

A CRITICAL REVIEW OF KNOWLEDGE MANAGEMENT MODELS

A thesis submitted to the Graduate School in partial
fulfillment of the requirements for the degree
Master of Science (Information Technology),
Universiti Utara Malaysia

by
Raguraman Raman

© Raguraman Raman, 2001. All rights reserved



Sekolah Siswazah
(Graduate School)
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PROJEK
(*Certification of Project Paper*)

Saya, yang bertandatangan, memperakukan bahawa
(*I, the undersigned, certify that*)

RAGURAMAN A/L RAMAN

calon untuk Ijazah
(*candidate for the degree of*) MSc. (IT)

telah mengemukakan kertas projek yang bertajuk
(*has presented his/her project paper of the following title*)

A CRITICAL REVIEW OF KNOWLEDGE MANAGEMENT MODELS

Seperiti yang tercatat di muka surat tajuk dan kulit kertas projek
(*as it appears on the title page and front cover of project paper*)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan,
dan meliputi bidang ilmu dengan memuaskan.
(*that the project paper acceptable in form and content, and that a satisfactory
knowledge of the field is covered by the project paper*)

Nama Penyelia
(*Name of Supervisor*) : Associate Prof. Shahrum Hashim

Tandatangan
(*Signature*) :

Tarikh
(*Date*) : 06 November 2001

TABLE OF CONTENTS

	Page
PERMISSION TO USE	i
ABSTRACT (BAHASA MALAYSIA)	ii
ABSTRACT (ENGLISH)	iii
ACKNOWLEDGMENTS	iv
DEDICATION	v
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER ONE: INTRODUCTION	
1.1 Background of the Problem	1
1.2 Problem Statement	2
1.3 Objective	5
1.4 Scope of Study	5
1.5 Significance of Study	6
CHAPTER TWO: LITERATURE REVIEW	
2.1 Concept of Knowledge in Organizations	7
2.2 Origins of Knowledge Management	9
2.2.1 Theoretical Origins	9
2.2.2 Empirical Origins	12
2.2.3 Technological Development	13
2.3 Defining Knowledge Management	14
2.4 Knowledge Categorization	18

2.5	Knowledge Management Models	19
2.5.1	Knowledge Category Models	19
2.5.2	Socially Constructed Models	21
2.5.3	Intellectual Category Models	22
2.6	Surveys on Knowledge Management	23
2.7	How Organizations Manage Knowledge	24
2.8	Knowledge Management and Enabling Technologies	25
2.9	Issues in Knowledge Management	26

CHAPTER THREE: METHODOLOGY

3.1	Research Method And Procedures	28
3.2	Research Tasks	29
3.3	Deliverables	31

CHAPTER FOUR: RESEARCH FINDINGS

4.1	Old and New Management Paradigms	32
4.2	Discussions on Knowledge Management Models	34
4.2.1	Knowledge Category Models	34
4.2.2	Socially Constructed Models	40
4.2.3	Intellectual Category Models	41
4.3	Combined Knowledge Management Model	42

CHAPTER FIVE: DISCUSSION

5.1	Summary	46
5.2	Discussion	47
5.3	Limitations	48
5.4	Suggestion for Future Research	51

GRADUATE SCHOOL
UNIVERSITI UTARA MALAYSIA

PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a postgraduate degree from the Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or part; for scholarly purpose may be granted by my supervisor(s) or, in their absence, by the Dean of the Graduate School. It is understood that any copying or publication gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Requests for permission to copy or to make other use of material in this thesis in whole or in part should be addressed to:

