National Council for Accreditation of Teacher Education list and the department chairs were sent a web-based survey with e-mail and telephone communications. Using SPSS, descriptive statistics, *t* tests, and ANOVA analyses were carried out to analyze the responses to the survey in Chapter 4.

CHAPTER 4

DATA ANALYSIS

This chapter provides analyses of the data that compares groups by organizational factors. These analyses are based on the responses to the survey of academic department chairs in colleges of education. Two types of analyses were conducted: *t* tests and ANOVA analyses. Results that are presented and discussed are limited to data analyses statistically significant at less $\alpha = .05$. On several occasions, marginally significant results were included, where p-values ranged from .050 to .059.

Study findings are organized according to the following sections: (a) the research questions and hypotheses, (b) design of the study, (c) findings, and (d) summary. This chapter describes the findings and results of the study that include procedures of data collection and analysis, description of the respondents, and characteristics of responding institutions.

Research Questions and Hypotheses

Question 1: How do academic department chairs in colleges of education differ in their perceptions of performance of their departments based on the applications of

knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors?

H01: There is no difference in the perceptions of department chairs in the performance of leadership knowledge management strategies by organizational factors.

H02: There is no difference in the perceptions of department chairs in the performance of culture knowledge management strategies by organizational factors,

H03: There is no difference in the perceptions of department chairs in the performance of technology knowledge management strategies by organizational factors.

H04: There is no difference in the perceptions of department chairs in the performance of measurement knowledge management strategies by organizational factors.

Question 2: How do academic department chairs in colleges of education differ in their perceptions of the importance of knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors?

H05: There is no difference in the perceptions of department chairs in the importance of leadership knowledge management strategies by organizational factors.

H06: There is no difference in the perceptions of department chairs in the importance of culture knowledge management strategies by organizational factors.

H07: There is no difference in the perceptions of department chairs in the importance of technology knowledge management strategies by organizational factors.

H08: There is no difference in the perceptions of department chairs in the importance of measurement knowledge management strategies by organizational factors.

Design of the Study

This section describes the design of this study, including the web-based main survey instrument, response rate, descriptions of variables, and characteristics of data.

Survey Implementation

A revised web-based survey was employed to collect data to ascertain the differences in the perceptions of performance using knowledge management strategies in the academic departments in colleges of education. Data were also gathered to investigate the perceptions of importance of the department chairs toward knowledge management strategies. This web-based survey included: (a) an informed consent form, (b) a pre-notice email contact with an introductory letter to the

participants of the study, (c) a list of 19 survey items for knowledge management strategies in colleges of education revised from the Knowledge Management Assessment Tool originally designed by the American Productivity and Quality Center, and (d) organizational information. Copies of these web pages appear in Appendix B.

The population was the chairs of the academic department in colleges of education that were current members of the National Council for Accreditation of Teacher Education in seven states in the north central region of the United States. The department chairs (319 in total) were selected from the directory of the National Council for Accreditation of Teacher Education.

Response Rate

Although the respondents were academic department chairs of teacher education programs in higher education institutions, the unit of analysis for this study was the organization, the academic department in a college of education within the seven states in the north central region of the United States. The chairs were used as proxies representing their respective departments. The response rate was based on the number of the department chairs who completed the web-based survey, which was sent directly to each department chair of teacher training programs in the region. These individuals represented various academic areas of the field. From the 319 target respondents, a total of 159 department chairs completed the survey, for a response rate of 49.8%.

Profiles of the Respondents

The profile of the sample used in this study reflects the organizational responses regarding the survey, which was completed by 159 academic department chairs. As previously described, the departments were selected from the list of the National Council for Accreditation of Teacher Education data base, not randomly selected. A summary of the characteristics of the responding academic departments is presented in this section.

Table 4 shows that 91 departments of 159 (57.2%) were public institutions and 48 departments (30.2%) were private institutions, with 20 departments (12.6%) departments not identifying the type of institution.

Table 4

Frequency Distribution of Responding Departments by Type of School

Type of Institution	Frequency	Percent	Valid Percent
Public	91	57.2	65.5
Private	48	30.2	34.5
Total	139	87.4	
Missing	20	12.6	
Total	159	100.0	100.0

The total number of faculty, including tenured and nontenured instructors, ranges from 1 to 65 people. The total number of faculty and staff combined ranged from 2 to 114 people. The total number of enrolled students, including

undergraduates and graduates, ranged from 33 students to 4,300 students. The annual department budgets ranged from \$0 to \$5,748,849. The allocation of budget on salary ranged from 0% to 100%. The allocation of budget on non-salary ranged from 0 % to 100%. For more detailed information about the range of organizational information, see Appendix H.

Table 5 presents how the respondents were grouped, using a visual binning function of SPSS Graduate Version 15.0. Of the 159 chairs who responded to the survey, 115 chairs identified their seniority as a chair. Years as a chair ranged from 0 to 20 years. As shown in Table 5, approximately half of the department chairs (50.4%) who responded identified themselves to be new to their position as a chair (less than three years as chair), while 49.6% of the chairs had been in the position over three years.

Table 5

Frequency Distribution of Years of Experience

Years as Chair	Frequency	Percent	Valid Percent
less than or 1	20	12.6	17.4
1 to 3	38	23.9	33.0
more than 3	57	35.8	49.6
Subtotal	115	72.3	
Missing	44	27.7	
Total	159	100.0	100.0

Table 6 indicates that the responses represented a relatively balanced sample in terms of educational field of the departments. Note that because not every respondent identified his or her academic department, only those departments identified by the respondents are presented.

Table 6

Comparison of Responding and Nonresponding Departments

Areas	Responded	Total in target population
Education	30	57
Teacher Education	10	32
Educational Leadership, Policy, and Higher Education Administration	16	43
Curriculum, Instruction, Teaching & Learning, and Technology	16	32
Special Education, Disorder and Intervention	13	24
Kinesiology, Physical Education, Sports, Health, Recreation, and Wellness	13	32
Ed Psychology, Counseling, and Human Services	11	38
Childhood, Elementary, and Human Development	7	27
Language, Literacy, and Reading	2	7
Adult Education, Work, and Human Resource Development	5	5
Others (Social Work, Family & Consumer, Educational Foundations, Regular Education, and Human Environmental)	11	22
Subtotal	134	319
Missing	25	
Total	159	319

Categorizing Educational Field of the Departments

Most of the departments are difficult to categorize by the Classification of Instructional Programs (CIP) code. The CIP code is designed for categorizing fields of study and programs in higher education institutions for tracking, assessing, and reporting academic practices. However, most of the departments use more than a single CIP code. Many of the targeted departments have been merged with other departments or other fields of study over the years. Therefore, this study created the following classification to indicate that departments share common ground, academically and practically. These classifications were based on a number of carefully considered assumptions, which the researcher describes as follows:

- Group 1 educational psychology, counseling, curriculum, instruction, teaching and learning, instructional technology, childhood and elementary education, and human development
- Group 2 educational leadership, policy, higher education, adult education, work, and human resource development
- Group 3 special education, disorder and intervention, kinesiology, physical education, sports and recreation, language and literacy
- Group 4 others (education, teacher education, social work, family and consumer education, educational foundations)

Group 1 was created on the assumption that these departments shared theoretical roots in psychology or psychological influences in designing curriculum or instruction and implementing it in classroom settings. The programs in Group 2

were mostly related to educational administration and policy-related fields. This study categorized special education, sports, and physical education into Group 3. The programs in Group 4 were clustered in a way that the departments are not directly related to teacher training programs in terms of subject and administration but are housed in colleges or schools of education. The departments in Group 4 also include those that are difficult to categorize into other groups listed above. This study found that Group 4 mostly had a single department in it.

Tables 7 and 8 indicate that (of those respondents who identified a department area) 38.1% of the respondents belong in Group 4, 21.4% in Group 1, 17.6% in Group 3, and 13.2% in Group 2.

In order to answer the research questions, this study primarily employed *t* tests. Using a median score and the visual binning function of SPSS, organizational information was primarily placed into two groups, except for the field or area of department and the existence of knowledge management in the department mission statement. Table 9 displays the characteristics of organizational information dichotomized by using the visual binning function of SPSS.

Table 7

Frequency Distribution of Educational Field of Responding Departments

Group	Departments	Frequency	Percent	Valid Percent
4	Education	30	18.9	22.4
4	Teacher Education	10	6.3	7.5
2	Educational Leadership & Policy and Higher Education Administration	16	10.1	11.9
1	Curriculum, Instruction, Teaching & Learning, and Technology	16	10.1	11.9
3	Special Education, Disorder and Intervention	13	8.2	9.7
3	Physical Education, Kinesiology, Sports, Health, Recreation, and Wellness	13	8.2	9.7
1	Educational Psychology, Counseling, and Human Services	11	6.9	8.2
1	Childhood, Elementary, and Human Development	7	4.4	5.2
3	Language, Literacy, and Reading	2	1.3	1.5
2	Adult Education, Work, and Human Resource Development	5	3.1	3.7
4	Others (Social Work, Family & Consumer, Ed Foundations, Regular Education, and Human Environmental	11	6.9	8.2
	Missing	25	15.7	
	Total	159	100.0	100.0

Table 8

Frequency Distribution of Educational Group of Responding Departments

Group	Departments	Frequency	Percent	Valid Percent
1	Educational Psychology, Counseling, Curriculum, Instruction, Teaching & Learning, Instructional Technology, Childhood, Elementary, Human Development	34	21.4	25.4
2	Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development	21	13.2	15.7
3	Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, and Language & Literacy	28	17.6	20.9
4	Others (Education, Teacher Education, Social work, Family & Consumer, Educational Foundations)	51	32.1	38.1
	Missing	25	15.7	
	Total	159	100.0	100

Table 9

Summary of Characteristics of the Respondents by Median Splits (Binned)

Variable	Group	Frequency	Percent	Valid %
Number of Tenured Faculty (Binned)	less than or equal to 7	76	47.8	56.7
	more than 7	58	36.5	43.3
	Subtotal	134	84.3	100.0
	Missing	25	15.7	
	Total	159	100.0	
Number of Non-Tenured Faculty (Binned)	less than or equal to 4	73	45.9	54.1
	more than 4	62	39.0	45.9
	Subtotal	135	84.9	100.0
	Missing	24	15.1	
	Total	159	100.0	
Number of Staff including Part-Time Assistants (Binned)	less than or equal to 4	68	42.8	53.5
	more than 4	59	37.1	46.5
	Subtotal	127	79.9	100.0
	Missing	32	20.1	
	Total	159	100.0	
Number of Enrolled Undergrads (Binned)	less than or equal to 250	58	36.5	51.8
	more than 250	54	34.0	48.2
	Subtotal	112	70.4	100.0
	Missing	47	29.6	
	Total	159	100.0	
Number of Enrolled Graduate Students (Binned)	less than or equal to 126	59	37.1	50.0
	more than 126	59	37.1	50.0
	Subtotal	118	74.2	100.0
	Missing	41	25.8	
	Total	159	100.0	
Total number of Faculty (Binned)	less than or equal to 11	71	44.7	53.0
	more than 11	63	39.6	47.0
	Subtotal	134	84.3	100.0
	Missing	25	15.7	
	Total	159	100.0	
Total number of Enrolled Students (Binned)	less than or equal to 402	53	33.3	50.5
	more than 402	52	32.7	49.5
	Subtotal	105	66.0	100.0
	Missing	54	34.0	
	Total	159	100.0	

(continued on following page)

Table 9 (continued)

Variable	Group	Frequency	Percent	Valid %
Total Number of the Faculty and Staff Combined (Binned)	less than or equal to 17	66	41.5	52.4
	more than 17	60	37.7	47.6
	Subtotal	126	79.2	100.0
	Missing	33	20.8	
	Total	159	100.0	
Amount of Annual Department Budget (Binned)	less than or equal to \$479,754	39	24.5	50.0
	more than \$479,754	39	24.5	50.0
	Subtotal	78	49.1	100.0
	Missing	81	50.9	
	Total	159	100.0	
Allocation of Budget on Salary (Binned)	less than or equal to 75.00%	43	27.0	48.3
	more than 75.00%	46	28.9	51.7
	Subtotal	89	56.0	100.0
	Missing	70	44.0	
	Total	159	100.0	
Allocation of Budget on Non-Salary (Binned)	less than or equal to 19.00%	44	27.7	46.3
	more than 19.00%	51	32.1	53.7
	Subtotal	95	59.7	100.0
	Missing	64	40.3	
	Total	159	100.0	
KM Statement	No Mission Statement	4	2.5	3.0
	KM Absence	95	59.7	70.9
	KM Presence	35	22.0	26.1
	Subtotal	134	84.3	100.0
	Missing total	25	15.7	
E-newsletter	No	101	63.5	74.3
	Yes	35	22.0	25.7
	Subtotal	136	85.5	100.0
	Missing	23	14.5	
	total	159	100.0	
Online Courses	No	62	39.0	45.6
	Yes	74	46.5	54.4
	Subtotal	136	85.5	100.0
	Missing	23	14.5	
	total	159	100.0	

(continued on following page)

Table 9 (continued)

Variable	Group	Frequency	Percent	Valid %
Co-teaching	No	73	45.9	54.5
	Yes	61	38.4	45.5
	Subtotal	134	84.3	100.0
	Missing	25	15.7	
	total	159	100.0	

Profile of Nonrespondents

In order to identify the characteristics of nonrespondents, this study made contacts with the department chairs. Since not all department chairs identified their contact information on a web-based survey, the researcher made personal contacts with all the respondents through email communications and telephone calls and identified the chairs who did not respond. The following is the summary of the reasons why the nonresponding department chairs did not respond to the survey:

- (a) overloaded routine: the nonrespondent chairs were simply overwhelmed by daily routines.
- (b) new chairship: they were new to the current position as a chair. Hence, they were not comfortable or confident enough to respond to the external surveys.
- (c) lack of interest: some had no interest in participating in this kind of research, management-oriented research in particular.
- (d) structural change of a department: some departments were in transition to reorganization such as merging with another department.

(e) leave of absence: some of the nonrespondents were on leave for conference, sabbatical, or some other reasons.

As shown in Table 6, respondents to the survey were relatively balanced across educational fields; therefore, there was little chance that the results of data analyses would misrepresent this characteristic of the population.

Findings

The findings in this chapter are organized around the two primary research questions and eight hypotheses. Findings are derived from data received from 159 survey instruments returned by academic department chairs. As described in Chapter 3, the study presents 19 knowledge management strategies in four domains over two dimensions: perceptions of performance and perceptions of importance toward knowledge management strategies. For examining these two dimensions, the same set of questionnaires and Likert-type rating scales, but with different ratings values, were provided to the respondents.

The responses of the chairs to the survey instrument indicate their perceptions of performance and perceptions of importance of the four knowledge management domains: culture, leadership, technology, and measurement. The following are the names of the value for each survey item, knowledge management strategy, and its description that appeared on the web-based survey.

Leadership included:

- (a) vision – your department views sharing best practices and experiences (organizational knowledge) with others as a strategic asset.
- (b) strategic alignment – when developing organizational strategies, your department considers the effectiveness and efficiency of organizational knowledge.
- (c) value of learning – your department creates an environment that supports and facilitates a learning organization.
- (d) motivation – your department recognizes faculty and staff for their contributions to the development of best pedagogical practice, scholarship, and service.

Culture included:

- (a) community-oriented – your department encourages faculty (or staff) to work together and to share their experience and knowledge.
- (b) trust/openness – problems or errors are openly discussed and solutions are shared in the department.
- (c) collaboration – faculty in the department frequently mentor each other to develop best teaching and research practices and other scholarship.
- (d) entrepreneurship – faculty and staff with an entrepreneurial spirit are recognized in the department.
- (e) responsiveness – your department offers opportunities for professional development to faculty and staff.

Technology included:

- (a) training – faculty and staff in the department are trained to use new technology.
- (b) synergy – your department uses technology to capture internal and external best teaching and research practices.
- (c) communication – technology is used to reduce communication barriers in the department.
- (d) problem-olving – your department has adopted technology with a clear vision to solve problems.
- (e) up-to-date technology – your department continually upgrades information technology and hardware.
- (f) storing knowledge – technology is used to capture and store knowledge.

Measurement included:

- (a) effectiveness – your annual report includes recommendations of cost-effective strategies to achieve department goals.
- (b) decision making – annual indicators are refined to reflect changes in the (knowledge) management priorities of the department.
- (c) systematic evaluation – your department systematically uses evaluation processes to provide evidence of knowledge development.
- (d) integrating knowledge – your department allocates resources toward efforts that increase its knowledge capability.

Organizational factors were applied to examine the differences of perception of performance using knowledge management strategies and the perception of importance toward them. For item responses, this study presents descriptive information for all departments on all the survey questionnaires. A summary of survey response frequencies is presented in Appendix H.

When reporting t tests and ANOVA analyses, this study referred to Field's (2005) guidelines as follows:

- (a) t tests include the value of t with the degrees of freedom (df) and significance value p ; for instance, $t(df) = t \text{ value}, p < .05$.
- (b) ANOVA analyses include F -ratio with the degrees of freedom for the effect of the model (df_M) and the degrees of freedom of the residuals of the model (df_R) and significance value p ; for instance, $F(df_M, df_R) = F \text{ value}, p < .05$.

This study created the composite variables for each of four domains in knowledge management strategies that were derived from responses to survey items of each domain. T tests and ANOVA analyses were conducted with those composite variables and organizational factors. Second, this study conducted t tests and ANOVA analyses with individual dependent variables in each domain and organizational factors.

This study presents t tests with p values less than .05 or .01. The significance level of $p < .05$ is selected as a commonly accepted level in the field of education to control Type I error (Ary, Jabobs, & Razavieh, 1996). For ANOVA

analyses, F -values are reported that are significant at a value less than the criterion value of both .05 and .01 with * and ** on each p value in tables, respectively. For post-hoc tests, this study employed Tukey HSD to identify the specific groups between which the significant differences occurred at the .05 level or less. The Tukey HSD is known to better control the Type I error and have greater statistical power than other post hoc procedures (Field, 2005).

Table 10 presents the results of data analyses in terms of mean scores and standard deviations. Table 10 illustrates a summary of descriptive statistics for two dimensions, the perceptions of performance and the perceptions of importance of knowledge management strategies. Variables in Table 10 are composite variables that represent each domain of knowledge management strategies.

Table 10

A Summary of Means (M) and Standard Deviations (SD) for Four Domains in the Perceptions of Performance and the Perceptions of Importance Dimensions with Composite Variables

Domains	Perceptions of Performance			Perceptions of Importance		
	N	M	SD	N	M	SD
Leadership	158	3.24	.628	152	3.45	.563
Culture	157	3.16	.542	151	3.33	.533
Technology	156	3.06	.598	151	3.20	.652
Measurement	158	2.46	.886	152	2.58	.969

Overall, department chairs seem to recognize the importance of knowledge management strategies, and they believe that their department uses knowledge management strategies. As shown in Table 10, every mean score of the perceptions of importance dimension was higher than its corresponding mean score in the perceptions of performance dimension, although no significant tests were carried out to assess these differences.

As shown in Table 10 in the perceptions of performance dimension, the highest mean score is the leadership domain and the lowest is the measurement domain. In the perceptions of importance dimension, the highest mean score is leadership and the lowest is measurement. In the perceptions of performance dimension, the highest mean score is the leadership domain (M=3.24) and the lowest is measurement domain (M=2.46). In the perceptions of importance dimension, the highest mean score is the leadership domain (M=3.45) and the lowest is measurement (M=2.58).

