

A Paradigmatic and Methodological Survey of the Knowledge Management Literature: 2000 to 2004

James Sheffield¹ & Zining Guo²

¹ University of Auckland, NZ

² Xelocity Limited, NZ

Knowledge management research lacks a cumulative tradition. This critical review of the literature employs a Habermasian inquiring system and McGrath's classification of research methods to identify gaps and recommend how to fill them. All articles from eleven first-tier journals for the period 200-2004 are classified by research paradigm, research methodology, and research interest (technical, practical, emancipatory). The key finding is that inquiry in KM is starkly unbalanced. Overuse of the positivist paradigm and its dominant research method (sample survey) prevents the exploitation of the highly relevant insights available via the interpretivist and critical pluralist paradigms and the field study method.

1. Introduction

The knowledge management (KM) literature is expanding rapidly. However, surveys of the literature have shown that KM research lacks conceptual integration and cumulateness. Knowledge management research is in an emergent, theory-building stage. (Croasdell et al., 2003) An overarching framework is needed to unify research. (Rubenstein-Montano et al., 2001)

This lack of integration in KM research motivates the need for the practical use of philosophy. An inquiring system - a philosophically grounded, universally pragmatic framework for inquiry - is required to provide a coherent framework. (Courtney, 2001; Courtney, Croasdell, & Paradice, 1998; Richardson & Courtney, 2004; Richardson, Courtney, & Paradice, 2001; Sheffield, 2004, 2005)

This paper reports on a survey of the research methods employed in KM research, and analyzes findings in conjunction with a Habermasian inquiring system previously developed by the authors. (Guo & Sheffield, 2006) All articles relevant to knowledge management published in leading journals in 2000 through 2004 are classified. The results are analyzed for trends and gaps. Recommendations are made.

This paper is organized in the following way. Section 2 reviews the Habermasian inquiring system and provides conceptual necessary definitions of concepts. Section 3 explains the survey methodology. Section 4 presents the findings. Section 5 discusses key findings. Section 6 identifies gaps in the literature and recommends new directions for KM research.

2. Research objectives

2.1 Research interests

Habermasian inquiring systems draw from both the systems thinking and critical thinking traditions. The key architectural element is Habermas’ knowledge interests (viz. technical, practical, and emancipatory). Guo and Sheffield’s (2006) Habermasian Inquiring System consists of describing how four other design elements (Habermas’ three rationalities, Churchman’s roles, knowledge dynamics, and research paradigms) are positioned within this structure (Table 1).

Knowledge Interest	Technical	Practical	Emancipatory
Habermas’ Rationalities	Technical	Organizational	Personal
Churchman’s Roles	Measure of Performance	Decision Maker	Client
Knowledge Dynamics	Knowledge Application	Knowledge Normalization	Knowledge Creation
Research Paradigm	Positivism	Interpretivism	Critical Pluralism

Table 1 Habermasian Inquiring System and research paradigms

The following provides a brief definition of *research interests*. Habermas recognizes three knowledge-constitutive interests, viz. technical, practical, and emancipatory. The *technical* interest is concern for human “work”, which encompasses any interactions with the physical world. The *practical* interest is concerned with interpretation of language and intersubjective communication. The *emancipatory* interest is concern for emancipation from colonization of the life-world. It provides a dialectical synthesis of, and a self-reflection on, both the technical and practical approaches. (Habermas, 1968) Knowledge interests, as instantiated in research activities, constitute research interests.

2.2 Research paradigms

Research paradigm generally refers to “the progress of scientific practice based on people’s philosophies and assumptions about the world and the nature of knowledge”. (Collis & Hussey, 2003) There are various categorizations of research paradigms. (Burrell and Morgan, 1979; Deetz, 1996; Morgan and Smirchich, 1980). Positivism, interpretivism, and critical inquiry are frequently identified as the main paradigms for business research. (Cavana, Delahaye, & Sekaran, 2001; Crotty, 1998; Ulrich, 2001)

Table 2 is adapted from (Cavana et al., 2001; Sheffield, 2004). It provides a detailed conceptual definition of the positivist, interpretivist, and critical pluralist research paradigms.