Dean of Graduate School
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman

ABSTRAK

Setiap organisasi pada hari ini menyedari hakikat betapa pentingnya memaksimumkan penggunaan pengetahuan “Knowledge”. Pengetahuan ini biasanya wujud atau boleh didapati di pelbagai tempat dalam pelbagai rupa bentuk. Umpamanya dalam pangkalan data “Data Base”, pangkalan pengetahuan “Knowledge Base”, kabinet fail dan minda pekerja dalam organisasi itu, dan banyak tempat lagi. Lazimnya, sesuatu jabatan dalam sebuah organisasi akan mengulangi kerja yang telah dilaksanakan oleh jabatan lain. Setiap organisasi perlu mengenal pasti asset-aset pengetahuan yang dimiliki dan cara-cara mengurus serta menggunakan untuk memperolehi pulangan yang maksimum. Kertas projek ini membincangkan secara menyeluruh tentang definisi, jenis dan komponen beberapa model Pengurusan Pengetahuan atau “Knowledge Management”. Berdasarkan perbincangan kritikal ini, sebuah model yang lengkap dan seluruh, hasil gabungan beberapa model lain dicadangkan. Model ini dapat mempermudahkan rekaan, perkongsian dan penemuan pengetahuan agar dapat memainkan peranan sebagai petunjuk asas yang dapat dilaksanakan oleh organisasi serta sesuai untuk kajian masa hadapan. Model ini direkabentuk selepas mempertimbangkan kekurangan dan kelebihan yang terdapat pada model-model lain. Model yang dicadang juga akan memaparkan jenis-jenis, bentuk-bentuk serta keupayaan memperolehi pengetahuan di dalam sesebuah organisasi. Justeru, ini akan membolehkan suatu organisasi menghasilkan pengetahuan baru serta menjelaki, mengurus dan mengekalkan pengetahuan yang dimilikinya itu di samping mengalakkan penggunaan pengetahuan di kalangan pekerjanya. Apabila dilaksanakan kelak, pengurusan pengetahuan akan membawa kepada pengurusan sumber dan khidmat pelanggan yang lebih efektif dan efisyen serta mengurangkan kerja berulang dan kos di samping memperbaiki pelbagai aspek lain di dalam organisasi.

ABSTRACT

Organizations are realizing how important it is to “know what they know” and be able to make maximum use of the knowledge. This knowledge resides in many different places such as databases, knowledge bases, filing cabinets and peoples’ heads and is distributed right across the enterprise. Most of the time one section of an enterprise repeats work of another section simply because it is impossible to keep track of, and make use of, knowledge in other sections. Organizations need to know what their knowledge assets are and how to manage and make use of these assets to get maximum return. This paper discusses in detail the definition, kinds, and components of a few Knowledge Management models. Based on this critical discussion, an integrated business model to facilitate knowledge creation, sharing, and discovery is tentatively suggested to act as a basic and generic guide for implementation by organizations and for further research. This model is generated after taking into considerations the limitations of all the other models. This model will also give an insight to the types, forms and availability of knowledge within an organization. This in turn will enable organizations to develop new knowledge, track its knowledge, manage and preserve their knowledge while encouraging its staff to use and share their knowledge. When implemented, knowledge management will translate in effective and efficient resource management, customer support and service, redundancy or bottleneck elimination, cost reduction and improving many other aspects of the organizations.

ACKNOWLEDGMENTS

A project like this takes quite a lot of time, resource and effort to complete. Hence, I would like to take this opportunity to acknowledge a number of people for their invaluable help and contribution towards this project, and making it a success. Thanks to A. Prof. Shahrum Hashim, for his guidance and advice, A. Prof. Dr. Wan Rozaini for her advice and knowledge. I would like to also sincerely thank the Thesis Committee members. I sincerely hope this book will be very useful in serving a good purpose and valuable point of reference on this Knowledge Management Field. Special thanks to those who helped me to compile the materials, translate and proofread this book. Thank You.

DEDICATION

This book is dedicated to my beloved parents, wife, family, colleagues and friends.
Thanks for the support, help and motivation.

LIST OF TABLES

	Page
Table 1: Old and New Management Paradigms	32

LIST OF FIGURES

	Page
Figure 1 : Conceptual roots of intellectual capital.	11
Figure 2 : Nonaka's Knowledge Management model.	19
Figure 3 : Boisot's Knowledge Category model.	20
Figure 4 : Demerest's Knowledge Management model.	21
Figure 5 : Intellectual Capital model if Knowledge Management	22
Figure 6 : Modified Knowledge Flow Model	36
Figure 7 : Knowledge Category model	39
Figure 8 : Knowledge Category and Conversion model	43
Figure 9 : Knowledge Categories	49

Chapter 1 INTRODUCTION

1.1 Background of the Problem

In a highly demanding business world today, an organization's competitive potential almost wholly depends on how well it can manage and deploy its corporate assets. These assets can be categorized into financial, tangible and intangible elements. Traditionally, tangible assets like plant, equipment, inventory and financial capital were considered the most fundamental corporate asset. Intangible assets played a very little or vague role in any organization regardless the industry it came from. But generally, many organizations, till today still downplay the importance of their intangible assets.

Despite managing and giving prime focus to all their tangible assets, organizations are still finding it very hard to gain the advantage to beat their competitors.

Eventually, organizations have found out that tangible assets can only help them to a certain extent. It is now becoming clearer that organizations require a much broader range of resources to be able to compete and succeed in any current market. Hence, increasing number of organizations have started to give more emphasis to their intangible assets, which was left idle, unexplored and unmanaged for a long time.

