



Creating The Discipline of Knowledge Management

The Latest in University Research



Edited by Michael Stankosky

TEAM LING

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Editor

Michael Stankosky, D.Sc.



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Preface

“Knowledge assets determine success or failure, but you will search in vain to find them in a company’s books.”

—Thomas A. Stewart

This is a critical juncture in the life of Knowledge Management (KM). KM is over ten years old. Should it continue to grow and age as KM, should it be abandoned, or should it morph into the many paths of management and information technology science? Should anyone really care, except a handful of practitioners and scholars who deal with this on a daily basis? Why would anyone care if we still don’t have a globally accepted definition of KM; let alone universally accepted frameworks, principles, and best practices. Many executives and managers don’t even know that KM exists, or that it is the solution to many issues concerning improving organizational efficiency, effectiveness, and innovation. There are many KM failures to point to; perhaps more failures than successes. Does KM then have, or even need, a future?

My answer is a resounding yes! When this author is asked, why KM? you will hear one answer time and time again: It’s all about KM. It is an answer that bears constant repetition and reaffirmation. Many try to justify a KM initiative by searching for a value proposition, which is a good and necessary thing. The fact of the matter is we exist in a knowledge-based economy, however, where knowledge assets are the principal factors of production; just as physical assets, like coal and steel, dominated the manufacturing/industrial economy. If you have a difficult time grasping this notion, I recommend that you read *Wealth of Knowledge* by Tom Stewart. Tom lays this out in most direct and eloquent terms.

If nations and organizations want to attain a competitive advantage, they have to deal with knowledge assets. They are in the balance sheets of national and organizational wealth and value, although not in the explicit terms and figures that accountants need for calculation.

This book is about trying to establish a solid scientific background for KM, not only as an academic discipline, but also as a recognized essential element in all management research and practices. We often say that practice makes perfect. In fact, theory makes perfect; practice makes permanent. We need a theoretical construct for KM, so that practitioners can practice with confidence.

What makes this book unique is its dedication to using the scientific method, which underlies the basis for doctoral-level research; to obtain a doctorate, a candidate must follow century-tried methods of disciplined research, and subject themselves to the scrutiny and judgments of scholars, peers, and practitioners. This is not to say that there are no other like-KM research activities. What makes this unique is the “brain-trust” of faculty, doctoral candidates, and individuals—over 100 in number—working as a team against a research map, under the auspices of a nationally recognized

university which has established the first master's and doctoral programs in KM. Only a university can ultimately legitimize an academic discipline.

What you will see in this book are the research results of eleven Doctors of Science, who combined the best of research with their own practical experiences in KM. They are remarkable individuals, completing a degree recognized as the ultimate in an educational experience. They represent the less than one percent of the population which has such an accomplishment.

Up front, however, I ask you to be patient with reading their works. This is a book of research, not readings. Look for the golden nuggets which we have highlighted. While they have attempted to modify their research works for general reading, a dissertation is not like the easy flowing prose that one finds in the best mystery novels. However, this collection is important enough to the knowledge economy to find a place in a more accessible publication such as this book. No one finds reading Newton's principles of mathematics and energy easy, yet they have defined and sustained the industrial age as no other written works have. We also see this book as a first installment, for we have 35 more doctoral candidates in some stage of KM research and education. In some ways, the research findings contained in this book are but the springboard for new research. You too can also play a key role by communicating with us; thereby adding your own research and practical insights to the KM body of knowledge.

Finally, if asked again if KM should have a future, I respond: If the current KM language and practices are not working, then we better find a way of making them work, or invent new ones. For the knowledge economy is in motion, and we need to not only stay with it, but also to get ahead of it to remain competitive. It is a fast-moving train, and we need to renew our knowledge assets at the same speed of our businesses and activities. In other words: Knowledge at the speed of business.