Table 11 presents the results of data analyses in terms of mean scores and standard deviations. Table 11 illustrates a summary of descriptive statistics of individual knowledge management strategies of four domains in two dimensions: perceptions of performance and perceptions of importance. In the perceptions of performance dimension, the highest mean scores are “vision” (M=3.44) in the leadership domain, “community-oriented” (M=3.54) in the culture domain, “storing knowledge” (M=3.43) in technology, and “integration” (M=2.99) in measurement. In the perceptions of importance dimension, the highest mean scores are “value of

learning” (M=3.73) in the leadership domain, “community-oriented” (M=3.73) in culture domain, “up-to-date technology” (M=3.50) in technology, and “integration” (M=3.19) in measurement.

Table 11

Summary of Means (M) and Standard Deviations (SD) for the Perceptions of Performance and the Perceptions of Importance Dimensions with Individual Variables

Domains	Variable Labels	Perceptions of Performance			Perceptions of Importance		
		N	M	SD	N	M	SD
Leadership	Vision	156	3.44	.644	151	3.62	.620
	Strategic Alignment	152	3.06	.633	147	3.22	.700
	Value of Learning	156	3.37	.645	150	3.73	.476
	Motivation	155	3.39	.629	149	3.50	.722
Culture	Community-Oriented	157	3.54	.615	151	3.74	.472
	Openness	157	3.12	.692	151	3.48	.575
	Collaboration	157	3.09	.654	151	3.39	.663
	Entrepreneurship	150	2.95	.758	145	2.89	.859
	Responsiveness	154	3.40	.662	145	3.50	.708
Technology	Training	156	3.14	.704	149	3.39	.742
	Synergy	147	3.01	.687	144	3.11	.749
	Communication	155	3.18	.751	148	3.28	.817
	Problem Solving	152	2.81	.707	147	2.99	.832
	Up-to-date Technology	154	3.26	.721	149	3.50	.600
	Storing Knowledge	154	3.43	.558	150	3.40	.655
Measurement	Effectiveness	135	2.53	.809	132	2.71	.861
	Decision Making	131	2.79	.744	126	2.90	.784
	Systematic Evaluation	142	2.89	.809	137	2.93	.917
	Integrating Knowledge	146	2.99	.680	139	3.19	.658

As presented in Table 11, except for “entrepreneurship” and “storing knowledge,” the mean scores of the perceptions of importance dimension were higher than their corresponding value in the perceptions of performance dimension. Although no significant tests were conducted to assess the differences, examination of the mean values indicates that the measurement domain in both dimensions is lower than other domains.

Except for educational field of departments and the existence of knowledge management in the department mission statement, the study conducted *t* tests in order to examine the differences of the perceptions of performance and the perceptions of importance toward knowledge management strategies by organizational factors. The information on the results includes the number of respondents, means, degrees of freedom, and standard deviations for the survey items that are only statistically significant.

In the following section, the results of data analyses with four composite variables that represent each of the four knowledge management domains are presented, followed by the results of the analyses with individual variables within each domain over two dimensions. As was described earlier in this chapter, survey results that are not statistically significant are not discussed in this chapter.

Perception of Performance Dimension

Research Question 1: How do academic department chairs in colleges of education differ in their perceptions of performance of their departments based on the

applications of knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors?

Leadership

H₀₁: There is no difference in the perceptions of department chairs in the performance of leadership knowledge management strategies by organizational factors.

Table 12 presents that the difference in the leadership domain by the use of co-teaching is significant, $t(126) = -2.27, p < .05$. For this and all subsequent analyses, more specific descriptions of differences will be discussed in Chapter 5.

Table 12

Summary of *t* Tests of the Overall Leadership Domain (Composite) in the Perceptions of Performance Dimension

Variables	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Leadership	Co-Teaching	No	71	3.24	.507	-2.27 (126)	.025*
		Yes	57	3.43	.445		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

* $p < .05$ (2-tailed)

As shown in Table 13, significant differences are found in “value of learning” by the presence of co-teaching, $t(131) = -2.23, p < .05$, and in “motivation” by the presence of co-teaching, $t(131) = -3.11, p < .05$. In addition, Table 13 shows that the difference in “vision” by the type of institution, public and private universities, is marginally significant, $t(136) = -1.92, p = .057$.

Table 13

Summary of *t* Tests of the Leadership Strategies by Organizational Factors in the Perceptions of Performance Dimension

Dependent Variables	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Vision	Type of Institution	Public	90	3.38	.646	-1.92 (136)	.057
		Private	48	3.58	.498		
Value of Learning	Co-Teaching	No	72	3.25	.666	-2.23 (131)	.027*
		Yes	61	3.49	.566		
Motivation	Co-Teaching	No	73	3.26	.646	-3.11 (131)	.002**
		Yes	60	3.58	.530		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

Tables 14, 15, and 16 show that a difference in “motivation” by the presence of knowledge management in its mission statement is significant, $F(3,130) = 3.35, p < .05$. Post-hoc tests show a statistically significant difference between Groups 2 and 4.

Table 14

Descriptive Statistics for Motivation by Educational Field of the Departments in the Perceptions of Performance Dimension

Variable	Group ^a	N	M	SD
Motivation	1	34	3.24	.890
	2	21	3.05	.590
	3	28	3.43	.634
	4	51	3.55	.541
	Total	134	3.37	.689

- ^a1: Educational Psych, Counseling, Curriculum, Instruction, Teaching & Learning, Technology, Childhood, Elementary & Secondary, and Human Development
 2: Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development
 3: Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language, and Literacy
 4: Others: Education, Teacher Education, Social Work, Family & Consumer, and Educational Foundations

Table 15.

ANOVA Table for Motivation by Educational Field of the Departments in the Perceptions of Performance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Motivation	Between Groups	4.527	3	1.509	3.35	.021*
	Within Groups	58.555	130	.450		
	Total	63.082	133			

* The mean difference is significant at the .05 level.

Table 16

Post-hoc Tests for Motivation by Educational Field of the Departments in the Perceptions of Performance Dimension

Tukey HSD				
Group	1	2	3	4
1				
2				
3				
4		-.501*		

* The mean difference is significant at the .05 level.

Tables 17, 18, and 19 show that a significant difference in “strategic alignment” is found by the presence of knowledge management in the department’s mission statement, $F(2,127) = 3.23, p < .05$. Post-hoc tests show a statistically significant difference between the academic departments with knowledge management in their mission statement and those without knowledge management in the mission statement.

Table 17

Descriptive Statistics for Strategic Alignment by the Presence of KnowledgeManagement in the Mission Statement in the Perceptions of Performance Dimension

Variable	KM Statement	N	M	SD
Strategic Alignment	No Mission Statement	3	3.00	.000
	KM Absence	93	2.98	.608
	KM Presence	34	3.29	.676
	Total	130	3.06	.632

Table 18

ANOVA Table for Strategic Alignment by the Presence of Knowledge Managementin the Mission Statement in the Perceptions of Performance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Strategic Alignment	Between Groups	2.492	2	1.246	3.23	.043*
	Within Groups	49.016	127	.386		
	Total	51.508	129			

*The mean difference is significant at the .05 level.

Table 19

Post-hoc Tests for Strategic Alignment by the Presence of Knowledge Management
in the Mission Statement in the Perceptions of Performance Dimension

Tukey HSD				
Variable	KM Statement	No Mission Statement	KM Absence	KM Presence
	No Mission Statement			
Strategic Alignment	KM Absence			
	KM Presence			-.316*

* The mean difference is significant at the .05 level.

Culture

H₀₂: There is no difference in the perceptions of department chairs in the performance of culture knowledge management strategies by organizational factors

As shown in Table 20 in the culture domain, significant differences in the culture domain are found by the presence of online courses, $t(127) = -2.13, p < .05$, and by the presence of co-teaching practices, $t(126) = -2.27, p < .05$.

Table 20

A Summary of *t* Tests of the Overall Culture Domain (Composite) by Organizational Factors in the Perceptions of Performance Dimension

Variable	Organizational factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Culture	Online courses	No	58	3.14	.419	-2.13	.035*
		Yes	71	3.39	.433	(127)	
	Co-teaching	No	69	3.12	.463	-2.27	.025*
		Yes	59	3.35	.368	(126)	

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

* $p < .05$ (2-tailed)

As presented in Table 21, a difference in “trust/openness” is significant by the total number of enrolled students, including undergraduate and graduate students, $t(103) = 2.19, p < .05$. Although they are not statistically significant, the results indicate that the differences in “trust/openness” by years as chair in the current position and the use of co-teaching are marginally significant.

According to the results presented in Table 21, a difference in “collaboration” by the use of online courses is significant, $t(134) = -3.14, p < .01$. And a difference is observed in “entrepreneurship” by the presence of online courses, $t(128) = -2.45, p < .05$. Table 21 shows that there is a significant difference in “entrepreneurship” by the use of co-teaching practice, $t(127) = -2.26, p < .05$.

Table 21

Summary of *t* Tests of the Culture Strategies by Organizational Factors in the Perceptions of Performance Dimension

Dependent Variables	Organizational factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Trust/ Openness	Years as Chair	less than or equal to 3 years	58	3.02	.577	-1.97 (110.4)	.051
		more than 3 years	57	3.25	.662		
	Co-Teaching	No	73	3.03	.666	-1.95 (132)	.054
		Yes	61	3.25	.623		
	Total Number of Enrolled Students	less than or equal to 402	53	4.30	.575	2.19 (103)	.031*
		more than 402	52	4.04	.656		
Collaboration		No	62	2.90	.620	-3.14 (134)	.002**
	Online courses	Yes	74	3.24	.637		
Entrepreneur- ship	Online courses	No	58	2.76	.620	-2.45 (128)	.016*
		Yes	72	3.08	.637		
	Co-Teaching	No	70	2.77	.802	-2.26 (127)	.009*
		Yes	59	3.12	.672		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

Technology

H₀₃: There is no difference in the perceptions of department chairs in the performance of technology knowledge management strategies by organizational factors.

As shown in Table 22, a difference in the technology domain is significant by the presence of an online course, $t(122) = -2.89, p < .05$. It also presents that a marginally significant difference is found in the technology domain by the presence of an e-newsletter, $t(122) = -1.92, p = .058$.

Table 22

Summary of *t* Tests of the Overall Technology Domain (Composite) by Organizational Factors in the Perceptions of Performance Dimension

Variable	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Technology	e-newsletter	No	92	3.11	.484	-1.92 (122)	.058
		Yes	32	3.30	.499		
	Online courses	No	57	3.01	.457	-2.89 (122)	.005*
		Yes	67	3.26	.506		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

**p* < .01 (2-tailed)

Tables 23, 24, and 25 show a significant difference in the technology domain by the presence of knowledge management in its mission statement, $F(2,119) = 3.26, p < .05$. Post-hoc tests show a statistically significant difference between the academic departments with knowledge management in their mission statement and those without knowledge management in their mission statement.

Table 23

Descriptive Statistics for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Composite Variable	KM Statement	N	M	SD
Technology	No Mission Statement	4	3.13	.832
	KM Absence	86	3.09	.484
	KM Presence	32	3.35	.4367
	Total	122	3.16	.493

Table 24

ANOVA Table for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Variable		Sum of Squares	<i>df</i>	Mean Square	F	Sig.
Technology	Between Groups	1.533	2	.767	3.27	.042
	Within Groups	27.908	119	.235		
	Total	29.441	121			

Table 25

Post-hoc Tests for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Tukey HSD				
Variable	KM Statement	No Mission Statement	KM Absence	KM Presence
	No Mission Statement			
Technology	KM Absence			
	KM Presence			-.256*

* The mean difference is significant at the .05 level.

The results in Table 26 depict that there is a significant difference in “training” by the presence of an e-newsletter for communicating with their members, $t(133) = -2.35, p < .05$. Table 26 also indicates that significant differences found in “training” by the presence of online courses are significant, $t(132.5) = -2.83, p < .01$, and “problem solving” by the presence of online courses, $t(133) = -3.05, p < .01$. The difference in “up-to-date technology” by online courses is significant, $t(131) = -1.92, p = .057$.

Table 26

Summary of *t* Tests of the Technology Strategies by Organizational Factors in the Perceptions of Performance Dimension

Dependent Variables	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Training	e-newsletter	No	100	3.07	.671	-2.35 (133)	.020*
		Yes	35	3.37	.598		
	Online courses	No	61	2.97	.605	-2.83 (132.5)	.005**
		Yes	74	3.28	.693		
Problem-Solving	Online courses	No	61	2.52	.808	-3.05 (133)	.003**
		Yes	74	2.95	.792		
Up-to-date Technology	Online courses	No	61	3.08	.822	-1.92 (133)	.057
		Yes	74	3.35	.801		
Storing Knowledge	Type of Institution	Public	88	3.34	.565	-2.49 (134)	.014*
		Private	48	3.58	.498		
	Allocation of Budget on Nonsalary	less than or equal to 19.00%	43	3.28	.591	-2.13 (131)	.035*
		more than 19.00%	51	3.55	.541		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

As seen in Table 26, a difference in “storing knowledge” is significant by the type of institution, $t(134) = -2.49, p < .05$. There is also a significant difference in “storing knowledge” by the annual budget allocation on the non-salary area, $t(92) = -2.31, p < .05$. Data indicate that the more the academic departments allocate their financial resources to non-salary areas, the more they use technology for “storing knowledge.”

The results presented in Tables 27, 28, and 29 indicate that a significant difference is found in “storing knowledge” by the educational field of the departments, $F(3,127) = 4.68, p < .01$. Post-hoc tests show a significant difference between Groups 2 and 3 and Groups 2 and 4.

Table 27

Descriptive Statistics for Storing Knowledge by Educational Field of the Departments in the Perceptions of Performance Dimension

Variable	Group ^a	N	M	SD
Storing Knowledge	1	31	3.35	.551
	2	22	3.09	.610
	3	28	3.61	.497
	4	50	3.52	.505
	Total	131	3.43	.555

- ^a1: Educational Psych, Counseling, Curriculum, Instruction, Teaching & Learning, Technology, Childhood, Elementary & Secondary, and Human Development
 2: Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development
 3: Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language, and Literacy
 4: Others: Education, Teacher Education, Social Work, Family & Consumer, and Educational Foundations

Table 28

ANOVA Table for Storing Knowledge by Educational Field of the Departments in the Perceptions of Performance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Storing Knowledge	Between Groups	3.988	3	1.329	4.68	.004*
	Within Groups	36.074	127	.284		
	Total	40.061	130			

* $p < .05$ (2-tailed)

Table 29

Post-hoc Tests for Storing Knowledge by Educational Field of the Departments in the Perceptions of Performance Dimension

Tukey HSD

Group	1	2	3	4
1				
2				
3		-.516*		
4		-.429*		

* The mean difference is significant at the .05 level.

Tables 30, 31, and 32 show that a significant difference is found in “synergy” by the presence of knowledge management in the department’s mission statement, $F(2,123) = 4.39, p < .05$. The results of post-hoc tests show a statistically

significant difference between the academic departments with knowledge management in their mission statement and those without knowledge management in the mission statement.

Table 30

Descriptive Statistics for Synergy by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Variable	KM Statement	N	M	SD
Synergy	No Mission Statement	4	3.25	.957
	KM Absence	89	2.91	.685
	KM Presence	33	3.30	.585
	Total	126	3.02	.687

Table 31

ANOVA Table for Synergy by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Variable		Sum of Squares	<i>df</i>	Mean Square	F	Sig.
Synergy	Between Groups	3.928	2	1.964	4.39	.014*
	Within Groups	55.001	123	.447		
	Total	58.929	125			

* $p < .05$ (2-tailed)

Table 32

Post-hoc Tests for Synergy by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Tukey HSD

Variable	KM Statement	No Mission Statement	KM Absence	KM Presence
Synergy	No Mission Statement			
	KM Absence			
	KM Presence			-.393*

* The mean difference is significant at the .05 level.

Measurement

H₀₄: There is no difference in the perceptions of department chairs in the performance of measurement knowledge management strategies by organizational factors.

Table 33 shows that a significant difference in the measurement domain is found by the presence of an online course, $t(102) = -2.15, p < .05$.

Table 33

A Summary of *t* Tests of the Overall Measurement Domain (Composite) by

Organizational Factors in the Perceptions of Performance Dimension

Variable	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Measurement	Online courses	No	45	2.65	.572	-2.15 (102)	.034*
		Yes	59	2.89	.573		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

Tables 34, 35, and 36 show that a significant difference is found in the overall measurement domain by the presence of knowledge management in the department's mission statement, $F(2,101) = 8.92, p < .01$. Post-hoc tests show a statistically significant difference between the academic departments with knowledge management in their mission statement and those that have no mission statement.

Table 34

Descriptive Statistics for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Composite Variable	KM Statement	N	M	SD
Measurement	No Mission Statement	4	2.25	.204
	KM Absence	74	2.69	.578
	KM Presence	26	3.14	.459
	Total	104	2.79	.582

Table 35

ANOVA Table for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Measurement	Between Groups	5.179	2	2.590	8.79	.000**
	Within Groups	29.748	101	.295		
	Total	34.927	103			

** $p < .01$ (2-tailed)

Table 36

Post-hoc Tests for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Tukey HSD

Variable	KM Statement	No Mission Statement	KM Absence	KM Presence
Measurement	No Mission Statement			
	KM Absence			
	KM Presence		-.894*	.256*

* The mean difference is significant at the .05 level.

Table 37 indicates that a significant difference is found in “integrating knowledge” by the presence of online courses, $t(126) = -3.346, p < .01$.

Table 37

Summary of t Tests of the Measurement Strategies by Organizational Factors in the Perceptions of Performance Dimension

Dependent Variable	Organizational Factors	Labels	N	M ^a	SD	$t(df)$	Sig.
Integrating Knowledge	Online courses	No	57	2.75	.689	-3.35 (126)	.001*
		Yes	71	3.14	.616		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

* $p < .01$ (2-tailed)

Tables 38, 39, and 40 show that significant differences are found in “effectiveness” by the presence of knowledge management in the department’s mission statement, $F(2,113) = 9.16, p < .01$, and “decision making” by the presence of knowledge management in the department’s mission statement $F(2,113) = 4.70, p < .05$. Post-hoc tests for “effectiveness” show a statistically significant difference between the academic departments that have no mission statement and those that have with knowledge management in their mission statement. Post-hoc tests for “effectiveness” in Table 40 also show that there is a significant difference found between the departments with knowledge management in their mission statement and those without knowledge management in the mission statement. Post-hoc tests for “decision making” show that a significant difference is found between the departments with knowledge management in their mission statement and those without knowledge management in the mission statement.

Table 38

Descriptive Statistics for Effectiveness and Decision Making by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance

Dimension

Variables	KM Statement	N	M	SD
Effectiveness	No Mission Statement	4	1.75	.500
	KM Absence	84	2.39	.776
	KM Presence	28	3.00	.667
	Total	116	2.52	.797
Decision Making	No Mission Statement	4	2.50	.577
	KM Absence	84	2.67	.781
	KM Presence	28	3.14	.591
	Total	116	2.78	.759

Table 39

ANOVA Table for Effectiveness and Decision Making by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Variables		Sum of Squares	df	Mean Square	F	Sig.
Effectiveness	Between Groups	10.180	2	5.090	9.16	.000*
	Within Groups	62.786	113	.556		
	Total	72.966	115			
Decision Making	Between Groups	5.077	2	2.539	4.70	.011**
	Within Groups	61.095	113	.541		
	Total	66.172	115			

* $p < .01$ (2-tailed)

** $p < .05$ (2-tailed)

Table 40

Post-hoc Tests for Effectiveness and Decision Making by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Performance Dimension

Tukey HSD

Variables	KM Statement	No Mission Statement	KM Absence	KM Presence
Effectiveness	No Mission Statement			
			-1.250	-.607*
Decision Making	No Mission Statement			
				-.476*

* The mean difference is significant at the .05 level.

