

## Towards a comprehensive model of Organizational memory (OM) in healthcare enterprise

<sup>1</sup>Zakieh Piri, <sup>2</sup>Saeed Asefzadeh, <sup>3</sup>Farahnaz Sadoughi and <sup>4</sup>Leila Shahmoradi

1. Assistant professor, Ph.D. in Health Information Management, Paramedical Faculty, Tabriz University of Medical Sciences, Tabriz, Iran. Tel: +98411-3347258, Fax: +98411-3361300, [pirez\\_444@yahoo.com](mailto:pirez_444@yahoo.com)

2. Ph.D , Professor, Qazvin University of medical Sciences, [sasefzadeh@yahoo.com](mailto:sasefzadeh@yahoo.com)

3. Ph.D. in Health Information Management, Associate professor, Tehran University of medical sciences

4. Instructor, Ph.D. in Health Information Management Tehran University of Medical Sciences, School of Health Management and Information Sciences Tehran University of Medical Sciences, Tehran, Iran.  
[leilashahmoradi1@gmail.com](mailto:leilashahmoradi1@gmail.com)

**Abstract:** As humans, organizations can be forgetful. The objective of this study was to propose a model by which healthcare organizations can use it for healthcare knowledge management. Through a systematic review all journal articles published in the academic business literature between 1991 and 2009 that used the term “organizational memory” and related terms with the term ”model” were reviewed. The final sample of 19 models were analyzed according to the parameters of the study. The parameters were: Having clear inputs, processes, layers, networking and being process - oriented. The majority of models have focused on components of the OM in terms of inputs (12 models) and OM process or steps for building an OM (14models). Eight models were clearly mentioned to organizational processes and only three of 19 models clearly revealed networking. We provided an organizational memory development Process model (OMDP) which consisted of three main phases: Planning phase, Implementing phase and Evaluation phase. Considering the diversity of healthcare information and knowledge, Selecting a single model would not be enough for all aspects of healthcare. Therefore a memory of memories would be ideal for healthcare enterprise.

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**Key words:** Organizational memory, model, knowledge management, memory of memories concept

### Introduction

A society or community that is to steer itself must continue to receive a full flow of three kinds of information: first information about the world outside; second, information from the past, with a wide range of recall and recombination; and third, information about itself and its own parts(1). Certainly organizations can be said to have some form of memory(2). Indeed, an organization

must retain knowledge of its past efforts and environmental conditions(2). Memory is essential for learning, sense making, and communication(3). As humans, organizations can be forgetful, so Holan refers to four different possible forms of organizational forgetting as: Memory decay, Failure to capture, Unlearning and Avoiding bad habits(4). Simon defined organizational memory(OM) as “a structured set of knowledge related to the firm experience in a given domain”

[5] and Kamila explains OM as “an explicit, disembodied and persistent representation of knowledge and information in an organization, in order to facilitate its access and reuse by adequate members of the organization for their tasks”[6]. The term OM has been noted by several authors as Answer Garden(7), knowledge repository(8), knowledge storage(9), corporate memory(10), team memory(11), common information space(12), organizational knowledge base(13), social memory(14)(15), active documents(16). There are several articles in which OM has been studied from different views. Croasdell and Jennex in a meta-analysis provided us with top five OM citations as Stein & Zwass(17), Walsh & Ungson(18), Ackerman & Mandel (19), Bannon & Kuutti(20), Tuomi(21).

Memory appears to be everywhere in organizations(22) and can be materialized both on non-computerized media (books, papers, documentations, films, organizational culture rules) and computerized, represented by organizational memory information systems, based on Knowledge Management techniques and instruments that may be employed in organizational learning processes(23). Cross and Baird (24) identify the components of OM as individual memory, personal relationships, databases, work processes and support systems, product and services.

In organizations, knowledge often becomes embedded in documents, repositories, and organizational routines, practices, and norms(25). Kaathoven believes: the information contained in an OM comprises enterprise goals, organizational structure, tasks and rules up to resource information (e.g. knowledge maps of employees' skills etc.(26). The information that is stored in the OM system must be easily accessible and readable by the OMS user community(27). A review by Casey and Olivera on organizational memory literature from 1991-2001 reveals extensive interest in the construct reflected in the more than 300 articles across disciplines that to a greater or lesser degree make reference to it. Their study also reveals, however, limited integrated conceptual and empirical development of organizational memory(28).