*Michael Stankosky, D.Sc.
Washington, D.C.*

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Finally, special thanks to Francesco Calabrese and Joanne Freeman. Frank has kept this program on a “managed” basis, capably picking up my pieces and ensuring we have the right agenda, the meetings scheduled, the right people notified, etc. Clearly

he is the most capable of leaders and administrators and indispensable. He also brings that special wisdom that makes anyone look good. And Joanne has been the heavy duty typist, organizer, do-it-all, etc. She has kept this manuscript and us moving. If you're thinking about it, she's already doing it.

It truly does take a global community of practice!

To my twin grandsons, Michail Anthony and Joseph Archer,
expected to be born in 2005; who will represent a generation
of knowledge workers in the 21st century.

Advances in Knowledge Management: University Research Toward an Academic Discipline



Michael A. Stankosky, D.Sc.

How It Started: Knowledge Management as an Academic Discipline

When I was in business, it bothered me that my company had not taken advantage of what it knew. We had people scattered throughout the United States, and few knew the company's full potential. We chased new business opportunities, not really knowing what we had already developed and sold. We were always proposing new solutions, without taking advantage of those we had developed in the past. Moreover, how could we, when we did not know what they were?

I left industry and joined academia in 1998, having accepted a full-time faculty position at the George Washington University (GW). I was appointed as an associate professor of Systems Engineering in the Department of Engineering Management and Systems Engineering, School of Engineering and Applied Science. I chose to seek a position in this department because it was both multi- and interdisciplinary, reflecting the realities of the complex world one has to work in. One of the largest departments of its kind in any university, it included nine academic concentrations built on the premise that engineers eventually become managers and need the necessary management competencies to function in the modern world. On the other hand, it helped managers understand better the engineers who work in their domains, and thus provided some engineering skills to managers.

In addition to responsibilities for teaching systems engineering, I also inherited the oversight of courses in marketing of technology, technologic forecasting and management, law for engineers, artificial intelligence, and decision-support systems. These two latter courses got me interested in knowledge management (KM). When the chair of the department asked me if I wanted to delete these courses from the catalogue, I asked him to let me evaluate whether there was any interest and determine the state of these fields. As a result of that investigation, I was impressed with the quality and quantity of works in KM. Had I known about these when I was in industry, I could have used them to the profit of the company. I was surprised that KM was not part of a core curriculum in any degree program at GW.

So began my journey on creating an academic discipline for KM. In my new position, I had inherited several graduate and doctoral students and asked them to help me with KM research. This research revealed that many universities had some research

and elective courses on KM, but none at the time had a graduate program, especially at the doctoral level, dedicated to the field. Even at GW, we had several noted writers, but certainly no major thrust at examining all the aspects of KM and subjecting them to the rigors of scientific exploration.

In our early research, two things became clear to me: (a) knowledge was the prime currency in our national and global economy, and (b) knowledge directly provided value to the bottom line. We still lacked a common language to deal with it, and consequently, we borrowed some of the language of the information revolution. While the United States officially reached the information age in 1991, we have always been a knowledge-based economy. What that means is quite simple: Our economic well-being and competitive advantage are dependent on knowledge resources—our knowledge, experiences, education, training, professional networks, collaborative, and innovative skills. Other names and categories for these resources include knowledge assets, intellectual capital, human capital, structural capital, customer capital, and market capital. In sum, these knowledge assets are the prime factors and resources of production in a knowledge-based economy. In the words of Jack Welch, former chief executive officer of General Electric, “Intellectual capital is what it’s all about. Releasing the ideas of your people is what we’re trying to do, what we’ve got to do if we’re going to win.”

The facts described in the preceding paragraphs have spawned a new way of thinking about and managing these assets: KM, which was popularized around 1995 by many authors, practitioners, and advocates of intellectual technology (IT). Since that time, KM has been both a wild success and a wild failure. KM represented an evolution from the data and information eras to that of the knowledge economy, as depicted in Figure 1-1. The same figure shows how each era spawned their corresponding management disciplines and technologic elements.