The results presented in Tables 41, 42, and 43 indicate that a difference in “storing knowledge” is significant by educational field of the departments, $F(3,112) = 3.39, p < .05$. The results of post-hoc tests indicate a significant difference between Groups 2 and 4.

Table 41

Descriptive Statistics for Decision Making by Educational Field of the Departments in the Perceptions of Performance Dimension

Variables	Group ^a	N	M	SD
Decision Making	1	31	2.68	.909
	2	19	2.32	.582
	3	24	2.83	.761
	4	42	2.95	.661
	Total	116	2.75	.768

- ^a1: Educational Psych, Counseling, Curriculum, Instruction, Teaching & Learning, Technology, Childhood, Elementary & Secondary, and Human Development
 2: Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development
 3: Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language, and Literacy
 4: Others: Education, Teacher Education, Social Work, Family & Consumer, and Educational Foundations

Table 42

ANOVA Table for Decision Making by Educational Field of the Departments in the Perceptions of Performance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Decision Making	Between Groups	5.632	3	1.877	3.39	.021*
	Within Groups	62.118	112	.555		
	Total	67.750	115			

* $p < .05$ (2-tailed)

Table 43

Post-hoc Tests for Decision Making by Educational Field of the Departments in the Perceptions of Performance Dimension

Tukey HSD

Group	1	2	3	4
1				
2				
3				
4				-.637*

* The mean difference is significant at the .05 level.

Perception of Importance Dimension

Research Question 2: How do academic department chairs in colleges of education differ in their perceptions of the importance of knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors?

Leadership

H₀₅: There is no difference in the perceptions of department chairs in the importance of leadership knowledge management strategies by organizational factors.

Table 44 shows that a significant difference is found in the overall leadership domain by the total number of faculty and staff combined, $t(120) = -2.09, p < .05$.

Table 44

A Summary of *t*-ests of the Overall Leadership Domain (Composite) by
Organizational Factors in the Perceptions of Importance Dimension

Variable	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Leadership	Total Number of Faculty and Staff	less than or equal to 17	62	3.38	.522	-2.09 (120)	.039*
	Combined	more than 17	60	3.57	.444		

^a Scale: 4=Strongly Agree,3=Agree, 2=Disagree, 1=Strongly Disagree

**p*<.05 (2-tailed)

Table 45 shows that there is a significant difference found in “motivation” by the type of institution, $t(61.0) = 2.87, p < .01$.

Table 45

A Summary of *t* Tests of the Leadership Strategies by Organizational Factors in the
Perceptions of Importance Dimension

Dependent Variable	Organizational Factors	Labels	N	M	SD	<i>t</i> (<i>df</i>)	Sig.
Motivation	Type of Institution	Public	88	3.61	.633	2.87 (61.0)	.006*
		Private	46	3.11	1.100		

^a Scale: 4=Strongly Agree,3=Agree, 2=Disagree, 1=Strongly Disagree

**p*<.01 (2-tailed)

As shown in Tables 46, 47, and 48, a marginal difference is found in “vision” by the presence of knowledge management in the department’s mission statement, $F(3,125) = 2.61, p = .54$. The results of post-hoc tests show a marginally significant difference between Groups 2 and 4.

Table 46

Descriptive Statistics for Vision by Educational Field of the Departments in the Perceptions of Importance Dimension

Variable	Group ^a	N	Mean	SD
Vision	1	31	3.55	.768
	2	22	3.32	.716
	3	27	3.59	.501
	4	49	3.76	.522
	Total	129	3.60	.631

- ^a1: Educational Psych, Counseling, Curriculum, Instruction, Teaching & Learning, Technology, Childhood, Elementary & Secondary, and Human Development
 2: Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development
 3: Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language, and Literacy
 4: Others: Education, Teacher Education, Social Work, Family & Consumer, and Educational Foundations

Table 47

ANOVA Table for Vision by Educational Field of the Departments in the Perceptions of Importance Dimension

Variable		Sum of Squares	<i>df</i>	Mean Square	F	Sig.
Vision	Between Groups	3.009	3	1.003	2.61	.054
	Within Groups	48.030	125	.384		
	Total	51.039	128			

Table 48

Post-hoc Tests for Vision by Educational Field of the Departments in the Perceptions of Importance Dimension

Tukey HSD

Group	1	2	3	4
1				
2				
3				
4				

* The mean difference is significant at the .05 level.

Culture

Ho6: There is no difference in the perceptions of department chairs in the importance of culture knowledge management strategies by organizational factors.

As shown in Table 49, a marginally significant difference exists in the culture domain in departments by the annual department budget, $t(71) = -1.99, p = .051$.

Table 49

Summary of *t* Tests of the Overall Culture Domain (Composite) by Organizational Factors in the Perceptions of Importance Dimension

Variable	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Culture	Annual Budget	less than or equal to \$479,754	37	3.36	.339	-1.99 (71)	.051*
		more than \$479,754	36	3.52	.349		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree
* $p < .05$ (2-tailed)

As presented in Table 50, a marginally significant difference is found in “collaboration” by years as a chair in the current position, $t(109) = 1.97, p = .052$. Significant differences in “collaboration” are found by the total number of enrolled students, $t(99) = -2.54, p < .05$; by the total number of faculty and staff combined, $t(120) = -2.97, p < .01$; and by the amount of annual budget, $t(74) = -2.15, p < .05$.

Table 50

Summary of *t* Tests of the Culture Strategies by Organizational Factors in the Perceptions of Importance Dimension

Dependent Variables	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Collaboration	Years as Department Chair?	less than or equal to 3 years	56	3.52	.603	1.97 (109)	.052
		more than 3 years	55	3.27	.706		
	Total Number of Enrolled Students	less than or equal to 402	51	3.20	.693	-2.54 (99)	.013*
		more than 402	50	3.52	.580		
	Total Number of Faculty and Staff	less than or equal to 17	62	3.21	.681	-2.97 (120)	.004**
		more than 17	60	3.57	.647		
Amount of Annual Department Budget	less than or equal to \$479,754	38	3.24	.675	-2.15 (74)	.035*	
	more than \$479,754	38	3.55	.602			
Online courses	No	61	3.30	.691	-2.16 (129)	.031*	
	Yes	70	3.54	.606			
Entrepreneurship	E-newsletter	No	93	3.02	.807	2.52 (48.6)	.015*
		Yes	33	2.55	.971		
	Online courses	No	58	2.72	.914	-2.18 (124)	.031*
		Yes	68	3.06	.808		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

**p*<.05 (2-tailed)

***p*<.01 (2-tailed)

As reported in Table 50, a significant difference in “entrepreneurship” is found by the use of an *e*-newsletter, $t(48.60) = 2.52, p < .05$. In addition, there are significant differences found in “collaboration” by the presence of online courses,

$t(129) = -2.19, p < .05$, and in “entrepreneurship” by the presence of online courses, $t(124) = -2.18, p < .05$.

Technology

Ho7: There is no difference in the perceptions of department chairs in the importance of technology knowledge management strategies by organizational factors

Table 51 indicates that a significant difference is found in the technology domain by the presence of online courses, $t(120) = -2.10, p < .05$.

Table 51

Summary of *t* Tests of the Overall Technology Domain (Composite) by Organizational Factors in the Perceptions of Importance Dimension

Variable	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Technology	Online courses	No	58	3.19	.505	-2.10 (120)	.038*
		Yes	64	3.38	.508		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree
* $p < .05$ (2-tailed)

Tables 52, 53, and 54 show that a significant difference is found in the overall technology domain by the presence of knowledge management in the department’s mission statement, $F(2,117) = 5.44, p < .01$. Post-hoc tests show a statistically significant difference between the academic departments with no mission statement and those without knowledge management in the mission statement.

Table 52

Descriptive Statistics for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Composite Variable	KM Statement	N	M	SD
Technology	No Mission Statement	4	3.96	.083
	KM Absence	87	3.23	.517
	KM Presence	29	3.43	.438
	Total	120	3.30	.511

Table 53

ANOVA Table for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Technology	Between Groups	2.640	2	1.320	5.44	.006*
	Within Groups	28.393	117	.243		
	Total	31.033	119			

* $p < .01$ (2-tailed)

Table 54

Post-hoc Tests for the Overall Technology Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Tukey HSD

Variable	KM Statement	No Mission Statement	KM Absence	KM Presence
	No Mission Statement			
Technology	KM Absence	.730*		
	KM Presence			

* The mean difference is significant at the .05 level.

The results presented in Tables 55, 56, and 57 show that a significant difference is found in the overall technology domain in the perception of importance dimension by educational field of the departments, $F(3,116) = 2.88, p < .05$. The results of post-hoc tests indicate a significant difference between Groups 2 and 3.

Table 55

Descriptive Statistics for the Overall Technology Domain (Composite) on the
Educational Field of the Departments in the Perceptions of Importance Dimension

Variable	Group ^a	N	M	SD
Technology	1	28	3.21	.518
	2	20	3.02	.575
	3	27	3.42	.490
	4	45	3.34	.477
	Total	120	3.27	.518

- ^a1: Educational Psych, Counseling, Curriculum, Instruction, Teaching & Learning, Technology, Childhood, Elementary & Secondary, and Human Development
 2: Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development
 3: Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language, and Literacy
 4: Others: Education, Teacher Education, Social Work, Family & Consumer, and Educational Foundations

Table 56

ANOVA Table for the Overall Technology Domain (Composite) by Educational
Field of the Departments in the Perceptions of Importance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Technology	Between Groups	2.219	3	.740	2.88	.039*
	Within Groups	29.769	116	.257		
	Total	31.989	119			

* $p < .05$ (2-tailed)

Table 57

Post-hoc Tests for the Overall Technology Domain (Composite) by Educational
Field of the Departments in the Perceptions of Importance Dimension

Tukey HSD				
Group	1	2	3	4
1				
2				
3				
4				

* The mean difference is significant at the .05 level.

As seen in Table 58, there is a significant difference found in “synergy” by the type of institution, $t(127) = -2.15, p < .05$. This table also indicates that significant differences are found in “communication” by the presence of online courses, $t(127) = -3.16, p < .01$, and “problem solving” by the presence of online courses, $t(126) = -2.11, p < .05$.

In addition, there is also a significant difference in “problem solving” by the use of co-teaching, $t(125) = -2.36, p < .05$. A difference is found in “communication” by the total number of enrolled students, $t(99) = -2.54, p < .05$. There is a significant difference in “storing knowledge” by the total number of faculty and staff combined, $t(119) = -2.07, p < .05$.

Table 58

A Summary of *t* Tests of the Technology Strategies by Organizational Factors in the Perceptions of Importance Dimension

Dependent Variables	Organizational Factors	Labels	N	M ^a	SD	<i>t</i> (<i>df</i>)	Sig.
Synergy	Type of Institution	Public	86	3.31	.844	-2.15 (127)	.033**
		Private	46	3.41	.580		
Communication	Online courses	No	61	3.05	.845	-3.16 (127)	.002*
		Yes	68	3.49	.723		
	Total Number of Enrolled Students	less than or equal to 402	51	3.16	.857	-2.54 (99)	.013*
		more than 402	48	3.50	.652		
Problem Solving	Online courses	No	59	2.83	.834	-2.11 (126)	.037*
		Yes	69	3.14	.845		
	Co-Teaching	No	70	2.84	.792	-2.36 (125)	.020*
		Yes	57	3.19	.875		
Storing Knowledge	Total Number of Faculty and Staff	less than or equal to 17	62	3.27	.682	-2.07 (119)	.041*
		more than 17	59	3.53	.653		

^a Scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

The results presented in Tables 59, 60, and 61 indicate a significant difference observed in “storing knowledge” by the educational field of the departments, $F(3,124) = 4.25, p < .01$. For the question of how important the chairs perceived that their department used technology in order to capture internal and

external best practices, the results of post-hoc tests indicate a significant difference between Groups 1 and 2, Groups 2 and 3, and Groups 2 and 4.

Table 59

Descriptive Statistics for Storing Knowledge by Educational Field of the Departments in the Perceptions of Importance Dimension

Variable	Group ^a	N	M	SD
Storing Knowledge	1	31	3.45	.624
	2	22	2.95	.844
	3	27	3.59	.572
	4	48	3.42	.613
	Total	128	3.38	.677

- ^a1: Educational Psych, Counseling, Curriculum, Instruction, Teaching & Learning, Technology, Childhood, Elementary & Secondary, and Human Development
 2: Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development
 3: Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language, and Literacy
 4: Others: Education, Teacher Education, Social Work, Family & Consumer, and Educational Foundations

Table 60

ANOVA Table for Storing Knowledge by Educational Field of the Departments in the Perceptions of Importance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Storing Knowledge	Between Groups	5.425	3	1.808	4.25	.007*
	Within Groups	52.817	124	.426		
	Total	58.242	127			

* $p < .01$ (2-tailed)

Table 61

Post-hoc Tests for Storing Knowledge by Educational Field of the Departments in the Perceptions of Importance Dimension

Tukey HSD

Variable	Group	1	2	3	4
Storing Knowledge	1				
	2	.497*			
	3		-.638*		
	4			-.462*	

* The mean difference is significant at the .05 level.

The results in Tables 62, 63, and 64 indicate a significant difference in “problem-solving” by the presence of knowledge management in the department’s mission statement, $F(2,123) = 4.35, p < .05$. Post-hoc tests show a statistically significant difference between the academic departments that do not have a mission statement and those without knowledge management in the mission statement.

Table 62

Descriptive Statistics for Problem Solving by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Variables	Group	N	M	SD
Problem Solving	No Mission Statement	4	4.00	.000
	KM Absence	90	2.91	.843
	KM Presence	32	3.19	.780
	Total	126	3.02	.839

Table 63

ANOVA Table for Problem Solving by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Variable		Sum of Squares	<i>df</i>	Mean Square	F	Sig.
Problem Solving	Between Groups	5.804	2	2.902	4.35	.015*
	Within Groups	82.164	123	.668		
	Total	87.968	125			

* $p < .05$ (2-tailed)

Table 64

Post-hoc Tests for Problem Solving by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Tukey HSD

Variables	KM Statement	No Mission Statement	KM Absence	KM Presence
Problem Solving	No Mission Statement		1.089*	
	KM Absence			
	KM Presence			

* The mean difference is significant at the .05 level.

Measurement

H₀₈: There is no difference in the perceptions of department chairs in the importance of measurement knowledge management strategies by organizational factors.

Tables 65, 66, and 67 show a significant difference in the overall measurement domain by the presence of knowledge management in the department's mission statement, $F(2,98) = 4.34, p < .05$. Post-hoc tests show a statistically

significant difference between the academic departments with knowledge management in the mission statement and those without knowledge management in the mission statement.

Table 65

Descriptive Statistics for the Overall Measurement Domain (Composite) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Composite Variable	KM Statement	N	M	SD
Measurement	No Mission Statement	4	2.56	.688
	KM Absence	71	2.85	.616
	KM Presence	26	3.22	.593
	Total	101	2.93	.633

Table 66

ANOVA Table for the Overall Measurement Domain (Composite)) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Variable		Sum of Squares	df	Mean Square	F	Sig.
Measurement	Between Groups	3.256	2	1.628	4.34	.016*
	Within Groups	36.759	98	.375		
	Total	40.015	100			

* $p < .05$ (2-tailed)

Table 67

Post-hoc Tests for the Overall Measurement Domain (Composite)) by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Tukey HSD

Variable	KM Statement	No Mission Statement	KM Absence	KM Presence
Measurement	No Mission Statement			
	KM Absence			
	KM Presence		-.256*	

* The mean difference is significant at the .05 level.

Tables 68, 69, and 70 indicate that significant differences are found in “systematic evaluation” by educational field of the departments, $F(3,116) = 3.49, p < .05$, and “integrating knowledge” by educational field of the departments, $F(3,116) = 4.38, p < .01$. The results of post-hoc tests for the question of how importantly the chairs view “systematic evaluation” show that there is a significant difference between the departments in Groups 2 and 4. For the question of how importantly the chairs view “integrating knowledge,” post-hoc tests for the question show that there is a significant difference between the departments in Groups 2 and 3 and Groups 2 and 4.

Table 68

Descriptive Statistics for Systematic Evaluation and Integrating Knowledge by
Educational Field of the Department in the Perceptions of Importance Dimension

Variables	Group ^a	N	Mean	SD
Systematic Evaluation	1	30	2.70	.952
	2	20	2.50	1.000
	3	24	3.13	.900
	4	46	3.15	.816
	Total	120	2.93	.927
Integrating Knowledge	1	30	3.00	.695
	2	19	2.79	.631
	3	25	3.32	.627
	4	46	3.33	.598
	Total	120	3.16	.661

- ^a1: Educational Psych, Counseling, Curriculum, Instruction, Teaching & Learning, Technology, Childhood, Elementary & Secondary, and Human Development
 2: Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development
 3: Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language, and Literacy
 4: Others: Education, Teacher Education, Social Work, Family & Consumer, and Educational Foundations

Table 69

ANOVA Table for Systematic Evaluation and Integrating Knowledge by the Educational Field of the Department in the Perceptions of Importance Dimension

Variables		Sum of Squares	df	Mean Square	F	Sig.
Systematic Evaluation	Between Groups	8.465	3	2.822	3.49	.018*
	Within Groups	93.860	116	.809		
	Total	102.325	119			
Integrating Knowledge	Between Groups	5.285	3	1.762	4.38	.006**
	Within Groups	46.707	116	.403		
	Total	51.992	119			

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

Table 70

Post-hoc Tests for Systematic Evaluation and Integrating Knowledge by the Educational Field of the Department in the Perceptions of Importance Dimension

Tukey HSD

Variable	Group	1	2	3	4
Systematic Evaluation	1				
	2				
	3				
	4		-.652*		
Integrating Knowledge	1				
	2				
	3		-.531*		
	4		-.537*		

* The mean difference is significant at the .05 level.

Tables 71, 72, and 73 show significant differences in “decision making” by the presence of knowledge management in its mission statement, $F(2,107) = 4.07, p < .05$; “systematic evaluation” by the presence of knowledge management in its mission statement, $F(2,116) = 3.81, p < .05$; and “integrating knowledge” by the presence of knowledge management in its mission statement, $F(2,118) = 3.50, p < .05$.