Healthcare organizations have become knowledge-intensive communities which generate massive amounts of ‘knowledge-rich’ healthcare

data(29) Information comes in many forms, ranging from raw data to summaries of results, from narrative documents such as textbooks and journal article, to formal representations of knowledge, rules and guidelines encapsulating best practices, or automated decision support tools. The information focus may pertain to the domains of basic science, clinical practice, preventive medicine, public health, health services research, or a variety of specialized arenas(30). On the other hand healthcare information sources are widely distributed, ranging from local repositories and programs on one's own desktop, to those within the local enterprise (hospital, university, practice networks), to national or international sites accessible via the Internet(30). As vital decisions are made in daily activities and recalling and remembering some kinds of information and knowledge is essential, so knowledge plays an important role in healthcare organizations.

Our objective in this paper is to present the findings of our analysis of the literature on organizational memory models for developing a comprehensive model by which healthcare organizations can use it for healthcare knowledge management. Finally, we will discuss our findings and provide suggestions about future research directions.

### **Methodology:**

We analyzed all journal articles published in the academic business literature between 1991 and 2009 that used the term “organizational memory model”, “Corporate memory model”, The parameters of the search were set to identify publications that used the term anywhere in the text, title, abstract or references. We included references to obtain as much articles as we can. Using ProQuest, Emerald, LISA, PubMed, Scopus, Science Direct, and Wiley, articles and theses have been obtained. We did also hand searching of printed journals, books, dissertations and theses in the central libraries of Tabriz University of Medical Sciences and Tehran University of Medical Sciences (TUMS). We also googled gray literature in this field for every empirical studies, lesson learnt, ... to fill information gap which might be in journals and databases. An update

search was also performed in summer 2013. The search resulted in 30 models. Of those, 11 were discarded from the analysis because they did not match to the criteria of search, clear mention to OM components, performance layers, OM process and being process-oriented and networking. In healthcare, we found only one but valuable model (HEM) developed by Abidi and colleagues(29). We have just focused on modes figures, so there might be some explanations in the text which we ignored. In addition we excluded the articles in which the phrase “organizational memory model” were used without any illustration or figure. We included only those in which the words “organizational memory” were used in relation to knowledge management and a conceptual center where several types of knowledge and information can be stored for future using. We also included in our search all management disciplines, including information systems, marketing, operations research ,accounting, etc. which have been considered in many fields including healthcare area. The final sample of 19 models were analyzed. As the OM constructing model depends on the context, there was also a need for a taxonomy of health information. Because of diversity in healthcare services and wide heterogeneity in health information and knowledge, we have considered Wager et al’s model (31) For componants (knowledge items) in our OM model in healthcare area.