Figure 1-1

Timelines leading to the knowledge age.

The Past, Present and Future

<i>MANAGEMENT CONCEPTS</i>	SYSTEMS THINKING / APPROACH	SOFTWARE ENGINEERING MANAGEMENT	SYSTEMS ENGINEERING MANAGEMENT	KNOWLEDGE MANAGEMENT ENGINEERING
	Systems / Project Management	CMM	CMM	KMA/EE
<i>SYSTEMS</i>	DATA PROCESSING SYSTEM (DPS)	MANAGEMENT INFORMATION SYSTEM (MIS)	DECISION SUPPORT SYSTEM (DSS)	KNOWLEDGE MANAGEMENT SYSTEM (KMS)
<i>TECHNOLOGY ELEMENTS</i>	DATA	INFORMATION	ARTIFICIAL INTELLIGENCE	KNOWLEDGE
<i>AGE</i>	INDUSTRIAL	TECHNOLOGY	INFORMATION	KNOWLEDGE

Many organizations such as BP/Amoco, Ford, Xerox, Cemex, Siemens, and Cisco have mastered the practices of KM and have shown how they contribute to the bottom line. However, many others have abandoned it, because it did not deliver on the promises, or worse yet, because they see no relevancy for it in their strategies and operations. To many, KM is a fad, not to be bothered with. Many studies have looked at KM and found numerous obstacles to its success, yet none have looked at them in the light of prime resources for the organization.

Why Knowledge Management? It Is All About Knowledge Management!

Which led me to the conclusion that KM has significance and that it must be elevated to its own academic discipline, with the accompanying theoretical constructs, guiding principles, and professional society to serve as an evolutionary thrust. KM certainly is not a fad, because the knowledge-based economy is here to stay. In addition, fads normally hang around for 5 years, and KM has been in existence for at least 10 years. If the current language and practices of KM are not the right ones, then we must find them: Our knowledge-based economy leaves us no choice. Knowledge assets are the tools with which today's industries need to function. Consequently, KM must be given a priority position in our educational and training systems. It must be relegated to its own academic discipline, with guiding principles based on scientific research. We cannot afford the hit and miss of anecdotes and so-called best practices, even so called when they led to failure. Besides, it is not best practices that will give you the competitive advantage; rather, best practices-to-be.

So, what is an academic discipline? Webster defines it as a "field of study." Fields of study are what universities create on the basis of their importance to society. Only a university can legitimize an academic discipline. If KM were to be given such a status, it had to go mainstream, which meant, in university terms, that it had to be a degree-granting program. Without that, no one would be seriously attracted to it. While many individuals come to a university to learn, their principle objective is to get a degree. A degree is the calling card in our world and the first requirement for acceptance and advancement in the workforce. The challenge, however, was on what theoretical construct could I base KM. There were no KM degree—granting programs in America at that time—perhaps none in the world—as determined by our limited research at that time. I had to find some basis to present a proposal to the faculty and university. The sell would have been easier at GW if I could have identified other universities with KM degree—granting programs. Such programs would have also provided some basis for a proposed curriculum.

Theories are developed from top down or bottom up. The latter method was chosen because of the numerous writings and practices already in existence. The bottom-up method was used by Sir Isaac Newton in developing his theories for motion and physics that accelerated the industrial age: collecting falling apples and developing theories (i.e., validating, by scientific method, relationships among them). He often said that he could see further because he stood on the shoulders of giants. KM had such giants in Peter Drucker, Karl Wiig, Ikujiro Nonaka, Larry Prusack, Tom Davenport, Tom Stewart, Hubert St. Onge, and Karl-Eric Sveiby, to name just a few. I asked one of my doctoral students, now Dr. Francesco Calabrese, to help me in looking at not only their works, but also as many works and practices that we could find. We relied heavily on the KM research by Gartner et al. We benefited by the KM summary work of Charles Despres and Daniele Chauvel [1]. What emerged from this research was

Figure 1-2

List of knowledge management study impact areas.