Table 71

Descriptive Statistics for Decision Making, Systematic Evaluation, and Integrating Knowledge by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Variables	KM Statement	N	M	SD
Decision Making	No Mission Statement	4	2.75	.957
	KM Absence	79	2.77	.750
	KM Presence	27	3.26	.813
	Total	110	2.89	.794
Systematic evaluation	No Mission Statement	4	2.00	.816
	KM Absence	83	2.88	.955
	KM Presence	32	3.22	.792
	Total	119	2.94	.932
Integrating knowledge	No Mission Statement	4	3.00	.816
	KM Absence	84	3.08	.662
	KM Presence	33	3.42	.561
	Total	121	3.17	.654

Table 72

ANOVA Table for Decision Making, Systematic Evaluation, and Integrating Knowledge by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Variables		Sum of Squares	df	Mean Square	F	Sig.
Decision Making	Between Groups	4.857	2	2.428	4.07	.020*
	Within Groups	63.834	107	.597		
	Total	68.691	109			
Systematic Evaluation	Between Groups	6.324	2	3.162	3.81	.025*
	Within Groups	96.264	116	.830		
	Total	102.588	118			
Integrating Knowledge	Between Groups	2.878	2	1.439	3.50	.033*
	Within Groups	48.477	118	.411		
	Total	51.355	120			

* $p < .05$ (2-tailed)

Table 73

Post-hoc Tests for Decision Making, Systematic Evaluation, and Integrating Knowledge by the Presence of Knowledge Management in the Mission Statement in the Perceptions of Importance Dimension

Tukey HSD

Variables	KM Statement	No Mission Statement	KM Absence	KM Presence
Decision Making	No Mission Statement		-.487*	
	KM Absence			
	KM Presence			
Systematic Evaluation	No Mission Statement		-1.219*	
	KM Absence			
	KM Presence			
Integrating Knowledge	No Mission Statement		-.341*	
	KM Absence			
	KM Presence			

* The mean difference is significant at the .05 level.

The results of post-hoc tests for both “decision making” and “integrating knowledge” show that there is a statistically significant difference between the departments with knowledge management in the mission statement and those without knowledge management in the mission statement. Post-hoc tests for “systematic evaluation” indicate that there is a significant difference between the departments with no mission statement and those with knowledge management in the mission statement.

Summary

The chapter included the analyses of data collected from 159 academic department chairs in colleges of education in the north central region of the United States. Survey response information, profile of the respondents, and descriptive statistics of responses were presented.

ANOVA analyses and *t* tests analyzed organizational factors for differences in responses among knowledge management strategies. Significant differences at the level $p < .05$ or $.01$ were reported. In Chapter 5, findings are described and conclusions are drawn based on the results of data analyses. Implications for practices and future research are presented.

CHAPTER 5

FINDINGS, CONCLUSIONS, AND IMPLICATIONS

This study focused on the perceptions of academic department chairs of performance and importance of knowledge management strategies in higher education institutions. This chapter includes a review of the design of the study, summary of findings, conclusions, reconnection to the literature, and implications and recommendations for future study.

Review of the Design of the Study

A web-based survey was conducted to gather data from academic department chairs in colleges of education in seven states in the north central United States. The survey instrument included two dimensions, perceptions of performance and perceptions of importance, with four domains of knowledge management strategies, namely, leadership, culture, technology, and measurement. Data were analyzed using the SPSS and were presented through descriptive statistics, *t* tests, and ANOVA analyses to compare the differences of knowledge management strategies by organizational factors.

Summary of the Findings

The analyses of the survey data presented in Chapter 4 yielded several significant results. As stated in previous chapters, four strategies of the leadership domain were measured: vision, strategic planning, value of learning, and motivation. For the culture domain, five strategies were assessed: community orientation, trust/openness, collaboration, entrepreneurship, and responsiveness. Six strategies of the technology domain were measured: training, synergy, communication, problem-solving orientation, up-to-date technology, and storing knowledge. For the measurement domain, four strategies were analyzed: effectiveness, data-based decision making, systemic evaluation, and integration.

Several observations based on the results of analyses in two dimensions, the perceptions of performance and the perceptions of importance, are offered in the following section.

Perceptions of Performance Dimension

Research Question 1: How do academic department chairs in colleges of education differ in their perceptions of performance of their departments based on the applications of knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors?

Leadership

H₀₁: There is no difference in the perceptions of department chairs in the performance of leadership knowledge management strategies by organizational factors.

Overall, several differences in the leadership domain of the perceptions of performance dimension exist by organizational factors: (a) type of institution, (b) educational field of departments, (c) the presence of knowledge management in a department mission statement, (d) the presence of co-teaching, and (e) the presence of online courses.

In the leadership domain of the perceptions of performance dimension, a significant difference exists by the presence of co-teaching practice. Departments in Group 2 (Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development) are more likely to recognize faculty and staff for their contributions to the development of best pedagogical practice, scholarship, and service than those in Group 4 (Education, Teacher Education, Social work, Family and Consumer, and Educational Foundations).

Academic departments that provide an opportunity for a collaborative activity through co-teaching are more likely to recognize faculty and staff for their contributions to the development of best pedagogical practices, scholarship, and services as compared to those departments that do not. In addition, the departments with knowledge management in their mission statement, as compared to those without knowledge management in the mission statement, are more likely to

consider effectiveness and efficiency of organizational knowledge when developing department strategies.

Data analyses also indicate that academic departments in private institutions are more likely to view sharing best pedagogical and administrative practices with others in the department as a strategic asset compared to departments in public institutions. Another significant difference is that academic departments in which instructors taught classes together are more likely to value the notion of learning and to create a learning environment for the members within the department compared to departments that do not practice co-teaching.

Culture

Ho2: There is no difference in the perceptions of department chairs in the performance of culture knowledge management strategies by organizational factor.

Several differences in the culture domain are found by organizational factors, such as (a) the total number of enrolled students, (b) years as a chair, (c) the presence of co-teaching, and (d) the presence of online courses.

Data analyses indicate that smaller departments, in terms of the total number of enrolled students, are more likely to openly discuss problems. The departments that offer online courses are more likely to be open to identifying department problems and seeking solutions. In addition, the department chairs who have been in their current position longer are more prone to be open to discussing problems and sharing solutions within the department.

Academic departments that practice co-teaching are more apt to encourage faculty and staff entrepreneurship as compared to those departments in which co-teaching is not prevalent. Within departments that offer online courses, the faculty members are more likely to mentor each other for developing best teaching and research practice and to promote and recognize the entrepreneurial spirit.

Technology

Ho3: There is no difference in the perceptions of department chairs in the performance of technology knowledge management strategies by organizational factors.

Overall, there are several differences in the technology domain that exist by several organizational factors: (a) type of institution, (b) educational field of departments, (c) the allocation budget in nonsalary areas, (d) the presence of an e-newsletter, (e) the presence of online courses, and (f) the presence of knowledge management in a department mission.

The results indicate that academic departments use technology primarily to capture and store existing knowledge within the department. This study found that academic departments in private higher education institutions are more likely to use technology in order to store knowledge regarding teaching and research compared to departments in public institutions. How a department uses technology in capturing and storing knowledge differs by the educational field of department: in particular, the difference is found between the departments in Group 2 (Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource

Development) and Group 3 (Special Education, Disorder and Intervention, Kinesiology, Physical Education, Sports and Recreation, and Language and Literacy).

The results also indicate that the departments that allocate more than 19% of their financial resources to nonsalary areas are more likely to use technology for storing knowledge as compared to those which spend less than 19%. The results of data analyses show that departments that offer online courses are more likely to update technology and provide upgraded software and hardware.

In addition, the departments that publish an e-newsletter are more likely to offer training sessions or programs to department members in order to help them use a new technology. The results of the study show that the members of the departments that offer online courses, compared to those that do not, are more likely to offer training to use a new technology and that technology is adopted with a clear vision for solving problems within the department.

Departments with knowledge management in the department mission statement are more likely to use technology in order to capture internal and external knowledge regarding best pedagogical practice, scholarship, and service than those that do not.

Measurement

H₀4: There is no difference in the perceptions of department chairs in the performance of measurement knowledge management strategies by organizational factors.

Several differences in the measurement domain were found by the following organizational factors: (a) the presence of an e-newsletter, (b) the presence of online courses, and (c) the presence of knowledge management in a department mission.

This study found that departments that publish an e-newsletter for their members are more likely to use measurement knowledge management strategies to allocate resources toward efforts to increase its knowledge. The results of data analyses indicate that departments offering online courses are more likely to invest their resources to increase knowledge capability. The results also demonstrate that departments with knowledge management in the mission statement are more likely to consider cost-effective strategies in their annual report. Such departments also have annual indicators reflecting changes in the (knowledge) management priorities in the department as compared to those departments without knowledge management in the mission statement.

Perceptions of Importance Dimension

Research Question 2: How do academic department chairs in colleges of education differ in their perceptions of the importance of knowledge management strategies (leadership, culture, technology, and measurement) by organizational factors?

Leadership

Ho5: There is no difference in the perceptions of department chairs in the importance of leadership knowledge management strategies by organizational factors.

Overall, several differences in the leadership domain of the perceptions of importance dimension exist by two organizational factors: (a) type of institution and (b) educational field of departments.

The chairs of the academic departments in public institutions, as compared to those in private institutions, are more likely to recognize the importance of the faculty and staff contributing to the development of best pedagogical practices, scholarship, and services.

This study also found that the chairs in Group 4 (Education, Teacher Education, Social Work, Family and Consumer, and Educational Foundations) are more likely to believe that sharing best practices with each other in the department is important as compared to those in Group 2 (Educational Leadership and Policy, Higher Education, Adult Education, Work, and Human Resource Development).

These findings suggest that several organizational factors, such as the size of the department, seniority of the chair, and the presence of online courses and an e-newsletter, do not significantly affect the leadership management strategies in the perceptions of importance dimension.

Culture

H₀₆: There is no difference in the perceptions of department chairs in the importance of culture knowledge management strategies by organizational factors.

Overall, there are several differences in the culture domain that exist by several organizational factors, such as (a) years as a chair, (b) the total number of enrolled students, (c) the total number of faculty and staff combined, (d) the amount of annual budget, (e) the presence of an e-newsletter, and (f) the presence of online courses.

New department chairs are more likely to believe that it is important to encourage mentoring practices to develop better teaching and research activities. The results of data analyses show that the chairs of large departments, indicated by the number of enrolled students, the total number of faculty and staff, and the amount of annual department budget, are more likely to view it as important to encourage people in the department to mentor each other in developing best teaching and research practices.

The chairs of departments that publish an e-newsletter are less likely to believe that it is important to recognize the entrepreneurship of the faculty and staff in the department. The chairs of departments that publish online courses are more likely to recognize the importance of mentoring practices and entrepreneurship among faculty and staff.

Technology

H₀7: There is no difference in the perceptions of department chairs in the importance of technology knowledge management strategies by organizational factors.

Overall, significant differences exist in the technology domain by several organizational factors: (a) type of institution, (b) the total number of enrolled students, (c) the total number of faculty and staff, (d) the presence of online courses, (e) the presence of co-teaching, (f) educational field of departments, and (g) the presence of knowledge management in a department mission.

This study found that the chairs in Group 3 (Special Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language and Literacy) are more likely to believe that the technology knowledge management strategies are as important as those in Group 2 (Educational Leadership and Policy, Higher Education, Adult Education, Work, and Human Resource Development).

Department chairs in public institutions, compared to those in private institutions, are more prone to believe that it is important to use technology knowledge management strategies in order to capture internal and external best knowledge of teaching and research activities. The chairs of large departments, in terms of the total number of enrolled students and the total number of faculty and staff combined, seem to understand the importance of using technology in order to

reduce communication problems between people in a department and to store knowledge.

Chairs of the departments that offer online courses, compared to those that do not, are more likely to understand that it is important to use technology in order to reduce communication barriers among the people in the department and to address and solve problems with a clear vision. The findings also indicate that chairs of departments that offer co-teaching classes, compared to those that do not, are more likely to believe that it is important to have a clear vision for adopting technology as a tool to solve problems and to store knowledge.

The department chairs in Group 3 (Special Education, Disorder and Intervention, Kinesiology, Physical Education, Sports and Recreation, and Language and Literacy) and Group 4 (Education, Teacher Education, Social Work, Family and Consumer, and Educational Foundations) are more likely to believe that proper training to use new technology is important for department members, compared to those in Group 2 (Educational Leadership, Policy, Higher Education, Adult Education, Work, and Human Resource Development).

The chairs in Group 1 (Educational Psychology, Counseling, Curriculum, Instruction, Teaching and Learning, Technology, Childhood, Elementary and Secondary, and Human Development), compared to those in Group 3 (Special Education, Disorder and Intervention, Kinesiology, Physical Education, Sports and Recreation, and Language and Literacy), are less likely to believe that it is important to use technology in order to capture internal and external best practices.

Chairs in the departments with knowledge management in the mission statement, compared to those without knowledge management in the mission statement, are more likely to believe in the importance of technology in order to adopt a new technology with a clear vision to solve problems and to capture and store best practices in teaching, research, and services.

Measurement

Ho8: There is no difference in the perceptions of department chairs in the importance of measurement knowledge management strategies by organizational factors.

Several significant differences in the technology domain are found by two organizational factors: (a) educational field of departments and (b) the presence of knowledge management in a department mission statement.

The department chairs in Group 2 (Educational Leadership and Policy, Higher Education, Adult Education, Work, and Human Resource Development) and Group 4 (Education, Teacher Education, Social Work, Family and Consumer, and Educational Foundations) are less likely to recognize the importance of measurement knowledge management strategies that provide evidence of knowledge development taking place.

In addition, department chairs in Group 3 (Education, Disorder & Intervention, Kinesiology, Physical Education, Sports & Recreation, Language and

Literacy) and Group 4 (Education, Teacher Education, Social Work, Family and Consumer, and Educational Foundations), as compared to Group 2 (Educational Leadership and Policy, Higher Education, Adult Education, Work, and Human Resource Development), appear to be more apt to believe in the importance of measurement knowledge management strategies to provide evidence of knowledge development and to allocate department resources in order to increase knowledge capabilities within a department.

The chairs of academic departments with knowledge management in the mission statement are more likely to believe that it is important to have annual indicators reflecting any changes in the (knowledge) management priorities within a department and to allocate resources toward efforts that increase the knowledge capability of the department, as compared to those without knowledge management in the mission statement.

As compared to chairs of academic departments that have no mission statement, the departments with knowledge management in the mission statement are more likely to believe in the importance of using measurement knowledge management strategies to provide evidence of knowledge development occurring within a department.

In the following section, several conclusions are reached based on the findings.

Conclusions

Several important findings emerged from this study. In this section, several conclusions are drawn concerning the perceptions of performance and perceptions of importance of the chairs toward knowledge management strategies in colleges of education.

Perceptions of Performance Dimension

Several knowledge management strategies in the perceptions of performance dimensions are affected by organizational factors such as type of institution, budget allocation in nonsalary areas, and the presence of co-teaching online courses. Organizational factors such as seniority and the number of faculty or the number of enrolled students marginally affect the perceptions of the chairs using knowledge management strategies.

Colleges of education in private institutions are more inclined to adapt and use technology for capturing and storing knowledge within a department. The results of the survey also indicate that the type of institution makes substantial differences in technology knowledge management strategies except for the case of using technology for storing knowledge. Academic departments use technology knowledge management strategies mostly to store knowledge and solve problems of the department. The department chairs also emphasize the need for proper training and upgrading technology in order to maximize the benefits of technology in place.

In addition, the results of this study indicate that there is no significant difference in the culture domain and the measurement domain by type of institution, public or private, in the perceptions of performance dimension.

The departments that invest more financial resources in nonsalary areas, as opposed to salary areas, are more likely to recognize people for their contribution to knowledge development and to store organizational knowledge. This finding confirms the assumption of this study that departments that invest financial resources in nonsalary areas may be more likely to adopt and use knowledge management strategies.

The presence of online courses makes a difference in the perceptions of performance of knowledge management strategies. While no significant difference is found in the leadership domain, the presence of online courses makes a significant difference in the culture domain and the technology domain. The findings of the study imply that the presence of online courses contributes to promoting collaborative work between people in the department, encouraging entrepreneurship, and offering an opportunity for professional development for people in a department. In addition, the presence of online courses also affects knowledge management strategies in the technology domain such as training members and solving problems in a department. The findings of this study imply that the departments that offer online courses use technology as a conduit to link people in the department and to create a collaborative organizational culture.

Results of the study suggest that the practice of co-teaching affects knowledge management strategies in the leadership domain and the culture domain in the perceptions of performance dimension. For instance, the findings imply that departments using culture knowledge management strategies are more focused on promoting leadership and creating an adequate department climate for better performance.

Although this study initially assumed that the size of a department might make a difference in the perceptions of performance on knowledge management strategies, the results of the study indicate that the size of a department does not contribute substantially to the conceptual framework of the study. Several organizational factors representing the size of department, for instance, the total number of faculty and faculty and staff combined and annual budget of the department, did not significantly affect the perceptions of the chairs using knowledge management strategies in the colleges of education.

Perceptions of Importance Dimension

Several organizational factors indicative of the seniority of a chair and the presence of co-teaching practice, online courses, an e-newsletter, and knowledge management in a mission statement seem to influence knowledge management strategies in the perceptions of importance dimension.

In the culture domain, the chairs from the departments with a large number of faculty and staff combined and enrolled student body with large annual budget

revenue appear to believe that collaborative activities among people in the department are important. As opposed to senior chairs, new chairs believe that collaboration is important in implementing knowledge management. Aligned with this finding, chairs from the departments where online courses are offered perceive that collaboration is important.

The chairs of the departments where online courses are provided, co-teaching practices are observed, and an e-newsletter is distributed seem to believe that technology knowledge management strategies are important.

Compared to the chairs of the departments that have no mission statement, those chairs of departments with knowledge management in their mission statement seem to believe that technology is important to solve problems in a department. The chairs of the departments with knowledge management in the mission statement appear to recognize the importance of measurement knowledge management strategies. The results of the study indicate that the chairs show some interest in allocating their financial resources to improving the knowledge capability of the department.

Contrary to the assumptions of the study, the findings suggest that all indicators for the size of department such as the number of faculty, faculty and staff combined, enrolled students, and annual budget size do not affect the technology domain in the chairs' perceptions of importance. The allocation of the department budget in the nonsalary category also does not make a significant difference in knowledge management strategies in the perception of importance dimension.

Summary

This study found that department chairs' perceptions of knowledge management strategies vary by organizational factors in the performance dimension and importance dimension in colleges of education. The results of this study support the basic assumptions of the conceptual framework described in Chapter 1.

In particular, organizational factors that offer tangible evidence for collaboration among faculty members (co-teaching) and application of knowledge management technologies for instruction (online courses) play a role in differentiating knowledge management strategies in both dimensions, the perceptions of performance and importance, in colleges of education. However, when it comes to the issue of the presence of knowledge management in a mission statement, the results of the investigation are rather intriguing, since few significant differences in knowledge management strategies appear across the domains.

Several hypotheses were rejected and the related findings reveal possible issues in the conceptual framework that can be linked to the contextual nuances of higher education. These results lead to two intriguing questions: Is knowledge management worth the comparable attention that colleges of education are directing to classroom learning? To what extent and how broadly should knowledge management be examined in colleges of education? While most of the attention has been directed toward the assessment of classroom learning in colleges of education, the results of this study indicate that knowledge management strategies might

provide colleges of education with improvements linked to quality, effectiveness, and efficiency.

It is important to note, for instance, that there are chasms in measurement knowledge management strategies by the type of institution (private and public) and between higher education settings and for-profit, private organizations (those for which the knowledge management assessment tool was originally designed). Based on the comments from the survey participants as described in the next section of this chapter, academic departments in higher education institutions devote a large amount of resources to classroom assessment. However, their measurement strategies appear to be different from those applied in knowledge management practices of business and industry which are typically focused on the effectiveness and efficiency of organizational performance. For example, the NCATE accreditation process and requirements for academic departments in colleges of education are not geared to measure organizational effectiveness.

This concludes the summary of findings as related to this study. The following section provides additional observations by the researcher based on his return to the literature after he completed the data analysis of this study.