## Results

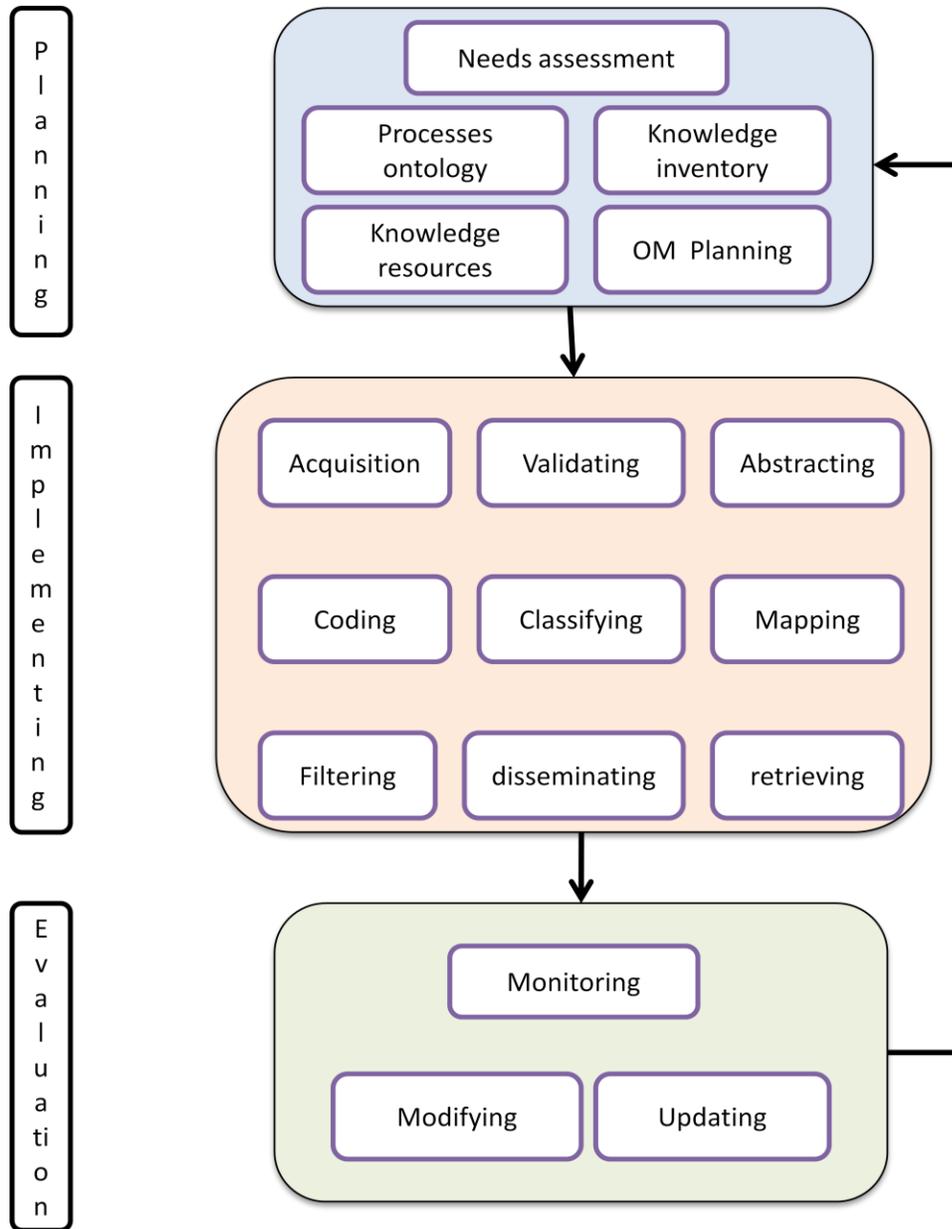
Table 1 shows OM models we considered as a base for our model. The majority of models have focused on components of the OM in terms of inputs (12 models) and OM process or steps for building an OM (14 models). Seven models were clearly mentioned to organizational processes and only three of 19 models clearly revealed networking. In healthcare, we found only one model developed by Abidi and colleagues(29).

According to the above results, we have provided our model based on two specifications: OM process steps and its components as a system. The model consisted of three main phases: Planning phase, Implementing phase and Evaluation phase as illustrated in fig. 1. Details for each phase are as following:

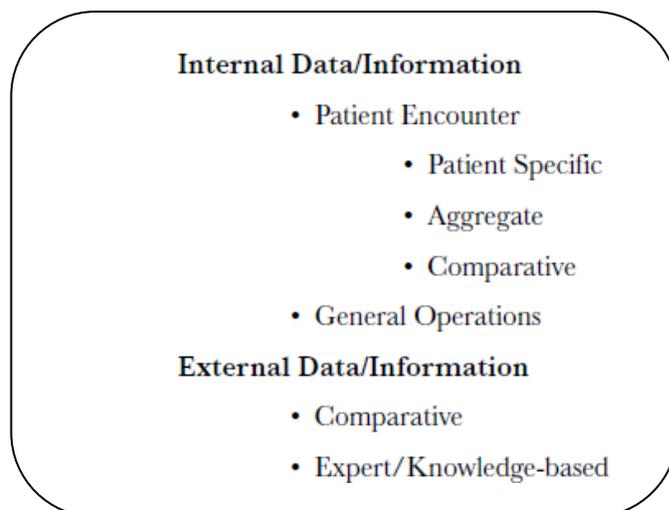
- Planning phase that includes: needs assessment, organizational processes ontology, creation of knowledge inventory, identifying knowledge resources in the organization
- Implementation phase that includes: knowledge acquisition, validation, abstracting, coding, classifying, mapping, filtering, disseminating and application
- Evaluation phase that includes: monitoring, modifying, updating