Knowledge Management— Multidiscipline

- | | |
|---|--|
| ❖ Systems Theory | ❖ Communications Theory |
| ❖ Risk Management Assessment | ❖ Organizational Psychology |
| ❖ Intelligent Agents | ❖ Visualization |
| ❖ Management of R&D | ❖ Groupware |
| ❖ Decision Support Systems | ❖ Virtual Networks |
| ❖ Modeling and Simulation | ❖ Strategic Planning |
| ❖ Data Mining / Data Warehousing | ❖ Management-by-Objectives |
| ❖ Enterprise Resource Planning | ❖ Total Quality Management |
| ❖ Business Process Engineering | ❖ Management Theory |
| ❖ Systems Analysis | ❖ Management of Information Systems |
| ❖ Systems Engineering | ❖ Database Design / Database Management Systems |
| ❖ Leadership | ❖ Data Communications and Networks |
| ❖ Ethics | |

an initial collection of the “KM apples” in existence—over 40 at that time, as shown in Figure 1-2. We also examined some of the barriers to KM success (Figure 1-3), and focused in on the research done by KPMG, which seemed to capture and summarize all the other efforts at examining this aspect. Our goals were to identify the key apples or ingredients necessary for a KM system and to ensure we designed into the equation the prescription to overcome the barriers to KM success.

The Four Pillars: The DNA of Knowledge Management

There were many statements gleaned from the KM works and writings, including a proliferation of definitions that sometimes disagreed with each other. Many attempts dealt with the definition of knowledge itself, a kind of epistemologic approach. These latter attempts never addressed the issue of managing these knowledge assets; they merely discussed the question of the definition. Other works dealt with learning and all its facets. Although I had some interest in these aspects, my main issue was to determine the critical elements, a *DNA* if you will, of KM. To me, the operative work in KM was the management of these assets. The company already had these assets; it just did not know how to articulate them and, consequently, had little to no guidance on how to manage them.

There were many formulations also, such as KM is all about people, and not technology. Communities of Practice were the main application for this group. For others, it was all about technology, such as a “portals and yellow pages” of knowledge workers. Some said it was about people, technology, and process. Everyone had his or her favorite silver bullet or saying/taxonomy.

Figure 1-3

Knowledge management barriers to success.

Barriers to Knowledge Management Success

Results From International Survey:

❖ Organizational Culture	80%
❖ Lack of Ownership	64%
❖ Info/Comms Technology	55%
❖ Non-Standardized Processes	53%
❖ Organizational Structure	54%
❖ Top Management Commitment	46%
❖ Rewards / Recognition	46%
❖ Individual vice Team Emphasis	45%
❖ Staff Turnover	30%

Earnst & Young KM International Survey, 1996
(431 senior executive responses)

In laying out all the so-called models, elements, definitions, pronouncements, cautions, and approaches, it became apparent that there were four principle areas or groupings, each containing many elements. The challenge was to find names for these four groupings and to validate them through some scientific approach. The clock was also ticking on my going before the faculty to introduce the proposal for KM as its own concentration in our master's and doctoral programs. I decided to take a stab at it, and the four pillars were born: All the KM elements were grouped under the following: Leadership/Management, Organization, Technology, and Learning (Figure 1-4). Names and groupings could change later on, on the basis of further research. The challenge now was to make deadlines to get a KM program in the academic calendar, if even that was possible given the necessary layers of approval and the many people involved (department, school, and university) to implement a graduate-level course of studies.

The Four Pillars

- Leadership/management: Deals with the environmental, strategic, and enterprise-level decision-making processes involving the values, objectives, knowledge requirements, knowledge sources, prioritization, and resource allocation of the organization's knowledge assets. It stresses the need for integrative management principles and techniques, primarily based on systems thinking and approaches.
- Organization: Deals with the operational aspects of knowledge assets, including functions, processes, formal and informal organizational structures, control