Reconnecting to the Literature

Reconnecting the findings of the study with the existing literature review provides an opportunity to explore the potential and limitations of this study for those who are engaged in research and practice. As mentioned in Chapter 2,

intellectual capital perspectives on knowledge (Albert & Bradley, 1997; Teece, 1998) present knowledge as a commodity that can be acquired, traded, quantified, and therefore predicted. In line with the intellectual perspective, the human capital perspective of knowledge (Becker, 1975; Kendrick, 1976; Mincer, 1989; Schultz, 1971) sees knowledge as an asset that can be quantified in numbers. While the human capital perspective emphasizes the importance of investment in human resources as compared to the intellectual capital perspective, knowledge in the eyes of both perspectives is viewed as a static form or end product, lacking understanding about the process and organizational context of knowledge creation and transfer. As the results of this survey indicate, academic department chairs in higher education institutions highly appreciate the significant role of culture or cultural strategies in implementing knowledge management. This finding is aligned with the literature review in Chapter 2 that there is a caveat between two major perspectives: (a) human capital theory and intellectual capital perspective that view knowledge and knowledge workers as assets and (b) the flow-oriented knowledge management perspective that emphasizes the process of knowledge creation and sharing among people. This caveat suggests that in order to successfully apply knowledge management to higher education institutions, it is important to construct support systems and create an organizational culture that promotes knowledge sharing and transfer. As opposed to previous management-oriented approaches that were applied and mostly focused on cost-effective orientation, supervising, and monitoring

approaches, knowledge management strategies for higher education settings play a role in encouraging knowledge activities among people.

According to responses to the open-ended questions, some department chairs expressed doubt that knowledge management strategies adopted from the business sector are suitable for higher education institutions. The following are statements from two of the respondents:

[This type of] survey seems to be geared toward for-profit business. Almost all of the department's faculty are tenured or in tenure-track positions and don't seem to be interested in knowledge management....Scientists working in other venues have goals that are different from those at universities in that they have less freedom in choice of research areas and must produce positive results rapidly. Knowledge management might be more applicable to those scientists employed in industry or national laboratory settings. (Anonymous personal communication through e-mail)

In general, most of the faculty members don't want to know how things get done. They don't seem to be interested in taking the time to share knowledge on a regular basis unless it results in a publication and/or grant award. In grant development, I have never seen nor heard of a faculty member considering the financial benefits of organizational knowledge. (Anonymous personal communication through e-mail)

As Santo (2005) points out, this skepticism is in part because higher education institutions, schools of education in particular, as opposed to for-profit organizations are not profit-oriented. Because knowledge in higher education settings is highly sophisticated and specialized, measuring it using rubrics adopted from the business sector is problematic. However, the possibility that classroom learning could be enhanced if higher education institutions work on organizational effectiveness should be considered.

The results of this study indicate that the majority of academic departments in colleges of education do not have a mission statement that includes knowledge management. This observation is congruent with findings of a previous study (Kidwell et al., 2002) that knowledge management is unfamiliar to leaders in higher education institutions. Potential benefits of knowledge management strategies and systems are not fully recognized by academic departments in higher education institutions. However, one can argue that through application of knowledge management strategies, academic departments might be more responsive to the changes and demands of their higher education contexts.

Results of this investigation are aligned with findings of previous studies (Dierkes, 2001; Skyrme, 1999; Tetrick & Da Silva, 2003) that assert that adapting knowledge management strategies requires creating a collaborative organizational culture, providing support for leadership, and building a technology system in order to transform intangible resources to organizational resources for improved organizational performance. In the following section, the researcher attempts to link the findings from this investigation to the existing studies by four knowledge management domains.

Leadership

The results of this study do not deny the vital need for department chairs to allocate resources effectively for the successful implementation of knowledge management. Establishing an expert leader in higher education institutions takes

time and resources (Wolverton, Gmelch, Montez, & Nies, 2001). For a department chair to be able to effectively manage a department, the results of this study suggest that socialization tactics may help. To build and maintain various kinds of relationships within a department, the results support the contentions of previous studies that chairs need to develop communication and team-building skills (Gmelch & Parkay, 1999; Hurley & Hult, 1998). Many department chairs are new to the position without formal leadership training. The results of perception of importance of chairs toward knowledge management strategies suggest that formal leadership training needs to be offered to new department leaders (Gmelch & Miskin, 1995).

This study supports Marsick and Watkins's contention (2003) that strategic leadership plays a critical role in providing an organization with an opportunity for learning. The results of this study reinforce those previous studies on knowledge management and institutional change efforts in higher education institutions that organizational learning plays an essential role in facilitating collaboration and knowledge sharing and transfer (Bate & Khasawneh, 2005; Jeris, 1998).

Leaders set the tone in their dedication to the promotion of collaboration and organizational learning. As Marsick and Watkins (2003) suggest, the results of the analyses of this study indicate that academic department chairs seem to value and understand the benefits of learning. It is important to note that Marsick and Watkins also contend that interventions for organizational learning take into consideration financial measures for organizational learning programs.

The data analyses, however, indicate that although department chairs highly recognize the value of most of the knowledge management strategies in the survey, they do not seem to fully take advantage of the benefits of knowledge management strategies. This finding is aligned with previous studies (Creswell et al., 1990; Seagren et al., 1993) that higher education institutions fail to provide or lack formal leadership and management training programs for department chairs to effectively manage various activities and work with people within a department. Linking knowledge management to leadership with a clear vision, innovative organizational changes become real possibilities (Amidon, 1997). Therefore, higher education institutions may need a change in their approach to developing leadership skills of academic department chairs through training and support systems.

Culture

Culture is made up of complex networks of traditions and norms that have been built up over time by people within an organization. Organizational changes often are met with resistance and are thwarted due to various cultural factors, such as lack of communication, absence of openness and trust, and lack of collaboration. The findings of this study, although many indicators are marginally significant, are aligned with researchers who assert that trust plays a leveraging role in building an organization that overcomes such challenges and yields improved outcomes (Dakhli & De Clercq, 2004; Davis, Schoorman, Mayer, & Tan, 2000). Trust can drive organizational innovation and performance improvement. Trust can encourage more

frequent, freer communications and extensive collaboration and cooperation between people within an organization (Abrams, Cross, Lesser, & Levin, 2003).

The results of this study are consistent with previous work (Kermally, 2002; Wolverton et al., 1998) that explains that successful implementation of knowledge management is enhanced by collaborative efforts and trust among people. Similar references are made by researchers (Davis et al., 2000; Trice & Beyer, 1993) that trust encourages knowledge sharing between people in an organization. This study illustrates the potential that trust-based collaborative efforts between faculty members within a department can facilitate knowledge sharing and transfer instead of knowledge hoarding.

In a highly professional community such as a higher education institution, intellectual activities (teaching and research) frequently occur in isolation. By building informal and formal channels or venues for people to communicate with each other, knowledge management may be used to establish mutual commitment and encourage people to participate in organizational change.

Technology

This study revealed that department chairs recognize the importance of technology for various purposes. The study results are aligned with previous work by Roth and Gooler (1989) that conveys the potential of emerging information technologies.

The present study revealed that several departments are adapting technology applications such as e-newsletters and on-line courses, which is consistent with previous work (Strassmann, 1997). These types of intradepartmental applications can be embedded effectively and updated continuously. Nam and Tatum (1997) assert that the technological commitment of leaders is a key factor that can lead toward organizational innovation. Findings from this investigation suggest that academic department chairs understand the importance of technology in managing the department. The absence or lack of department-wide communication networks and technical integration can prevent communication among people in a department and deter accessibility to information and knowledge.

Although this study does not provide evidence for how much technology contributes to enabling and sustaining the capabilities of academic departments, the findings support the notion that technology, information and communication technology in particular, functions as a coordinating mechanism in higher education institutions. It should not be overlooked, however, that nontechnology factors can also substantially affect processes and operations within a department.

Technology is merely a tool for those who use it. Academic department chairs for this study seem to recognize the importance of training in maximizing the benefits of technology. Technology knowledge management strategies can be used to bring together people in a department in the form of collaboration among instructors and to pursue other diverse activities to achieve desired goals. These collaborative activities among instructors might increase the breadth of knowledge in

a department. Technology strategies in knowledge management make it easier to access innovative research and teaching practices that are isolated within individual instructors, to share them with others, and, eventually, to help create a more collaborative process and climate.

Measurement

Several findings from this study, albeit marginally significant, are aligned with Boudreau's (2003) suggestion that knowledge management measurement strategies can contribute to data-driven decision making in higher education institutions. As mentioned earlier in this chapter, most measurement activities in colleges of education focus on classroom learning and student-teacher learning activities. However, several written statements to open-ended questions by the respondents suggested that department chairs do not seem to recognize knowledge management applications as a critical means of measurement.

This phenomenon might be due to claims by some authors that there is little effort in higher education institutions to investigate efficiency or return on investment (Gumport & Pusser, 1995; Leslie & Rhoades, 1995). Academic departments tend to have different foci in adopting and implementing measurement practices between profit-oriented knowledge management assessment and non-profit higher education settings.

The results also reveal that the majority of the targeted departments of this study have yet to apply knowledge management strategies to their institutions. This

lagging behavior might be attributed to the intellectual and practical limitations of applying knowledge management to higher education settings. This observation seems to bear out claims of the American Productivity and Quality Center's study (2001) that measuring the implementation of knowledge management may not take place in its early stages.

Making a profit is not the primary goal of most higher education institutions. Therefore, measurement of knowledge management strategies must be pursued under a broader strategic plan. Future research could incorporate various measurement tactics of knowledge management such as the balanced score model (Kaplan & Norton, 1996) that not only evaluates the value of new management strategies but also the capacity of an organization.

Summary

The findings from this study suggest that knowledge management as a strategy for organizational change requires a multitude of aspects: strong leadership with the understanding about the value of knowledge and internal human resources; an organizational culture that facilitates collaborative learning; a technological infrastructure that supports research, teaching, and service activities; and a systemic evaluation mechanism that proves the investment to be worth it.

The study results offer support for the conceptual framework in Chapter 1. This framework helps to ensure that the framework is interwoven with knowledge management practices through each domain of the knowledge management

strategies. The framework implies that each domain of knowledge management strategies separately affects the perceptions of performance and importance of department chairs in colleges of education toward knowledge management strategies. In particular, the results of this study, along with the literature review, indicate that the conceptual framework of the study contributes to the clarification that knowledge management is not synonymous with information management. This study shows that success in knowledge management depends on integrating and coordinating various, yet cohesively aligned strategies.

The study suggests that the role of leadership plays a critical role in applying and implementing knowledge management. This study indicates that chairs in higher education institutions should become aware of knowledge management and its strategies if they want to be proactive and create and maintain an environment for learning. This observation supports one of the key arguments about the role of leadership in the existing knowledge management literature that leadership is a quintessential contributor to successful organizational innovation (Tidd, Bessant, & Pavitt, 2001).

As illustrated in Chapter 2, since performance, as far as knowledge management is concerned, is determined by collaborative efforts of people in an organization, trust among all levels of workers within the organization is vital to organizational success (Kermally, 2002). New roles of leadership in knowledge management should facilitate communication and collaboration between people in an organization, promote entrepreneurship and creative thought, and enhance

dissemination of information related to teaching and research activities. This implies that internal human resources juxtaposed with the application of technologies are quintessential for successfully implementing knowledge management (Albert & Bradley, 1997). Without appreciation for the intangible human resources, organizations (including academic departments in higher education institutions) are disadvantaged at envisioning or preparing for the future.

Although this investigation confirms many arguments in existing literature on knowledge management, it does not address questions of how knowledge is actually created and shared in higher education contexts. For example, the study does not examine how tacit knowledge is converted to explicit knowledge in colleges of education. This type of knowledge creation and sharing takes place at the level of personal communication and relationships. Quantitative methods have limits for investigating processes of knowledge creation and sharing. Therefore, qualitative research methods may shed more light on the relationship, linkage, and communication process between people (communication givers and receivers) in an organization.

In the following section, implications for practice and recommendations for future research are discussed.

Implications for Practice

The results of this study offer several implications for leaders in higher education institutions, including department chairs, college deans, and other higher level administrators developing and applying knowledge management strategies.

First, with knowledge management strategies in place, leaders in higher education institutions could identify the key organizational characteristics that might lead to successful implementation of knowledge management in higher education settings. For instance, the results of the study show that many knowledge management strategies in the culture domain are significant across the organizational factors. This observation implies that identifying unique cultural norms and values and creating and cultivating an organizational climate for the members in the department are pivotal to successfully implementing knowledge management.

A great amount of activity in higher education contexts is conducted by individual faculty members who are highly specialized in a subject or discipline and eager to embody their own independent academic identity. One can argue that plausible applications of knowledge management are to help them pursue common interests, such as problem-oriented and collaborative work associated with grants, research projects, and other services. This type of application allows knowledge management to focus on solving technical and social problems, as opposed to a scientific theory or epistemological approach. In this respect, knowledge management can be deemed worthy and implemented by stakeholders in a way that

creates an organizational climate and process that nurtures teaching and research activities.

Second, the findings of this study suggest that knowledge management has potential for improving the performance of academic departments, facilitating intellectual activities, and creating knowledge resources. For this, the advocates for knowledge management need to promote the potential benefits of knowledge management for organizational change within higher education institutions. In addition, as Skyrme (1999) and Stevenson (2001) recommend, leaders in higher education institutions, department chairs, in particular, should function as Chief Knowledge Officers (CKO) to improve research and teaching practices and organizational effectiveness.

Third, knowledge management and its relevant technologies need to be introduced and department personnel need to be properly educated about the applications of technologies. Through this effort, as James (2000) points out, change delay or learning delay can be reduced or prevented. Knowledge management has the potential to facilitate internal knowledge-related activities by creating a technologically enhanced organizational culture. Knowledge management also provides indicators or factors for knowledge management implementation. Colleges of education might have already adapted and used some popular strategies, projects, or technologies that are known to be useful for implementing knowledge management. These strategies include communities of practice and information and communication technologies.

However, there is no guarantee that people, faculty members in particular, in an academic department will accept and participate in organizational change that features knowledge management, given that there may be antagonistic predispositions toward change strategies adapted from corporate organizations. Regardless of whether it is a department or a university that decides and provides technology support – including purchase, maintenance, and training – it is important that the voice of key participants must be heard from the beginning of implementation of knowledge management. With technologies that support a collaborative environment, a department may strengthen the linkage among its members and between a department and external sources.

Fourth, the contributions of the analyses of the measurement domain to this study were minute. Comments from the respondents and feedback from the pilot study suggest that translating department performance into some type of financial analysis is difficult. Measuring the investment in new management strategy implementations in terms of both financial and nonfinancial measures offers a significant indicator to external as well as internal stakeholders. Therefore, it would be helpful to develop applicable assessment tools so academic departments in higher education institutions can readily evaluate their organizational performance in implementing knowledge management strategies (Santo, 2005). It may be too premature to determine whether knowledge management strategies would result in better performance than traditional strategies in academic departments in higher education settings.

Implications for Future Research

The results of this exploratory study suggest that there is a great deal to learn about the application of knowledge management in higher education contexts.

First, from a methodological perspective, despite the useful findings generated by the survey for this study, future researchers should seek to develop a survey instrument that is more suitable for higher education contexts. The original survey instrument, developed by the American Productivity and Quality Center and the Arthur Andersen Consulting firm, was designed for the business sector. Since this present study adapted a survey instrument originally designed for a large-size business organization, various measurement problems occurred and should be taken into account for future research. For instance, the orientations and directions of measurement practices in higher education differ from those in the private sector: higher education institutions are more likely to focus on learning and teaching process and performance, but rarely on a monetary measure, while their counterparts in the private sector primarily emphasize and routinely assess cost-effectiveness, return on investment, and customer relations in financial terms. Put another way, financial-oriented measurement practices in higher education institutions are loosely coupled with other major areas, compared to the for-profit, private sector.

Second, although identifying directive and predictive relations among the knowledge management strategies is not the intent of this study, the researcher recognizes that there might be complex interplay among the variables. For example, with regard to the leadership domain, this study did not employ traditional

assessment tools that measured leadership style. This study derived strategies of leadership from the existing knowledge management literature, and there might be some degree of overlap between leadership and culture. Therefore, future researchers may consider conducting studies to identify the domains and strategies that represent the uniqueness of each domain and strategy.

Third, since the unit of analysis of this study was the organizational level, each department was assumed to be internally homogeneous with no differences between faculty or staff. This assumption should be tested. One of the alternatives to address this issue is to investigate the interactions or networking activities between people at multilevels or units in knowledge sharing and transfer. By employing various research approaches of qualitative as well as quantitative research methods, an endeavor to develop more comprehensive knowledge management strategies may come to fruition.

Fourth, one of the pitfalls of this study's assumption results in overlooking or ignoring the flow of knowledge among people in an organization. The quantitative data analyses of this study did not fully ascertain the way that academic department chairs understand knowledge management per se, since they offer a limited insight of cognitive process, individually and collectively, of how knowledge is shared with each other. Even though this study did not delve into the actual process of knowledge or flow of knowledge, as Chatzkel (2003) posits, this study recognizes the significance of uncovering the process of flow of knowledge between people within an organization. Such knowledge activities as creation, sharing, and transfer

of knowledge between people within an organization require an individual, human-oriented approach rather than an organizational, management approach. In this regard, future studies could develop research models that focus on how knowledge sharing and transfer actually occur between people in higher education contexts. Perhaps an interlinking mechanism and human activities can be illustrated to show the flow and dynamics of knowledge creation and sharing within and among departments within higher education institutions.

Fifth, suggestions and comments from the respondents stress the importance of a clear definition of knowledge. In this regard, this study recognizes that there might be a contradiction in implementing knowledge management in higher education institutions. The contradiction comes from the very definition of knowledge management. Since its inception, the concept of knowledge management has been contradictory between two terms: knowledge and management. Alvesson and Kärreman (2001) point out that knowledge in the existing knowledge management literature is too broad and poses an unreliable strategy that cannot be managed. Unless individual researchers limit the concept of knowledge in knowledge management for their study, this issue does not appear to be solved, at least not epistemologically. Hence, future research on knowledge management needs to develop clear theoretical boundaries and dimensions of knowledge aligned with the purpose and context.

Sixth, Altbach (1999) raises a fundamental issue. Creating new knowledge databases and systems and increasing the amount of information and knowledge do

not ensure accessibility to and equality of education in institutions of higher education. Given the situation that knowledge creation and dissemination are dominated by major research universities, a “cartel of information” across the nation could be created or prolonged. At an organizational level, this issue can also be related to power: who creates knowledge versus who controls it. In a highly professional community, such as the higher education institution, the issue of autonomy versus control is one that is always conflicting yet should not be compromised. Future study needs to be prudent and seek to avert organizational turmoil that might deter implementation of knowledge management because of potential misapplications based on power relationships within universities.