**Table1-** Comparison of OM models according to some parameters

Model No	Author(s)	Clear OM process	Process-oriented	Clear inputs	Clear layers	Networking
1	Walsh & Ungson (1991)(18 )	*		*		
2	Stein (1995)(1 )	*				
3	Stein & Zwass, V.(1995)(17 )	*		*		
4	Heijst et al (1996)(32 )	*				
5	Sowunmi, et al.(1996)(33)	*	*			
6	Morrison (1997)( 11)	*	*	*		
7	Wargitsch et al. (1997)(34 )	*				
8	Burstein et al.(1997)(35 )		*		*	
9	Anand et al. (1998) (36 )				*	*
10	Abecker, A. et al. (1998)(37 )	*	*	*	*	
11	Klamma & Jarke (1999)(38 )	*	*	*		
12	Teeni& Weinberger (2000)(39 )	*				
13	Van Elst , L. et al. (2001)(40 )	*	*	*		
14	Abidi (2001)( 29)	*	*	*	*	
15	Vasconcelos et al. ( 2001)( 41)			*	*	*
16	Watson (2004)(42 )			*		
17	Admane (2005)( 43)			*		
18	Nilakanta et al. (2006)(44 )	*		*		
19	Ochoa et al. (2009)(45 )	*		*		*
	Total	14	7	12	5	3



**Figure 1.** The model of Organizational Memory Developing Process (OMDP)



**Figure 2.** Types of health care information framework (31)

### Discussion:

If organizational knowledge is now, organizational memory is just before now(2). After nearly two decades, organizational memory has been attracted many authors. Although the memory is not new words, Walsh and Ungson (18) were pioneers for defining and applying it in organizations. So far several models and applications have been provided for OM in many fields. The importance of OM has been emphasized by many authors. Some authors have practically studied its effectiveness and successfulness (46, 47,48,49). Except for teeni's study(38), there was not a comprehensive model for constructing OM step by step. As we mentioned previously in table 1, there are some studies in which OM process stages had been identified, but the steps were not clearly identified on the model. Our study can contribute to any research by which systematic steps for building an OM is necessary. Since every organization produces, maintains and consumes various kinds of knowledge and information, in essence OM is a general term and is not devoted to a specific field. Although there is a need for several activities in every step of the process, we did not aim to show all details. We aimed to provide a holistic view of OM. Moreover all studies on information management and knowledge management can be

useful for appropriate activities in each step, for example acquisition, coding, storing, dissemination etc. For all practical purposes, modern healthcare systems generate massive amounts of 'knowledge-rich' healthcare data, but unfortunately this asset is not yet fully 'cashed' for improving the management and delivery of healthcare services(29). If a healthcare organization well defines its processes and knowledge items, our modFel can contribute to them in constructing an OM.

But using Wager's taxonomy for health information (31), we could just manage explicit knowledge in healthcare. The other aspect of knowledge items, tacit knowledge requires its challenges and considerations as like the other fields and organizations. With characteristics of healthcare organizations, all provided models including our OMDP model can be useful in constructing an OM in healthcare organizations, but there was a sort of historical lessons learnt in all efforts for integrating explicit health information. The same challenges would be important in constructing an OM which intend to include tacit knowledge for recalling, remembering and decision making in specific situations. It seems a single model could not be adequate for all aspects

of healthcare. Therefore a memory of memories would be ideal for healthcare enterprise.