To compete and become successful in their own market, organizations must now learn to manage their ultimate asset, that is 'Knowledge' and this practice is generally known as Knowledge Management or sometimes as business intelligence.

The contents of
the thesis is for
internal user
only

REFERENCES

Argyris, C. and Schon, D.A. (1978), *Organizational Learning: A Theory of Action Perspective*, Addison-Wesley Publishing, Reading, MA.

Audrey S.B. And Robert D.S (2001), "Managing organizational knowledge as a strategic asset", *Journal of Knowledge Management*, Vol, 5 No.1, pp.8-18

Badaracco, J.L. (1991), *The Knowledge Link: How Firms Compete Through Strategic Alliance*, Harvard Business School Press, Boston, MA, p.109.

Blake, P. (1998), "The Knowledge Management expansion", *Information Today*, Vol. 15 No. 1, pp. 12-13.

Boisot, M. (1987), *Information and Organizations: The Manager as Anthropologist*, Fontana/Collins, London.

Brooking, A. (1997), "The management of intellectual capital", *Journal of Long Range Planning*, Vol. 30 No. 3 , pp364-5.

Brown, J. and Duguid, P. (2000), "Balancing act: how to capture knowledge without killing it", *Harvard Business Review*, Vol. 78 No. 3, pp.73-80.

Chase, R. (1997), "The knowledge based organization: an international survey", *Journal of Knowledge Management*, Vol, 1 No.1.

Chin Kwai Fatt (2001), "Knowledge Management in a borderless world", *Malaysian Business*, August 1-15, mb-e, p. 3.

Clegg, S., Barrett, M., Clarke, T., Dwyer, L., Gray, J., Kemp, S. and Marceau, J. (1996), "Management knowledge for the future: innovation, embryos and new paradigms", in Clegg, S. and Palmer, G., *The politics of Management Knowledge*, Sage, London.

Cole-Gomolski, B. (1997), "Users loathe to share their know-how", *Computerworld*, Vol. 31 No. 46, pp. 6.

Cole-Gomolski, B. (1999), "Knowledge 'czars' fall from grace", *Computerworld*, Vol. 33 No. 1, pp. 1, 13.

Davenport, T. and Prusak, L. (1998), *Working Knowledge: How Organizations Manage What They Know*, Harvard University Press, Boston, MA.

Dataware Technologies (1998), "Knowledge management – linking people to knowledge for bottom line result", *Corporate Executive Briefing*, pp.16.

De Jarnett, L. (1996), "Knowledge the latest thing", *Information Strategy, The Executives Journal*, Vol. 12, pt 2, pp. 3-5.

Dervin, B. (1994), "Information, democracy: an examination of underlying assumptions", *Journal of the American society for Information Science*, Vol. 45 No. 6, pp. 365-85

Demerest, M. (1997), "Understanding knowledge management", *Journal of Long Range Planning*, Vol. 30 No. 3, pp. 374-84.

DiMattia, S. and Oder, N. (1997), "Knowledge management :hope, hype, or harbinger?", *Library Journal*, Vol. 122 No. 15, pp. 33-5.

Edvinsson, L (1997), "Developing intellectual capital at Skandia", *Long Range Planning* Vol. 30 No. 3, pp. 366-373.

Emin Civi (2000), "Knowledge Management as a competitive asset: a review", *Marketing Intelligence & Planning*, Vol. 18 No. 4, pp 166-174.

Forbes (1997), "Knowledge management: the era of shared ideas", *Forbes*, Vol. 160 No. 6, p.28.

Grant, R.M. (1991), "The resource-based theory of competitive advantage: implications for strategy formulation", *California Management Review*, Vol. 30 No. 3, pp 114-135.

Grayson, C.J. and O'Dell, C.S. (1998), "Mining your hidden resources", *Across the Board*, April, pp. 23-8.

Gronhaug, K. and Nordhaug, O. (1992), "Strategy and competence in firms", *European Management Journal*, Vol. 10 No 4, pp. 438-44.

Guthrie, J (2000), "Intellectual capital review: measurerement, reporting and management", *Journal of Intellectual Capital*, Vol.1 No.1.

Hayes-Roth, F. and Jacobstein, N. (1994), "The state of knowledge-based systems", *Communications of the ACM*, Vol. 37 No.3, pp. 27-39.

Hedlund, G. (1994), "A model of knowledge management and the N-Form Corporation", *Strategic management Journal*, Vol. 15, pp. 73-90.

Hibbard, J. (1997), "Knowing what we know", *Information Week*, Vol. 653 No. 20, pp. 46-64.