REFERENCES

- Abrams, L. C., Cross, R., Lesser, E., & Levin, D. Z. (2003). Nurturing interpersonal trust in knowledge-sharing network. *Academy of Management Executives*, 17(4), 64-77.
- Albert, S., & Bradley, K. (1997). *Managing knowledge: Experts, agencies, and organizations*. UK: Cambridge University Press.
- Altbach, P. G. (1999). Patterns in higher education development. In P. G. Altbach, R. O. Berdahl, & R. J. Gumport (Eds.), *American higher education in the twenty-first century* (pp. 15-38). Baltimore, MD: The Johns Hopkins University Press.
- Alvesson, M., & Kärreman, D. (2001). Odd couple: Making sense of the curious concept of knowledge management. *Journal of Management Studies*, 38(7), 995-1018. Retrieved April 22, 2006, from <http://www.ulib.niu.edu:4426/ehost/pdf?vid=4&hid=20&sid=6b125eaa-ddec-4b85-8041-50d3532de6d2%40sessionmgr3>
- American Productivity & Quality Center. (2001). Measurement for knowledge management. Retrieved August 11, 2006, from http://www.apqc.org/portal/apqc/ksn/Measurement%20for%20KM.pdf?paf_gear_id=contentgearhome&paf_dm=full&pageselect=contentitem&docid=106946
- Amidon, D. M. (1997). *Innovation strategy for the knowledge economy: The Ken Awakening*. Boston: Butterworth-Heinemann.
- Argyris, C., & Schön, D. (1980). What is an organization that it may learn. In M. Lockett & R. Spear (Eds.), *Organization as systems* (pp. 128-137). New York: Milton Keynes/The Open University Press.
- Ary, D., Jacobs, L., & Razavieh, A. (1996). *Introduction to research in education* (5th ed.). Orlando, FL: Harcourt Brace College Publishers.

- Baek, S., Liebowitz, J., Prasad, S. Y., & Granger, M. (1999). Intelligent agents for knowledge management: Toward intelligent web-based collaboration within virtual team. In J. Liebowitz (Eds.), *Knowledge management handbook* (pp. 1-23). Boca Raton, FL: CRC Press.
- Barney, J. (1991). Firm resources and competitive advantage. *Journal of Management*, 17(1), 99-120.
- Bartel, A. P., & Lichtenberg, F. R. (1987). The comparative advantage of educated workers in implementing new technology. *Review of Economics and Statistics*, 69(1), 1-11.
- Bassi, L. J. (1997). Harnessing the power of intellectual capital. *Training and Development*, 51(12), 25-30.
- Bate, R. & Khasawneh, S. (2005). Organizational learning culture, learning transfer climate, and perceived innovation in Jordanian organizations. *International Journal of Training and Development*, 9(2), 96-109.
- Becker, G. S. (1975). *Human capital*. Chicago: The University of Chicago Press.
- Beckman, T. J. (1999). The current state of knowledge management. In J. Liebowitz (Eds.), *Knowledge management handbook* (pp. 1-23). Boca Raton, FL: CRC Press.
- Bontis, N. (1998). Intellectual capital: An exploratory study that develops measures and models. *Management Design*, 36(2), 63-76.
- Boudreau, J. W. (2003). Strategic knowledge measurement and management. In S. E. Jackson, M. A. Hitt, & A. S. DeNisi (Eds.), *Managing knowledge for sustained competitive advantage: Designing strategies for effective human resource management* (pp. 360-396). San Francisco: Jossey-Bass.
- Brown, J. S., & Duguid, P. (1991). Organizational learning and communities of practice: Toward a unified view of working, learning, and innovation. *Organization Science*, 2(1), 40-57. Retrieved August 11, 2006, from <http://web.ebscohost.com/ehost/pdf?vid=3&hid=105&sid=821e8260-3dda-49b1-b732-2aaf8548ef37%40sessionmgr107>
- Brown, S., & Glasner, A. (Eds.) (1997) *Assessment matters in higher education: Choosing and using diverse approaches*. Philadelphia: The Open University Press.

- Burton-Jones, A. (2001). *Knowledge capitalism: Business, work, and learning in the new economy*. New York: Oxford University Press.
- Carrol, J. B., & Gmelch, W. H. (1994). Department chair's perceptions of the importance of their duties. *Journal of Higher Education Management*, 10(1), 49-63.
- Chatzkel, J. L. (2003). *Knowledge capital: How knowledge-based enterprises really get built*. New York: Oxford University Press.
- Chaudhry, A. S., & Higgins, S. E. (2001). Perspectives on education for knowledge management. Retrieved July 29, 2006, from <http://www.ifla.org/IV/ifla67/papers/036-115ae.pdf>
- Coakes, E, Willis, D., & Clarke, S. (Eds.), (2002). *Knowledge management in the sociotechnical world: The graffiti continues*. New York: Springer.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Comeau-Kirschner, C. (2000). The sharing culture. *Management Review*, 89(1), 8.
- Coulson-Thomas, C. (2003). *The knowledge entrepreneur: How your business can create, manage, and profit from intellectual capital*. Sterling, VA: Kogan Page.
- Creswell, J. W., Wheeler, D. W., Seagren, A. T., Egly, N. J., & Beyer, K. D. (1990). *The academic chairperson's handbook*. Lincoln, NE: University of Nebraska Press.
- Dakhli, D., & De Clercq, D. (2004). Human capital, social capital, and innovation: A multi-country study. *Entrepreneurship & Regional Development*, 16(2), 107-128.
- Davenport, H. T., DeLong, D. W., & Beers, M. (1998). Successful knowledge management projects. *Sloan Management Review*, 39(2), 43-57.
- Davenport, H. T., Harris, J. G., De Long, D. W., & Jacobson, A. L. (2001). Data to knowledge to results: Building an analytic capability. *California Management Review*, 43(2), 117-138.
- Davenport, H. T., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Boston: Harvard Business School Press.

- Davis, J. H., Schoorman, F. D., Mayer, R. C., & Tan, H. H. (2000). The trusted general manager and business unit outcomes: Empirical evidence of a competitive advantage. *Strategic Management Journal*, 21(5), 563-376.
- De Long D. W., & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management. *Academy of Management Executive*, 14(4), 113-127.
- Desouza, K. C., & Vanapalli, G. K. (2005). Securing knowledge in organizations. In K. C. Desouza (Eds.), *New frontiers of knowledge management* (pp. 76-98). New York: Palgrave/Macmillan.
- Despres, C., & Chauvel, D. (2000). How to map knowledge management. In D. A. Marchand, T. H. Davenport, and T. Dickson (Eds.), *Mastering information management* (pp. 170-176). New York: Financial Times Management.
- Dierkes, M. (2001). Visions, technology, and organizational knowledge: An analysis of the interplay between enabling factors and triggers of knowledge generation. In J. de la Mothe & D. Foray (Eds.), *Knowledge management in the innovation process* (pp. 9-42). Boston: Kluwer Academic Publishers.
- Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method* (2nd ed.). New York: John Wiley & Sons.
- Drucker, P. F. (1999). Knowledge-worker productivity: The biggest challenge. *California Management Review*, 41(2), 79-94.
- Drucker, P. F. (2002). *Managing in the next society*. New York: St. Martin's Press.
- Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital: Realizing your company's true value by finding its hidden roots*. New York: HarperBusiness.
- Fecher, R. J. (Ed.) (1985). *Applying corporate management strategies*. San Francisco: Jossey-Bass.
- Field, A. (2005). *Discovering statistics using SPSS* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Fiol, C. M. (2003). Organizing for knowledge-based competitiveness: About pipelines and rivers. In S. E. Jackson, M. A. Hitt, & A. S. DeNisi (Eds.), *Managing knowledge for sustained competitive advantage: Designing strategies for effective human resource management* (pp. 64-94). San Francisco: Jossey-Bass.

- Fowler, F. J. (2002). *Survey research method* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Freeze, R., & Kulkarni, U. (2005). *Knowledge management capability assessment: Validating a knowledge assets measurement instrument*. Proceedings of the 38th Hawaii International Conference on System Sciences. Retrieved August 27, 2006, from <http://csdl2.computer.org/comp/proceedings/hicss/2005/2268/08/22680251a.pdf>
- Gmelch, W. H., & Miskin, V. D. (1995). *Chairing an academic department*. Thousand Oaks, CA: Sage Publications.
- Gmelch, W. H., & Parkay, F. W. (1999). *Becoming a department chair: Negotiating the transition from scholar to administrator*. Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Ontario, April 19-23). Retrieved August 14, 2006, from http://www.eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/11/7e/62.pdf
- Goddard, A. (1998, November 13). Facing up to market forces. *Times Higher Education Supplement*, 13, 6-7.
- Gold, A. H., Malhotra, A., & Sedars, A. H. (2001). Knowledge management: an organizational capabilities perspective. *Journal of Management Information Systems*, 18(1), 185-214.
- Grant, R. M. (1996) Toward a knowledge-based theory of firm. *Strategic Management Journal*, 17, 109-122.
- Grover, V., & Davenport, T. H. (2001). General perspectives on knowledge management: Fostering a research agenda. *Journal of Management Information systems*, 18(1), 5-21.
- Gumport, P. J., & Pusser, B. (1995). A case of bureaucratic accretion: Context and consequences. *The Journal of Higher Education*, 66(5), 493-520.
- Gupta, A. K., & Gavndarajan, V. (2000). Knowledge management's social dimension: Lessons from Nucor Steel. *Sloan Management Review*, 42(1), 71-81.
- Gupta, S., & Bostrom, R. (2006). Using peer-to-peer technology for collaborative knowledge management: concepts, frameworks, and research issues. *Knowledge Management Research and Practice*, 4, 187-196.

- Hamel, G. (1991). Competition for competence and inter-partner learning within international strategic alliances. *Strategic Management Journal*, 12(4), 83-103.
- Hawkins, B. (2000). Libraries, knowledge management, and higher education in an electronic environment. Australian Library Information Association (ALIA) Conference on Capitalising on knowledge: The information profession in the 21st century (Canberra, Australia, October 23-26, 2000). Retrieved August 15, 2006, from <http://conferences.alia.org.au/alia2000/proceedings/brian.hawkins.html>
- Hope, J., & Hope, T. (1997). *Competing in the third wave: The ten key management issues of the information age*. Boston: Harvard Business School Press.
- Hurley, R. F., & Hult, G. T. M. (1998). Innovation, market orientation, and organizational learning: Integration and empirical examination. *Journal of Marketing*, 62(3), 42-54.
- Immerwahr, J. (1999). *Taking responsibility: Leaders' expectations of higher education*. The National Center for Public Policy and Higher Education and Public Agenda.
- James, R. (2000). Quality assurance and the growing puzzle of managing organizational knowledge in universities. *Higher Education Management*, 12(3), 41-59.
- Jennex, M. E., & Olfman, L. (2004). Assessing knowledge management success/effectiveness models. Proceedings of the 37th Hawaii International Conference on System Science. Retrieved December 1, 2006, from <http://csdl2.computer.org/comp/proceedings/hicss/2004/2056/08/205680236c.pdf>
- Jeris, L. S. (1998). Intervening for transformation: An organizational learning perspective. Retrieved January 16, 2007, from http://www.eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/25/c5/5d.pdf
- Kaplan, R. S., & Norton, D. P. (1996). *The balanced score: Translating strategy into action*. Boston: Harvard Business School Press.

- Kelly, S., & Murnane, S. (2005). Academic performance evaluation and the organization of knowledge in the research-intensive university. *The Irish Journal of Management*. Special Issue, 95-109. Retrieved April 11, 2006, from <http://web.ebscohost.com/ehost/pdf?vid=9&hid=16&sid=6db682ca-9e7d-4a6b-8d73-cd1d2ea75306%40SRCSM1>
- Kendrick, J. W. (1976). *The formation and stock of total capital*. New York: Columbia University Press.
- Kermally, S. (2002). *Effective knowledge management: A best practice blueprint*. New York: Jon Wiley & Sons.
- Kidwell, J. J., Vander Linde, K. M., & Johnson, S. L. (2000). Applying corporate knowledge management practices in higher education. *Educause Quarterly*, 23(4), 28-33
- Koenig, M. E. D. (1999). Education for knowledge management. *Information Services & Use*, 19(1), 17-31
- Lam, W. (2005). Successful knowledge management requires a knowledge culture: A case study. *Knowledge Management Research and Practice*, 3(4), 206-217.
- Leslie, L. L., & Rhoades, G. (1995). Rising administrative costs: Seeking explanations. *The Journal of Higher Education*, 66(2), 187-122.
- Malhotra, Y (2003). The knowledge application gap in information systems research and education and their quest for the dependent variable. *Information Resources Management Journal*, 16(2), 1-7.
- Marsick, V. J., & Watkins, K. E. (2003). Demonstrating the value of an organization's learning culture: The dimensions of the learning organization questionnaire. *Advances in Developing Human Resources*, 5(2), 132-151.
- McElroy, M. W. (2003). *The new knowledge management: Complexity, learning, and sustainable innovation*. Burlington, MA: Butterworth-Heinemann.
- Metcalfe, A. S. (Ed.) (2006). *Knowledge management and higher education: A critical analysis*. Hershey, PA: Idea Group Publishing.
- Mincer, J. (1989). *Human capital responses to technological change in the labour market*. NBER Working Paper No. 3207.
- Nam, C. H. & Tatum, C. B. (1997). Leaders and champions for construction innovation. *Construction Management Economics*, 15(4), 259-270.

- National Council for Accreditation of Teacher Education (n.d.). Retrieved April 13, 2007, from <http://www.ncate.org/public/faqaboutNCATE.asp?ch=1>
- Nelson, R., & Winter, S. (1982). *An evolutionary theory of economic change*. Boston: Harvard University Press.
- Nielsen, B. B. (2005). Strategic knowledge management research: Tracing the co-evolution of strategic management and knowledge management perspectives. *Competitiveness Review*, 15(1), 1-13.
- Nonaka, I. (1991, November-December). The knowledge-creating company. *Harvard Business Review*, 69, 96-104.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14-37.
- Nonaka, I. & Takeuchi, H. (1995). *The knowledge-creating company*. New York: Oxford University Press.
- Nunnally, J. C. (1994). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Organization for Economic Co-operation and Development (2003). *Knowledge management: New challenges for educational research*. Paris: Author.
- Organization for Economic Co-operation and Development (2004). *Innovation in the knowledge economy: Implications for education and learning*. Paris: Author.
- Palomba, C. A., & Banta, T. W. (Eds.) (1999). *Assessment Essentials: Planning, implementing, and improving assessment in higher education*. San Francisco: Jossey-Bass.
- Pavitt, K. (1992) Some foundations for a theory of the large innovating firm. In G. Dosi, R. Ginnetti, and P. A. Toninelli (Eds.), *Technology and enterprise in a historical perspective* (pp. 212-228). New York: Oxford University Press.
- Petrides, L. A. (2002). Organizational learning and the case for knowledge-based systems. In A. M. Serban & J. Luan (Eds.), *Knowledge management: Building a competitive advantage in higher education* (pp. 69-84). New Directions for Institutional Research, No. 113. San Francisco: Jossey-Bass.
- Pfeffer, J., & Sutton, R. I. (1999). Knowing what to do is not enough: Turning knowledge into action. *California Management Review*, 42(1), 83-91.

- Pickett, R. A., & Hamre, W. B. (2002). Building portals for higher education. In A. M. Serban & J. Luan (Eds.) *Knowledge management: Building a competitive advantage in higher education* (pp. 5-16). New Directions for Institutional Research, No. 113. San Francisco: Jossey-Bass.
- Rea, L. M., & Parker, R. A. (2005) *Designing and conducting survey research: A comprehensive guide*. San Francisco: Jossey-Bass Publishers.
- Reardon, D. F. (1998). Knowledge management: The discipline for information and library science professionals. 64th IFLA General Conference. Retrieved July 29, 2006, from <http://www.ifla.org/IV/ifla64/017-123e.htm>
- Roberts, S. A. (2001). Electronic journals in higher education: Technology, decisionmaking, and economics. *Information Services & Use*, 21(3/4), 223-234.
- Ross, D. (2005). How new technology is opening doors for KM? *Knowledge Management Review*, 8(3), 16-19.
- Roth, G. L. (1995). Information technology and workplace learning. *New Directions for Adult and Continuing Education*, 68, 75-85.
- Roth, G. L. & Gooler, D. D. (1989). Perceptions of occupational education deans regarding the uses of information technologies for instruction. *Journal of Studies in Technical Careers*, 11(3), 203-213.
- Rowley, D. J., Lujan, H. D., & Dolence, M. G. (1997). *Strategic change in colleges and universities*. San Francisco: Jossey-Bass Publishers.
- Rowley, J. (2000). Is higher education ready for knowledge management? *International Journal of Educational Management*, 14(7), 325-332.
- Ruth, S., Theobald, J., & Frizzell, V. (1999). A university-based approach to the diffusion of knowledge management concepts and practices. SIGPR, New Orleans, LA. Retrieved April 29, 2006, from <http://icasit.org/finalkmpaper.htm>
- Sackman, S. A. (1991). *Cultural knowledge in organizations*. Newbury Park, CA: Sage Publications.
- Sackman, S. A. (1997). *Cultural complexity in organizations: Inherent contrasts and contradictions*. Thousand Oaks, CA: Sage Publications.

- Saint-Onge, H. (2003). Creating and implementing a knowledge strategy. In J. L. Chatzkel (Ed.), *Knowledge capital: How knowledge-based enterprises really get built* (pp. 278-296). New York: Oxford University Press.
- Sanchez, R. (2001) Products, process, and knowledge architectures. In R. Sanchez (Ed.), *Knowledge management and organizational competence* (pp. 227-250). New York: Oxford University Press.
- Santo, S. A. (2005). Knowledge management: An imperative for schools of education. *TechTrends: Linking Research & Practice to Improve Learning*, 49(6), 43-49. Retrieved January, 19, 2007, from <http://web.ebscohost.com/ehost/pdf?vid=9&hid=120&sid=a9b9f05b-0257-4a21-8c5f-38f87c2c41e4%40sessionmgr3>
- Sapsed, J., Bessant, J., Partington, D., Tranfield, D., & Young, M. (2002). Teamworking and knowledge management: A review of converging themes. *International Journal of Management Review*, 4(1), 71-85.
- Schultz, T. W. (1971). *Investment in human capital: The role of education and research*. New York: The Free Press.
- Seagren, A. T., Creswell, J. W., & Wheeler, D. W. (1993). *The department chair: New roles, responsibilities, and challenges* (Higher Education Report No. 1). Washington, DC: ASHE-ERIC.
- Serban, A. M., & Luan, J. (2002). Overview of knowledge management. In A. M. Serban & J. Luan (Eds.), *Knowledge management: Building a competitive advantage in higher education* (pp. 5-16). New Directions for Institutional Research, No. 113. San Francisco: Jossey-Bass.
- Skyrme, D. J. (1999). *Knowledge networking: Creating the collaborative enterprise*. Woburn, MA: PlantATree
- Skyrme, D. J. (2000). Developing a knowledge strategy: From management to leadership. In D. Morey, M. Maybury & B. Thuraingham (Eds.), *Knowledge anagement: Classic and contemporary works* (pp. 61-83). Cambridge, MA: The MIT Press.
- Skyrme, D. J., & Amidon, D. M. (1998). New measures of success. *Journal of Business*, 19(1), 20-24.
- Smith, H. A., McKeen, J. D., & Singh, S. (2006). Making knowledge work: Five principles for action-oriented knowledge management. *Knowledge Management Research and Practice*, 4(2), 116-124.