### References:

1. Stein, E.W.(1995). Organizational memory: Review of concepts and recommendations for management. *International Journal of Information management*. Vol. 15. No. 2.pp. 17-32.
2. Mark S. Ackerman, Definitional and Contextual Issues in Organizational and Group Memories. To be presented at the Twenty-seventh Hawaii International Conference of System Sciences (HICSS), Organizational Memory minitrack, January, 1994. Also UC Irvine ICS Technical Report 93-42, September, 1993.
3. Tuomi, Ilkka, The Communicative View on Organizational Memory: Power and Ambiguity in Knowledge Creation Systems, *Proceedings of the 29th Annual Hawaii International Conference on System Sciences - 1996*
4. Holan, P. de, Phillips, N., and Lawrence, T. (2004). *Managing Organizational Forgetting*", MIT Sloan Management Review, Winter 2004, pp. 45-51.
- [5] Simon, G. Knowledge Acquisition and modeling for corporate memory: lessons learnt from experience. URL: <http://ksi.cpsc.ucalgary.ca/KAW/KAW96/simon/KAW96US.htm>
- [6] Olsevicova, Kamila. (2003). Organizational Memory for Improving Learning Management Systems. 3rd European Knowledge Management Summer School 7-12 Sept, 2003 San Sebastian, Spain.
7. Ackerman, M.S.(1994). Augmenting the Organizational Memory: A Field Study of Answer Garden. Published in the *Proceedings of the ACM Conference on Computer- Supported Cooperative Work (CSCW94)*, Nov. 1994, pp. 243-252.
8. Kogut, B., Zander, U. (1992). Knowledge of the firm, combinative replication of technology. *Organization Science*, 3:3, 383-397.
9. Hedlund, G. (1994). "A model of knowledge management and the N-form corporation," *Strategic Management Journal*, 15, pp.73-90
10. Beckett, RC (2000). A characterization of corporate memory as a knowledge system, *Journal of Knowledge Management*, Vol. 4, No. 4, 2000, p311-319
11. Morrison, J. (1997). Organizational memory information systems: Characteristics and development strategies. *Proceedings of The Thirtieth Annual Hawaii International Conference on System Sciences*.
12. Schmidt, K., Bannon, L. (1992). Taking CSCW seriously. Supporting articulation work. *Computer Supported Cooperative Work(CSCW)*. 1(1-2), pp 7-40.
13. Lehner, F., Maier, R.K. (2000). How can organizational memory theories contribute to organizational memory systems? *Information systems Frontiers*. 2:3/4. pp.277-298.
14. Fentress, J., Wickman, C. (1994), *Social memory*, Blackwell, Oxford.
15. Valinierser, J. and Veer, R. (2000). *The social mind: construction of an Idea*, Cambridge university press, Cambridge.
16. Guy A. Boy, ORGANIZATIONAL MEMORY SYSTEMS, Plenary Paper, IFAC 2001, Kassel, Germany.
17. Stein, E.W. and V. Zwass, "Actualizing Organizational Memory with Information Systems", *Information Systems Research*, 6, 1995, pp. 85- 117.
18. Walsh, J.P. and G. R. Ungson, "Organizational Memory", *Academy of Management Journal*, 16, 1991, pp. 57-91
19. Ackerman, M.S., and E. Mandel, "Memory in the Small: An Application to Provide Task-Based Organizational Memory for a Scientific Community", *Proceedings of the 28th Annual Hawaii International Conference on System Sciences*, Vol. 4, IEEE Computer Society Press, 1995, pp. 323-332.
20. Bannon L. and K. Kuutti, "Shifting Perspectives on Organizational Memory: From

Storage to Active Remembering", Proceedings of the 29th Hawaii International Conference on System Sciences, Vol. 3, IEEE Computer Society Press, 1996, pp. 156-167.

21. Tuomi, I., "The communicative view on organizational memory: Power and ambiguity in knowledge creation systems," Proceedings of the twenty-ninth annual Hawaii international conference on system sciences, Vol.3, IEEE Computer Society Press, 1996, pp. 147-155.

22. Mark S. Ackerman, Christine Halverson : Organizational Memory as Objects, Processes, and Trajectories: An Examination of Organizational Memory in Use. Computer Supported Cooperative Work (CSCW) 13(2):155-189 (2004)

23. Vrncianu1, M, et al. Organizational memory:An approach from knowledge management and quality management of organizational learning perspectives, Quality Management in Services, Vol XI • Nr. 26 • June 2009

24. Cross, R. and Baird, L., 2000. "Technology is not enough: improving performance by building organizational memory", Sloan Management Review, Spring, 69-78.

25. Lau Franci, Toward a Conceptual Knowledge Management Framework in Health , Perspectives in Health Information Management 1;8, Fall 2004

[26] R. v. Kaathoven, M. A. Jausfeld, M. Staudt, and U. Reimer, "Organizational memory supported workflow management," in "Electronic Business Engineering", Proceedings 4. Internationale Tagung Wirtschaftsinformatik 1999 (A.-W. Scheer and M. Nuttgens, eds.), (Heidelberg), pp. 543 – 563, Physica-Verlag, 1999.

27. A transformational model for Organizational Memory Systems management with privacy concerns Sergio F. Ochoa, Valeria Herskovic, Edgard Pineda, José A. Pino Information Sciences 179 (2009) 2643–2655

28. Casey, Olivera, Learning from the past: a review of the organizational memory literature, 5th

International Conference on Organizational Learning and Knowledge 30 May –2 June, 2003.

29. Syed Sibte Raza Abidi, Knowledge management in healthcare: towards, 'knowledge-driven' decision-support services International Journal of Medical Informatics 63 (2001) 5–18

30. Bushko, Renata G. Future of Health Technology, IOS press, 2002.

31. Wager, Karen A et al. Managing health care information systems: A Practical Approach for Health Care Executives, Jossey-Bass, USA, 2005, p 5.