Hibbard, J. and Carrilo, K.M. (1998), "Knowledge revolution – getting employees to share what they know is no longer technology challenge", *Informationweek*, 5 January, No 663.

Hubber, G.P (1991), "Organizational learning: the contributing processes and the literatures", *Organization Science*, Vol. 2 No. 1, pp. 88-115.

Jordan, J. and Jones, P. (1997), "Assessing your company's knowledge management style", *Long Range Planning*, Vol. 30, pp. 392-8.

Koniger, P. and Janowitz, K. (1995), "Drowning in information, but thirst for knowledge", *International Journal of Information Management*, Vol. 15 No 1, pp. 111-25.

Kuhn, T. (1974), "Second thoughts on Paradigms",, in Suppe, F. (Ed.), *The Search for Philosophical Scientific Theories*, University of Illinois, Chicago, IL.

KPMG Management Research Report (1998), KPMG Management Consulting. (Online) <http://kpmg.interact.nl/publication/knowmgmt.pdf>.

Lank, E. (1997), "Leveraging invisible asset: the human factor", *Journal of Long Range Planning*, Vol. 30 No. 3, pp. 406-12.

Lawton, G. (1999), "Building the new knowledge interface", *Knowledge Management*, Vol.2 No.2, pp.45-52.

Mayo, A. (1998), "Memory bankers", *People Management*, Vol. 4 No. 2, pp. 34-8.

McDermott, R. (1999), "Why information technology inspired but cannot deliver knowledge management", *California Management Review*, Vol. 41, pp. 103-17.

McLoughlin, H. and Thorpe, R. (1993), "Action learning – a paradigm in emergence: the problems facing a challenge to traditional management education and development", *British Journal of Management*, Vol. 4, pp. 19-27.

Manville, B. and Foote, N (1996), "Harvest your workers' knowledge", *Datamation*, July.

Marakas, G.M. (1999), *Decision Support Systems in the Twenty-first Century*, Prentice Hall, Engelwood Cliffs, NJ.

Marakas, G.M. and Elam, J.J. (1997), "Creativity enhancement in problem solving: through software or process?", *Management Science*, Vol. 43 No.8, pp.1136-46.

Nonaka, I. (1991), "The knowledge-creating company", *Harvard Business Review*, Vol. 6 No. 8, pp. 96-104.

Nonaka, I. And Takeuchi, K. (1995), *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, Oxford.

Piggott, S.E.A (1997), "Internet commerce and knowledge management – the next megatrends", *Business Information Review*, Vol. 14 No 4, pp.169-72.

Polanyi, M. (1962), *Personal Knowledge: Towards a Post Critical Philosophy*, Harper, Torchbooks, New York, NY.

Poynder, R. (1998), "Getting to the nuts and bolts of knowledge management", *Information World Review*, April, p. 20.

Quinn, J.B., Anderson, P. and Finkelstein, S. (1996), "Managing professional intellect: making the most of the best", *Harvard Business Review*, March-April, pp.71-80.

Quintas, P., Lefree, P. and Jones, G. (1997), " Knowledge management: a strategic agenda", *Journal of Long Range Planning*, Vol. 30 No. 3, pp. 385-91.

Realin, J.A. (1997), "A model of work-based learning", *Organization Science*, Vol. 8 No. 6, pp. 563-78.

Roberts, H. (1998), "The bottom-line of competence-based management: management accounting, control and performance measurement", presented at EAA Conference, Antwerp. In Maria, M. (2000), "A critical review of knowledge management as a management tool", *Journal of Knowledge Management*, Vol 4 No 3, pp.204-216.

Rodney M, and Sandra M. (1999), " A Critical Review of Knowledge Management Methods", *The Learning Organization*, Vol 6 No 3, pp. 91-100.

Roos, J., Roos, G., Edvinsson, L. and Dragonetti, N.C. (1997) *Intellectual Capital – Navigating in the New Business Landscape*.

Rutihinda C. (1996), "Resource-based Internationalization", AB, Stockholm.

Shum, S.B. (1997), "Negotiating the construction and reconstruction of organizational memories", *Journal of Universal Computer Science*, Vol. 3 No. 8, pp 899-928.

Skandia (1995), *Value Creating Process*, Supplement to 1995 Skandia Annual Report. In Maria, M. (2000), "A critical review of knowledge management as a management tool", *Journal of Knowledge Management*, Vol 4 No 3, pp.204-16.

Tapscott D. (1999), "Growing Up Digital", McGraw-Hill, New York.

Taylor et al. (1997), *International Journal of Technology Management*, Vol. 11 No. 3, pp. 385-91.