- Spec, R. van der, & Carter, G. (2003). A survey on good practices in knowledge management in European companies. In K. Mertins, P. Heisig, & J. Vorbeck (Eds.), *Knowledge management: Concept and best practices* (2nd ed.; pp. 191-206). New York: Springer.
- Stark, J. S., Briggs, C. L., & Rowland-Poplowski, J. (2000, May). *Curriculum leadership roles of chairs in continuously planning departments*. Paper presented at the 40th Annual Forum of the Association for Institutional Research, (Cincinnati, OH).
- Statistical Package for Social Sciences (n.d.) Graduate version 15.0. Retrieved November 30, 2006, from <http://www.spss.com/PDFs/SDP15SPCHR.pdf>
- Stevenson, J. M. (2001) Modern practice, pragmatism, and philosophy in higher education administration: Knowledge leadership of the chief academic officer. *College Student Journal*, 35(2), 162-168.
- Stewart, T. A. (1997). *Intellectual capital: The wealth of new organizations*. New York: Doubleday.
- Stiglitz, J. E. (2000). The contributions of the economics of information to twentieth century economics. *The Quarterly Journal of Economics*, 115(4), 1441-1478.
- Strassmann, P. A. (1997). *The squandered computer: Evaluating the business alignment of information technologies*. New Canaan, CT: Information Economics Press.
- Teece, D. J. (1998). Capturing value from knowledge assets: The new economy, markets for know-how, and intangible assets. *California Management Review*, 40(3), 55-79.
- Tetrick, L. E., & Da Silva, N. (2003). Assessing the culture and climate for organizational learning. In S. E. Jackson, M. A. Hitt, & A. S. DeNisi (Eds.), *Managing knowledge for sustained competitive advantage: Designing strategies for effective human resource management* (pp. 333-359). San Francisco: Jossey-Bass.
- Thomas, J. C., Kellog, W. A., & Erickson, T. (2001). The knowledge management puzzle: Human and social factors in knowledge management. *IBM Systems Journal*, 40(4), 863-884.

- Thomson, G. (1997). Changing universities: From evolution to revolution. In S. Armstrong, G. Thomson, & S. Brown (Eds.), *Facing up to radical changes in universities and colleges* (pp. 1-8). London, UK: Kogan Page.
- Thorn, C. A. (2001). Knowledge management for educational information systems: What is the state of the field? *Educational Policy Studies Archives*, 9(47). Retrieved August 20, 2005, from <http://epaa.asu.edu/epaa/v9n47>
- Tidd, J., Bessant, J., & Pavitt, K. (2001). *Managing innovation: Integrating technological, market, and organizational change*. Hoboken, NJ: Wiley.
- Trice, H.M., & Beyer, J. M. (1993). *The cultures of work organizations*. Englewood Cliffs, NJ: Prentice Hall.
- Truch, E. (2004). *Knowledge orientation in organizations*. Burlington, VT: Ashgate.
- Turban, E., & Aronson, J. E. (2001). *Decision support systems and intelligent systems*. (6th ed.), Upper Saddle River, NJ: Prentice Hall.
- Van Tiem, D. M., Moseley, J. L., & Dessinger, J. C. (2000). *Fundamentals for performance technology: A guide to improve people, process, and performance*. Washington, DC: International Society for Performance Improvement.
- Wenger, E., McDermott, R., & Snyder, W. M. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston: Harvard Business School Press.
- Wiig, K. M. (1994). *Knowledge management: The central management focus for intelligent-acting organizations*. Arlington, TX: Schema Press.
- Wiig, K. M. (1999). Introducing knowledge management into the enterprise. In J. Liebowitz (Eds.), *Knowledge management handbook* (pp. 1-23). Boca Raton, FL: CRC Press.
- Wiig, K. M. (2000). Knowledge management: An emerging discipline rooted in a long history. In C. Despres & D. Chauvel (Eds.), *Knowledge horizons: The present and the promise of knowledge management* (pp. 3-26). Boston: Butterworth-Heinemann.
- Wolfe, D. A., & Lucas, M. (2001). Investing knowledge in universities: Rethinking the firm's role in knowledge transfer. In J. de la Mothe & D. Foary (Eds.), *Knowledge management in the innovation process* (pp. 173-191). Boston: Kluwer Academic Publisher.

- Wolverton, M., Gmelch, W.H., Montez, J., & Nies, C.T. (2001). *The changing nature of the academic deanship*. ASHE-ERIC Higher Education Report, v. 28, no. 1. San Francisco: Jossey-Bass.
- Wolverton, M., Gmelch, W. H., & Sorenson, D. (1998). The department as double agent: The call for department change and renewal. *Innovative Higher Education*, 22(3), 203-215.
- Zack, M. J. (1998). Developing a knowledge strategy. *California Management Review*, 41(3), 125-145.

APPENDIX A

PERMISSION TO USE KMAT INSTRUMENT FROM THE
AMERICAN PRODUCTIVITY AND QUALITY CENTER

Subject: RE: Message from Hae-Young Lee from Northern Illinois University
(About the KMAT)

Date: Mon, 10 Apr 2006 13:44:28 -0500

From: "Webb, Ron" <rwebb@apqc.org>

To: "lee hae-young" <hrdcorea@yahoo.com>

Dear Hae-Young Lee,

This email can act as permission to use APQC's KMAT document in your dissertation. Please ensure you that you cite the source anytime the document is used, copied, or reproduced in any media.

I'm not clear what you second issue is below. All KMAT information we have is on our Website.

Ron Webb

From: lee hae-young [mailto:hrdcorea@yahoo.com]

Sent: Monday, April 10, 2006 11:49 AM

To: Webb, Ron

Subject: Message from Hae-Young Lee from Northern Illinois University
(About the KMAT)

Dear Ron Webb,

How are you, sir? I am a doctoral candidate at Northern Illinois University working on disseration on knowledge management. I have been advised by Lori Perry to speak to you regarding using the Knowledge Management Assessment Tool (KMAT) developed by your organization and Arthur Anderson Consulting some years ago. I have two things that I would like to consult with you, although I am well aware that you must be very busy.

First, it is my understanding that when I use your KMAT for my dissertation, I am required to present the email communications or any documnet containing the permission use your KMAT for my study. It's important to avert legal issues involving intellectual property. Lori Perri in previous email communications with me told me that since KMAT on the Internet is public information, anyone can use it. Would you let me know your thoughts on that issue?

Second, I am also expected to insert a copy of KMAT package including fax cover sheet, demographic information, introduction, scoring sheets for performance and

importance, descriptions of each questionnaire, and industry classification codes. I only could find a KMAT questionnaire section from website.

Could you help me on these issues, sir?

Thanks and have a good one.

Best wishes,

Note: forwarded message attached.

Hae-Young Lee
Doctoral Candidate at the Northern Illinois University
1400 W. Lincoln Highway, #K-2
DeKalb, IL 60115
Tel: 815-787-0808

APPENDIX B

COPY OF THE WEB-BASED SURVEY INSTRUMENT

A Knowledge Management Survey in College/School of Education

[Exit this survey >>](#)

Consent Statement

*1. I voluntarily agree to participate in the survey of knowledge management strategies in higher education institutions being conducted by Hae-Young Lee, of the Department of Counseling, Adult and Higher Education at Northern Illinois University. I understand that this survey is to investigate the current use of knowledge management strategies and the perception of academic department chairs in higher education institutions and, ultimately, seeks an adequate way to improve the performance of the academic departments.

I understand that this survey may involve me as following:

1. my completion of a web-based questionnaire items and/or
2. my written suggestions for future research.

I understand that any identifiable information in regard to my name and/or department name will remain confidential, that is, this information will not be listed in the dissertation or any future publication(s).

[Next >>](#)

A Knowledge Management Survey in College/School of Education

[Exit this survey >>](#)

Introduction (What is Knowledge Management?)

Knowledge management (KM) is an emerging management approach to acquire, transfer, share and create information, ideas, and experiences that people in the organization may possess. KM is intended to harness an inclusive culture, improve organizational performance, and sustain a competitive edge.

This survey instrument was adapted from the Knowledge Management Assessment Tool (KMAT) originally designed by Arthur Andersen Consulting and the American Productivity and Quality Center. This survey is designed to examine how academic departments at college of education in higher education institutions use knowledge management strategies and how department chairs perceive those strategies.

[<< Prev](#) [Next >>](#)

A Knowledge Management Survey in College/School of Education

[Exit this survey >>](#)

Introduction (Performance and Importance)

This survey defines knowledge as experiences and skills related to teaching, research, and service activities in higher education institutions.

This survey is divided into four domains: leadership, culture, technology, and measurement. Each domain contains practices that may be scored on two dimensions. For example:

- (a) how well your department as a whole uses this practice (Performance), and
- (b) how important you perceive this practice to be to your department (Importance).

Performance assesses the degree to which you think that your department as a collective entity is using each practice.

Importance identifies how you as an individual chair perceive how important each practice is to your department.

After completing the Performance ratings on a practice, please continue to evaluate Importance ratings by clicking your responses on the boxes below.

Please use a full screen for the next pages.

[<< Prev](#) [Next >>](#)

A Knowledge Management Survey in College/School of Education

[Exit this survey >>](#)

Performance and Importance

PERFORMANCE

Please indicate how well your department as a whole is using the following practices. Please read the statements below and provide your judgment, based on your experience and understanding of your department.

Response options are:

Strongly Agree; Agree; Disagree; Strongly Disagree; Don't Know or Not Applicable.

IMPORTANCE

Please indicate how you perceive the level of importance of each of the following statements about your department.

Response options are:

Very Important; Important; Somewhat Important; Not Important; Don't Know or Not Applicable.

After completing the Performance ratings on a practice, please continue to evaluate Importance ratings by clicking your responses on the boxes below.

1. Leadership (Click the boxes under 'Performance' and 'Importance' for answers that apply)

	Performance	Importance
Your department views sharing knowledge as a strategic asset	<input type="checkbox"/>	<input type="checkbox"/>
Your department considers the effectiveness and efficiency of organizational strategies	<input type="checkbox"/>	<input type="checkbox"/>
Your department creates an environment that facilitates a learning organization	<input type="checkbox"/>	<input type="checkbox"/>
Your department recognizes people for their contributions to sharing and crating new knowledge	<input type="checkbox"/>	<input type="checkbox"/>

2. Culture (Click the boxes under 'Performance' and 'Importance' for answers that apply)

	Performance	Importance
Your department encourages people to work together and to share their experience and knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Problems or errors are openly discussed and solutions are shared in the department	<input type="checkbox"/>	<input type="checkbox"/>
Faculty mentor each other to develop best teaching and research practices and other scholarship	<input type="checkbox"/>	<input type="checkbox"/>
Faculty and staff with an entrepreneurial spirit are recognized in the department	<input type="checkbox"/>	<input type="checkbox"/>

3. Technology (Click the boxes under 'Performance' and 'Importance' for answers that apply)

	Performance	Importance
Faculty and staff in the department are trained to use new technology	<input type="checkbox"/>	<input type="checkbox"/>
Technology is used as a bridge connecting internal and external best teaching and research practices	<input type="checkbox"/>	<input type="checkbox"/>
Technology is used to reduce communication barriers in the department	<input type="checkbox"/>	<input type="checkbox"/>
Your department has adopted technology with a clear vision to solve problems	<input type="checkbox"/>	<input type="checkbox"/>
Your department continually upgrades information technology and hardware	<input type="checkbox"/>	<input type="checkbox"/>
Technology is used to capture and store knowledge within your department	<input type="checkbox"/>	<input type="checkbox"/>

4. Measurement (Click the boxes under 'Performance' and 'Importance' for answers that apply)

	Performance	Importance
Your annual report includes recommendations of cost-effective strategies to achieve department goals	<input type="checkbox"/>	<input type="checkbox"/>
Annual indicators are refined to reflect changes in the (knowledge) management priorities of the department	<input type="checkbox"/>	<input type="checkbox"/>
Your department evaluation report includes financial and non-financial indicators	<input type="checkbox"/>	<input type="checkbox"/>
Your department allocates resources toward efforts that increase its knowledge capability	<input type="checkbox"/>	<input type="checkbox"/>

[<< Prev](#) [Next >>](#)

A Knowledge Management Survey in College/School of Education

[Exit this survey >>](#)

Organizational Information

1. Type of Current Institution (Click the circle for answers that applies)

- Public Private

2. Name of Your Department (Please type the name of your department in the box)

3. Year(s) as Department Chair at Current Institution (Please indicate the number of years in the current position as a chair in the box)

4. Number of Tenured Faculty Members (Please indicate the number of tenured faculty of your department in the box)

5. Number of Non-tenured (Tenure track) Faculty Members (Please indicate the number of non-tenured faculty of your department in the box)

6. Number of Staff Involved in Teaching, Research, and Other Activities. (Please indicate the number o staff of your department in the box)

7. Number of Undergraduate Students Currently Enrolled. (Please indicate the number of undergraduate students of your department this year in the box)

8. Number of Graduate Students Currently Enrolled. (Please indicate the number of graduate students of your department this year in the box)

9. Total Amount of Annual Department Budget (US\$). (Please indicate type the amount of budget of your department in the box)

10. Budget allocation (percentages) (Please indicate the percentage of the budget allocation of your department in the box)

Personnel/Salary	<input type="text"/>
Remainder of dept. budget	<input type="text"/>

11. Does your department's mission include any notion of Knowledge Management (Click the circle for answers that apply)

- Yes
- No
- Department has no mission statement

12. Does your department have an e-magazine or e-newsletter for students, staff, and faculty? (Click the circle for answers that apply)

- Yes
- No

13. Does your department regularly offer e-learning or on-line courses? (Click the circle for answers that apply)

- Yes
- No

14. Does your department regularly offer courses that are co-taught by faculty (Click the circle for answers that apply)

- Yes
- No

15. Would you provide your contact information (i.e. your name, email address, or university/college name) in order to avoid repetitive and unnecessary contact from me?

Again, as stated in the consent form, any identifiable information such as your name and/or department name will remain confidential, that is, this information will not be used in any type of publication(s).

[<< Prev](#) [Next >>](#)

A Knowledge Management Survey in College/School of Education

[Exit this survey >>](#)

Suggestions

1. It would be appreciated if you offer suggestions for the future research.

[<< Prev](#) [Next >>](#)

A Knowledge Management Survey in College/School of Education

[Exit this survey >>](#)

Thank You for Your Participation

You just completed all the survey questionnaires. I would appreciate your time and help. Thank you.

[<< Prev](#) [Done >>](#)

APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL



September 15, 2006

OFFICE OF RESEARCH COMPLIANCE
INSTITUTIONAL REVIEW BOARD
DIVISION OF RESEARCH AND GRADUATE STUDIES
DEKALB, ILLINOIS 60115-2864
(815) 753-8588
FAX (815) 753-1631
E-MAIL researchcompliance@niu.edu
WEB www.grad.niu.edu/orc

MEMORANDUM

TO: Hae-Young Lee
Department of Counseling, Adult, & Higher Education
1400 W. Lincoln Hwy., Apt. K-2
DeKalb, IL 60115

FR: David Henningsen, Chair
Institutional Review Board #1

RE: Graduate student research project involving human subjects titled *Knowledge management strategies and processes in colleges of education*

This is to inform you that your request for approval of modifications to the above-named project has been received by the Office of Research Compliance. Because your research project was originally approved on June 19, 2006 by the Institutional Review Board (IRB) as exempt from the Code of Federal Regulations, (45 CFR 46) for the protection of human subjects, and because the modifications you propose do not change that categorization, no further review of this project is needed.

The IRB has adopted this strategy for exempt projects only. Further review is required only if proposed modifications would necessitate Subcommittee or Full Board Review.

The Board and this office appreciate your attention to the regulations and NIU policy, and the fact that you have submitted the updated materials for our files.

DH/psw

cc: F. Giordano
G. Roth
ORC (#2245)

APPENDIX D

PRE-NOTICE E-MAIL FOR THE SURVEY

Dear Department Chair,

How are you? I am a doctoral candidate at Northern Illinois University.

A few days from now you will receive an email request to complete a questionnaire for my dissertation research.

The survey is about knowledge management strategies used in college/school of education in higher education institutions and the perceptions of department chairs about those strategies.

I am contacting YOU in advance because I have learned that many people would like to know ahead of time that they will be contacted. This survey will not only HELP my dissertation research but IT WILL also INFORM department chairs and people in decision-making positions.

I appreciate your time and consideration. Your generosity and participation will CONTRIBUTE GREATLY TO MY dissertation research.

Best regards,

Hae-Young Lee
Doctoral Candidate
Gable Hall # 200
Adult, Counseling and Higher Education
NORTHERN ILLINOIS UNIVERSITY

815-748-4828

PS: Here is a preview of the survey that you will soon receive. In an email, you will find this:

Here is a link to the survey:

<http://www.surveymonkey.com/s.asp?A=150792501E83218>

When you click on the link, you will be automatically linked to the web-based survey of mine.

Thanks for your participation.

At this time, the survey is empty, since this is a pre-notice letter. However, you will soon receive an email with a link to web-based survey.

APPENDIX E

INVITATION E-MAIL FOR THE SURVEY

Dear Dr. Department Dean, Chair, Director, and Coordinator,

I am contacting to invite your participation in my dissertational study.

This survey is intended to investigate the practices and opinions of department chairs at college/school of education on knowledge management strategies.

This web-based questionnaire contains **33 items**. It should take less than **10 minutes** to complete.

The success of the survey depends greatly on your participation. Your responses will remain completely confidential and will be released only as summaries in which no individual's identification can be revealed.

Here is a link to the survey:

<http://www.surveymonkey.com/s.asp?A=150555601E88829>

If you have any questions or concerns, please feel free to contact me at 815-748-4828 or hrdcorea@yahoo.com.

Thank you very much for your participation in this survey for my dissertational research.

Sincerely,

Hae-Young Lee
Doctoral Candidate
Gable Hall # 200
Department of Counseling, Adult and Higher Education
Northern Illinois University

PS: You should be able to have all the questions and rating scales at the same time on a full screen.

APPENDIX F

FOLLOW-UP E-MAIL FOR THE SURVEY

Reminder of A Survey for Knowledge Management Strategies (Dissertational Study at from Northern Illinois University)

Dear Department Chair:

A couple of weeks ago, you might receive a web-based questionnaire about knowledge management strategies being used by your department and your perceptions about the strategies.

I am contacting you now, since your questionnaire is very important for me to get accurate results. Since this is a regional study in the north-central states of the US, it'd be only by having **almost every chair responded in order to get the results that are truly representative.**

If you have already completed your questionnaire, I really appreciate it. If not, would you **please complete it sometime this week?**

I hope that you will visit and complete the questionnaire soon.

Here is a link to the survey:

<http://www.surveymonkey.com/s.asp?u=884472670765>

Thank you very much for your participation in this survey for my dissertational research.

Sincerely,

Hae-Young Lee
Doctoral Candidate
Gable Hall # 200
Department of Counseling, Adult and Higher Education
Northern Illinois University

PS: You should be able to have all the questions and rating scales at the same time **on a full screen.**

If you have any questions or concerns, please feel free to contact me at 815-748-4828 or hrdcorea@yahoo.com.

APPENDIX G

FINAL AND THANK YOU E-MAIL FOR THE SURVEY

Thank you from Hae-Young Lee (Knowledge management survey)

Dear Sirs/Ma'ams,

How are you?

I am writing this letter to appreciate your time and help to participate in the web-based survey for dissertational research.

On Friday, November 17th, 2006 at midnight, the web-based survey will be closed.

Although you must have been busy, many of you, more than I expected, took invest your valuable time to respond to my survey. I am more than happy to share with you that the data collected are of quality.

Again, I assure you that your responses will remain completely confidential and will be released only as summaries where none of your individual's identification can be revealed. If you are interested in the results of the survey, please do not hesitate to contact me.

Thank you very much and have a great weekend.