32. Heijst , G.V. , Spek , R.V. and Kruizinga. E. (1996). Organizing Corporate Memories. Computer Based Learning Unit, University of Leeds. URL: <http://ksi.cpsc.ucalgary.ca/KAW/KAW96/vanheijst/HTMLDOC.html>, Accessed June 2007.

33. Sowunmi, A. et al. Knowledge Acquisition for an Organisational Memory System, Proceedings of the 29th Annual Hawaii International Conference on System Sciences - 1996

34. Wargitsch, C. et al. (1997). WorkBrain: Merging Organizational MEMORY and Workflow management of system, in: Workshop "Knowledge Based of system for Knowledge management in Enterprises", 21. AI annual convention '97, 9. - 12 September, Freiburg, Baden-Wuerttemberg, Deutschland.

[35] Burstein, F., H. Linger, E. Stein, and M.E. Jennex, "Researching Organisational Memory Systems," Unpublished Working Paper for the Task Force on Organizational Memory, F. Burstein, G. Huber, M. Mandviwalla, J. Morrison, and L. Olfman, (eds.) Presented at the 31st Annual Hawaii International Conference on System Sciences. Hawaii, HI, January, 1998.

36. Anand, V., et al. (1998). An Organizational Memory Approach to Information Management. Academy of Management Review, 23(4), 796-809.

37. Abecker, A. et al. (1998), 'Toward a Technology for Organizational Memories', IEEE Intelligent Systems, Vol. 13, No. 3. 40-48.

38. Klamma ,R. , Jarke , M. (1999). Knowledge Management Cultures: A Comparison of Engineering and Cultural Science Projects. ECSCW-Workshop XMWS'99, Beyond

Knowledge Management: Managing Expertise, 13.9.99, Copenhagen, Denmark

39 . Teeni, D , Weinberger,H.(2000) ‘Systems development of organizational memory: a literature survey’, Proceedings of the Eighth European Conference on on Information Systems 2000, Vienna, Austria, Hansen, H. R., Bicheler M., and Mahrer H. (eds.), vol. 1, pp. 219-227.

40. Van Elst , L. et al. (2001). Exploiting User and Process Context for Knowledge Management Systems. Workshop on User Modeling for Context-Aware Applications at the 8<sup>th</sup> Int. Conf. on User Modeling, July 13-16, 2001, Sonthofen, Germany.

41. Vasconcelos, J., Kimble, C. F. (October 2001). Gouveia, & D. Kudenko Reasoning in Corporate Memory Systems: A Case Study of Group Competencies Proceedings of the 8<sup>th</sup> International Symposium on the Management of Industrial and Corporate Knowledge Université de Technologie de Compiègne, France.

42. Watson, R, T.( 2004). Data management: Database and Organizations ,third edition, John Wiley and Sons, Inc., p32.

43. Admane, L. (August 2005). A generic model of corporate memory: Application to industrial systems. Journal of knowledge ma nagement practice.

44. Nilakanta , S. et al. (January-March 2006). Organizational Memory Management: Technological and Research Issues Journal of Database Management, 17(1), 85-94.

45. Ochoa, Sergio F. et al. A transformational model for Organizational Memory Systems management with privacy concerns, Information Sciences 179 (2009) 2643–2655

46. Ackerman, M. S., Halverson, C. A. (1998). Considering an organization’s memory. Proceedings of the ACM 1998 conference on Computer supported cooperative work.

[47] Jennex., M. E., Organizational Memory Effects on Productivity. Unpublished doctoral dissertation, Claremont Graduate School, Claremont, CA, 1997.

[48] Karsten, H., “Organizational Memory Profile: Connecting Roles of Organizational Memory to Organizational Form”, in Nunamaker, J. F., Jr., and R. H. Sprague, Jr. (Eds.), Proceedings of the 29th Annual Hawaii International Conference on System Sciences, Vol. III, IEEE Computer Society Press, Los Alamitos, CA, 1996, pp. 188-196.

[49] K., Sandoe, and L. Olfman, “Organizations of Memory: A Simulation”, in Nunamaker, J. F., Jr., and R. H. Sprague, Jr. (Eds.), Proceedings of the

27th Annual Hawaii International Conference on System Sciences, Vol. IV, IEEE Computer Society Press, Los Alamitos, CA, 1994, pp. 161-170.

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