Warm regards,

APPENDIX H

SUMMARY OF FREQUENCIES ON ORGANIZATIONAL INFORMATION

Table 74
Summary of Frequencies on Organization Information

	Frequency	Percent	Valid Percent
Type of Institution			
Public	91	57.2	65.5
Private	48	30.2	34.5
Subtotal	139	87.4	100.0
Missing	20	12.6	
Total	159	100.0	
Educational Fields of the Departments			
Education	30	18.9	22.4
Teacher Education	10	6.3	7.5
Educational Leadership, Policy, & Higher Ed-Administration	16	10.1	11.9
Curriculum, Instruction, Teaching & Learning, & Technology	16	10.1	11.9
Special Ed, Disorder & Intervention	13	8.2	9.7
Kinesiology, Physical Ed, Sports, Health, Recreation, & Wellness	13	8.2	9.7
Ed Psychology, Counseling, & Human Services	11	6.9	8.2
Childhood, Elementary, & Human Development	7	4.4	5.2
Language, Literacy, & Reading	2	1.3	1.5
Adult Ed, Work, & Human Resource Development	5	3.1	3.7
Others (Social Work, Family & Consumer, Ed Foundations, Regular Ed, & Human Environmental	11	6.9	8.2
Subtotal	134	84.3	100.0
Missing	25	15.7	
Total	159	100.0	
Years as Department Chair			
.0	1	.6	.9
.2	1	.6	.9
1.0	18	11.3	15.7
1.5	1	.6	.9

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
1.6	1	.6	.9
2.0	14	8.8	12.2
2.5	2	1.3	1.7
3.0	20	12.6	17.4
4.0	13	8.2	11.3
4.5	1	.6	.9
5.0	7	4.4	6.1
6.0	9	5.7	7.8
7.0	6	3.8	5.2
8.0	4	2.5	3.5
9.0	4	2.5	3.5
10.0	2	1.3	1.7
11.0	3	1.9	2.6
12.0	3	1.9	2.6
13.0	1	.6	.9
16.0	2	1.3	1.7
17.0	1	.6	.9
20.0	1	.6	.9
Subtotal	115	72.3	100.0
Missing	44	27.7	
Total	159	100.0	

Number of Tenured Faculty

0	5	3.1	3.7
1	6	3.8	4.5
2	14	8.8	10.4
3	10	6.3	7.5
4	12	7.5	9.0
5	11	6.9	8.2
6	9	5.7	6.7
7	9	5.7	6.7
8	12	7.5	9.0
9	6	3.8	4.5
10	5	3.1	3.7
11	3	1.9	2.2
12	3	1.9	2.2
13	1	.6	.7
14	1	.6	.7
15	3	1.9	2.2

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
16	3	1.9	2.2
17	3	1.9	2.2
18	3	1.9	2.2
19	2	1.3	1.5
20	4	2.5	3.0
21	1	.6	.7
23	1	.6	.7
26	1	.6	.7
31	1	.6	.7
33	1	.6	.7
35	1	.6	.7
36	1	.6	.7
44	1	.6	.7
65	1	.6	.7
Subtotal	134	84.3	100.0
Missing	25	15.7	
Total	159	100.0	

Number of Non-Tenured Faculty

0	3	1.9	2.2
1	16	10.1	11.9
2	14	8.8	10.4
3	17	10.7	12.6
4	1	.6	.7
4	22	13.8	16.3
5	18	11.3	13.3
6	7	4.4	5.2
7	7	4.4	5.2
8	3	1.9	2.2
9	7	4.4	5.2
10	2	1.3	1.5
11	1	.6	.7
12	2	1.3	1.5
13	4	2.5	3.0
14	1	.6	.7
15	1	.6	.7
18	2	1.3	1.5
19	1	.6	.7
20	1	.6	.7

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
21	1	.6	.7
22	1	.6	.7
30	1	.6	.7
35	1	.6	.7
70	1	.6	.7
Subtotal	135	84.9	100.0
Missing	24	15.1	
Total	159	100.0	
Number of Staff including Part-Time Assistants			
0	8	5.0	6.3
1	17	10.7	13.4
2	1	.6	.8
2	19	11.9	15.0
3	15	9.4	11.8
4	8	5.0	6.3
5	6	3.8	4.7
6	2	1.3	1.6
7	4	2.5	3.1
8	4	2.5	3.1
9	6	3.8	4.7
10	2	1.3	1.6
11	4	2.5	3.1
12	2	1.3	1.6
13	1	.6	.8
14	1	.6	.8
16	2	1.3	1.6
17	1	.6	.8
18	1	.6	.8
19	4	2.5	3.1
20	4	2.5	3.1
21	1	.6	.8
22	1	.6	.8
23	4	2.5	3.1
24	1	.6	.8
26	1	.6	.8
34	2	1.3	1.6
35	1	.6	.8
36	1	.6	.8

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
38	1	.6	.8
49	1	.6	.8
55	1	.6	.8
Subtotal	127	79.9	100.0
Missing	32	20.1	
Total	159	100.0	

Number of Enrolled Undergraduates

0	20	12.6	17.9
30	2	1.3	1.8
33	1	.6	.9
60	1	.6	.9
68	1	.6	.9
92	1	.6	.9
100	3	1.9	2.7
110	1	.6	.9
125	1	.6	.9
126	1	.6	.9
135	1	.6	.9
150	6	3.8	5.4
169	1	.6	.9
175	1	.6	.9
180	1	.6	.9
190	1	.6	.9
200	6	3.8	5.4
220	1	.6	.9
222	2	1.3	1.8
230	1	.6	.9
240	1	.6	.9
250	4	2.5	3.6
270	1	.6	.9
288	1	.6	.9
290	1	.6	.9
291	1	.6	.9
300	5	3.1	4.5
340	1	.6	.9
350	4	2.5	3.6
358	1	.6	.9
360	1	.6	.9

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
361	1	.6	.9
371	1	.6	.9
380	1	.6	.9
400	5	3.1	4.5
416	1	.6	.9
425	1	.6	.9
468	1	.6	.9
515	1	.6	.9
532	1	.6	.9
550	1	.6	.9
651	1	.6	.9
680	1	.6	.9
700	2	1.3	1.8
750	3	1.9	2.7
780	1	.6	.9
800	2	1.3	1.8
850	1	.6	.9
1017	1	.6	.9
1100	1	.6	.9
1200	1	.6	.9
1500	1	.6	.9
1585	1	.6	.9
1750	1	.6	.9
1800	3	1.9	2.7
2000	1	.6	.9
2200	2	1.3	1.8
3500	1	.6	.9
Subtotal	112	70.4	100.0
Missing	47	29.6	
Total	159	100.0	
Number of Enrolled Graduate Students			
0	18	11.3	15.3
5	1	.6	.8
10	1	.6	.8
18	1	.6	.8
20	3	1.9	2.5
21	2	1.3	1.7
25	2	1.3	1.7

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
26	1	.6	.8
28	1	.6	.8
30	2	1.3	1.7
35	1	.6	.8
36	1	.6	.8
40	3	1.9	2.5
45	1	.6	.8
47	1	.6	.8
50	2	1.3	1.7
52	1	.6	.8
55	1	.6	.8
62	1	.6	.8
75	2	1.3	1.7
79	2	1.3	1.7
80	1	.6	.8
85	1	.6	.8
93	1	.6	.8
100	3	1.9	2.5
112	1	.6	.8
120	4	2.5	3.4
132	1	.6	.8
140	1	.6	.8
144	1	.6	.8
149	1	.6	.8
150	7	4.4	5.9
162	1	.6	.8
175	3	1.9	2.5
195	1	.6	.8
200	2	1.3	1.7
210	1	.6	.8
212	1	.6	.8
225	1	.6	.8
248	1	.6	.8
249	1	.6	.8
250	3	1.9	2.5
251	1	.6	.8
280	1	.6	.8
285	1	.6	.8
290	1	.6	.8

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
300	5	3.1	4.2
350	2	1.3	1.7
400	4	2.5	3.4
450	2	1.3	1.7
475	2	1.3	1.7
500	4	2.5	3.4
550	1	.6	.8
600	4	2.5	3.4
700	1	.6	.8
738	1	.6	.8
800	1	.6	.8
976	1	.6	.8
1500	1	.6	.8
Subtotal	118	74.2	100.0
Missing	41	25.8	
Total	159	100.0	

Total Number of Faculty

1	1	.6	.7
2	3	1.9	2.2
3	2	1.3	1.5
4	6	3.8	4.5
5	7	4.4	5.2
6	1	.6	.7
6	6	3.8	4.5
7	11	6.9	8.2
8	9	5.7	6.7
9	7	4.4	5.2
10	5	3.1	3.7
11	13	8.2	9.7
12	4	2.5	3.0
13	7	4.4	5.2
14	2	1.3	1.5
15	4	2.5	3.0
16	6	3.8	4.5
18	1	.6	.7
19	4	2.5	3.0
20	2	1.3	1.5
21	5	3.1	3.7

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
22	2	1.3	1.5
23	7	4.4	5.2
24	5	3.1	3.7
26	2	1.3	1.5
27	1	.6	.7
28	2	1.3	1.5
29	1	.6	.7
31	1	.6	.7
35	1	.6	.7
36	1	.6	.7
40	1	.6	.7
44	1	.6	.7
74	1	.6	.7
100	1	.6	.7
106	1	.6	.7
Subtotal	134	84.3	100.0
Missing	25	15.7	
Total	159	100.0	

Total Number of Enrolled Students

33	1	.6	1.0
40	1	.6	1.0
60	1	.6	1.0
68	1	.6	1.0
75	1	.6	1.0
80	1	.6	1.0
110	1	.6	1.0
120	2	1.3	1.9
126	1	.6	1.0
130	1	.6	1.0
150	2	1.3	1.9
154	1	.6	1.0
170	1	.6	1.0
175	3	1.9	2.9
177	1	.6	1.0
180	1	.6	1.0
200	4	2.5	3.8
220	1	.6	1.0
222	1	.6	1.0

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
224	1	.6	1.0
225	1	.6	1.0
243	1	.6	1.0
248	1	.6	1.0
250	3	1.9	2.9
251	1	.6	1.0
255	1	.6	1.0
270	2	1.3	1.9
275	3	1.9	2.9
290	3	1.9	2.9
291	1	.6	1.0
300	2	1.3	1.9
308	1	.6	1.0
371	1	.6	1.0
379	1	.6	1.0
400	3	1.9	2.9
402	1	.6	1.0
405	1	.6	1.0
420	1	.6	1.0
425	1	.6	1.0
429	1	.6	1.0
450	4	2.5	3.8
453	1	.6	1.0
475	1	.6	1.0
495	1	.6	1.0
500	4	2.5	3.8
532	1	.6	1.0
550	1	.6	1.0
556	1	.6	1.0
600	2	1.3	1.9
605	1	.6	1.0
617	1	.6	1.0
650	1	.6	1.0
700	1	.6	1.0
701	1	.6	1.0
710	1	.6	1.0
740	1	.6	1.0
800	2	1.3	1.9
816	1	.6	1.0

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
830	1	.6	1.0
850	1	.6	1.0
875	1	.6	1.0
900	1	.6	1.0
920	1	.6	1.0
950	1	.6	1.0
1000	2	1.3	1.9
1161	1	.6	1.0
1200	1	.6	1.0
1491	1	.6	1.0
1600	1	.6	1.0
1800	2	1.3	1.9
2000	1	.6	1.0
2247	1	.6	1.0
2275	1	.6	1.0
2323	1	.6	1.0
2400	1	.6	1.0
2675	1	.6	1.0
2700	1	.6	1.0
4300	1	.6	1.0
Subtotal	105	66.0	100.0
Missing	54	34.0	
Total	159	100.0	

Total Number of the Faculty and Staff
Combined

2	1	.6	.8
4	1	.6	.8
5	3	1.9	2.4
6	3	1.9	2.4
7	5	3.1	4.0
8	1	.6	.8
8	5	3.1	4.0
9	6	3.8	4.8
10	1	.6	.8
10	7	4.4	5.6
11	4	2.5	3.2
12	4	2.5	3.2
13	9	5.7	7.1
14	7	4.4	5.6

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
15	3	1.9	2.4
16	1	.6	.8
17	5	3.1	4.0
18	5	3.1	4.0
19	1	.6	.8
20	4	2.5	3.2
21	1	.6	.8
22	3	1.9	2.4
24	2	1.3	1.6
25	4	2.5	3.2
26	2	1.3	1.6
27	3	1.9	2.4
28	2	1.3	1.6
29	2	1.3	1.6
30	1	.6	.8
31	1	.6	.8
32	3	1.9	2.4
33	1	.6	.8
35	3	1.9	2.4
36	1	.6	.8
38	2	1.3	1.6
40	1	.6	.8
42	1	.6	.8
43	2	1.3	1.6
44	1	.6	.8
46	3	1.9	2.4
51	1	.6	.8
54	1	.6	.8
55	1	.6	.8
56	1	.6	.8
57	1	.6	.8
58	1	.6	.8
62	1	.6	.8
76	2	1.3	1.6
78	1	.6	.8
114	1	.6	.8
Subtotal	126	79.2	100.0
Missing	33	20.8	
Total	159	100.0	

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
Amount of Annual Department Budget			
\$0.00	3	1.9	3.8
\$1.00	1	.6	1.3
\$65.00	1	.6	1.3
\$8,600.00	1	.6	1.3
\$12,500.00	1	.6	1.3
\$14,000.00	1	.6	1.3
\$15,000.00	1	.6	1.3
\$16,000.00	1	.6	1.3
\$17,000.00	1	.6	1.3
\$19,000.00	1	.6	1.3
\$22,000.00	1	.6	1.3
\$25,000.00	1	.6	1.3
\$27,500.00	1	.6	1.3
\$28,000.00	1	.6	1.3
\$29,000.00	1	.6	1.3
\$30,000.00	1	.6	1.3
\$36,000.00	1	.6	1.3
\$45,000.00	2	1.3	2.6
\$47,000.00	1	.6	1.3
\$48,000.00	1	.6	1.3
\$55,000.00	1	.6	1.3
\$61,000.00	1	.6	1.3
\$64,000.00	1	.6	1.3
\$100,000.00	1	.6	1.3
\$110,000.00	1	.6	1.3
\$125,000.00	2	1.3	2.6
\$200,000.00	1	.6	1.3
\$227,500.00	1	.6	1.3
\$240,000.00	1	.6	1.3
\$260,000.00	1	.6	1.3
\$348,000.00	1	.6	1.3
\$350,000.00	1	.6	1.3
\$375,000.00	1	.6	1.3
\$381,751.00	1	.6	1.3
\$459,509.00	1	.6	1.3
\$500,000.00	1	.6	1.3
\$520,000.00	1	.6	1.3

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
\$688,280.00	1	.6	1.3
\$700,000.00	1	.6	1.3
\$703,021.00	1	.6	1.3
\$750,000.00	1	.6	1.3
\$767,000.00	1	.6	1.3
\$780,000.00	1	.6	1.3
\$873,000.00	1	.6	1.3
\$906,000.00	1	.6	1.3
\$1,078,000.00	1	.6	1.3
\$1,120,813.00	1	.6	1.3
\$1,122,229.00	1	.6	1.3
\$1,186,000.00	1	.6	1.3
\$1,250,000.00	1	.6	1.3
\$1,366,342.00	1	.6	1.3
\$1,400,000.00	1	.6	1.3
\$1,424,732.00	1	.6	1.3
\$1,438,846.00	1	.6	1.3
\$1,750,000.00	2	1.3	2.6
\$1,917,102.00	1	.6	1.3
\$1,940,000.00	1	.6	1.3
\$2,000,000.00	1	.6	1.3
\$2,021,966.00	1	.6	1.3
\$2,100,000.00	1	.6	1.3
\$2,600,000.00	1	.6	1.3
\$2,900,000.00	1	.6	1.3
\$2,929,300.00	1	.6	1.3
\$3,000,000.00	1	.6	1.3
\$3,024,758.10	1	.6	1.3
\$3,168,448.00	1	.6	1.3
\$4,000,000.00	1	.6	1.3
\$4,329,192.00	1	.6	1.3
\$5,000,000.00	1	.6	1.3
\$5,748,849.00	1	.6	1.3
Subtotal	78	49.1	100.0
Missing	81	50.9	
Total	159	100.0	

(Continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
Allocation of Budget on Salary (%)			
.00	14	8.8	15.7
1.00	3	1.9	3.4
10.00	1	.6	1.1
13.60	1	.6	1.1
23.00	1	.6	1.1
24.00	1	.6	1.1
36.00	1	.6	1.1
40.00	1	.6	1.1
45.20	1	.6	1.1
50.00	1	.6	1.1
51.00	1	.6	1.1
56.00	1	.6	1.1
58.00	1	.6	1.1
60.00	6	3.8	6.7
64.00	1	.6	1.1
65.00	1	.6	1.1
66.00	1	.6	1.1
70.00	5	3.1	5.6
75.00	1	.6	1.1
80.00	7	4.4	7.9
81.00	1	.6	1.1
81.90	1	.6	1.1
82.00	1	.6	1.1
84.00	1	.6	1.1
85.00	6	3.8	6.7
87.00	1	.6	1.1
90.00	10	6.3	11.2
93.80	1	.6	1.1
94.00	1	.6	1.1
95.00	8	5.0	9.0
96.00	1	.6	1.1
97.00	2	1.3	2.2
98.00	4	2.5	4.5
100.00	1	.6	1.1
Subtotal	89	56.0	100.0
Missing	70	44.0	
Total	159	100.0	

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
Allocation of Budget on Non-Salary (%)			
.00	5	3.1	5.3
1.00	2	1.3	2.1
2.00	4	2.5	4.2
3.00	2	1.3	2.1
4.00	1	.6	1.1
5.00	8	5.0	8.4
6.00	1	.6	1.1
6.20	1	.6	1.1
10.00	9	5.7	9.5
13.00	1	.6	1.1
15.00	6	3.8	6.3
16.00	1	.6	1.1
18.00	1	.6	1.1
18.10	1	.6	1.1
19.00	1	.6	1.1
20.00	7	4.4	7.4
25.00	1	.6	1.1
30.00	5	3.1	5.3
33.00	1	.6	1.1
35.00	1	.6	1.1
36.00	1	.6	1.1
40.00	6	3.8	6.3
42.00	1	.6	1.1
49.00	1	.6	1.1
50.00	1	.6	1.1
52.00	1	.6	1.1
54.00	1	.6	1.1
54.80	1	.6	1.1
60.00	1	.6	1.1
64.00	1	.6	1.1
76.00	1	.6	1.1
77.00	1	.6	1.1
86.40	1	.6	1.1
90.00	1	.6	1.1
100.00	17	10.7	17.9
Subtotal	95	59.7	100.0
Missing	64	40.3	
Total	159	100.0	

(continued on following page)

Table 74 (continued)

	Frequency	Percent	Valid Percent
KM Statement			
No Mission Statement	4	2.5	3.0
No	95	59.7	70.9
Yes	35	22.0	26.1
Subtotal	134	84.3	100.0
Missing	25	15.7	
Total	159	100.0	
E-Newsletter			
No	101	63.5	74.3
Yes	35	22.0	25.7
Subtotal	136	85.5	100.0
Missing	23	14.5	
Total	159	100.0	
E-Learning			
No	62	39.0	45.6
Yes	74	46.5	54.4
Subtotal	136	85.5	100.0
Missing	23	14.5	
Total	159	100.0	
Co-Teaching			
No	73	45.9	54.5
Yes	61	38.4	45.5
Subtotal	134	84.3	100.0
Missing	25	15.7	
Total	159	100.0	