Research Paradigm	Positivism	Interpretivism	Critical Pluralism
Assumptions	Objective world which science can measure and “mirror” with expert, privileged knowledge	Inter-subjective world which science can represent with concepts and indicators; social construction of reality	Material world of structured contradictions and/or exploitation which can be objectively known only by removing tacit ideological biases
Aim	To discover universal laws that can be used to predict human activity	To uncover socially constructed meaning of reality as understood by an individual or group	To uncover surface illusions so that people will be empowered to change their world
Stance of researcher	Stands aloof and apart from stakeholders and subject matter so that decisions can be made objectively	Becomes fully involved with stakeholders and subject matter to achieve a full understanding of the stakeholders’ world	Involved with stakeholders so that surface illusions can be identified, but urges subjects to change their world
Values	Value free; their influence is denied	Values included and made explicit	Values included and made explicit
Types of reasoning	Deductive	Inductive	Deductive and inductive
Research plan	Rigorous, linear and rigid, based on research hypothesis	Flexible, and follows the information provided by the research stakeholders	The imperative for change guides the actions of the researcher
Typical research methods and type(s) of analysis	Experiments; questionnaires; secondary data analysis; quantitatively coded documents; statistical analysis	Ethnography; participant observation; interviews; focus groups; conversational analysis; case studies	Field research, historical analysis, dialectical analysis, feminist studies, case studies of personal experience and injustice
Goodness or quality criteria	Conventional benchmarks of “rigor”; internal and external validity; reliability and objectivity; technical excellence validated by objective truth	Trustworthiness and authenticity; Fit with social norms; inter-personal consensus validated by rightness of advocacy (speech acts) and actions	Historical situatedness; erosion of ignorance and misapprehensions; sincerity of beliefs; action stimulus; personal commitment validated by truthfulness

Table 2 *Research paradigms and research methods*

2.3 McGrath’s classification of research methods

Research methods are “generic classes of research settings for gaining knowledge about a research problem”. There are various schemes to classify research methods. By comparing different classification schemes, for instance, McGrath (1982), Alavi & Carlson (1992), and Pervan (1998), it is decided that McGrath’s classification scheme would be used, with adaptations if necessary.

McGrath classifies eight research methods in a circumplex. (Figure 1) The eight methods are positioned as pie segments located within a triangle of measures of quality (validity). Three desiderata (viz. generalizability, precision, and realism

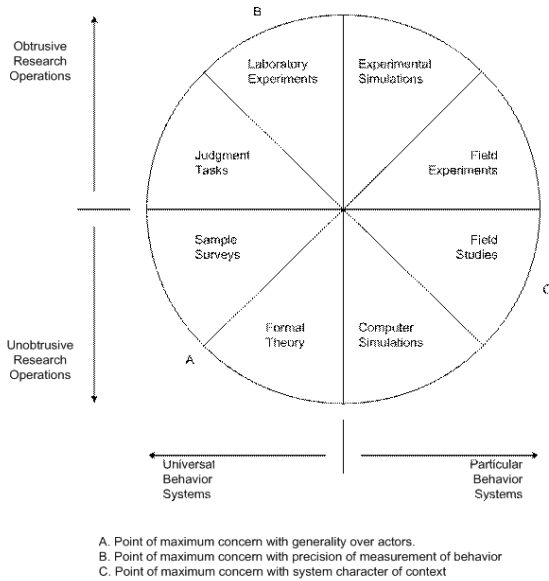


Figure 1 A classification scheme for research methods (McGrath, 1982 :73)

of context) are mapped on the circumplex. McGrath argues that reliance on a single method will inevitably produce research that is “flawed” in that it cannot perform well against all three desiderata. (McGrath, 1982)

The strength of McGrath’s classification is that it links research methods to research paradigms. Positivist methods provide greater internal and external validity in the measure of universal constructs. Interpretive and critical pluralist paradigms are required to appreciate the existential reality that a particular social setting has for those who in-habit (i.e. en-act) it.

3. Survey methodology

3.1 Modified classification scheme

Key aspects of the classification scheme are shown in Figure 2. To better reflect KM research activities, “system development” was added as a methodology. (Adams & Courtney, 2004; Nunamaker, Chen, & Purdin, 1990-91)

Each article included in the literature survey will be classified by the following five concepts.

- A. *Demographics*: The demographics of journal name, year of publication, author and country affiliation are recorded. (Croasdell et al., 2003; Pervan, 1998)
- B. *Empirical or Non-Empirical*: An article is judged to be *empirical* if the researcher acquires original data as his/her primary source of evidence. (Alavi & Carlson, 1992; Pervan, 1998) Otherwise, it is judged to be *non-empirical*. A non-empirical article is further classified into *computer simulation*, *theory-building*, or *literature review*.
- C. *Research Paradigms*: The research paradigm of an empirical article is judged to

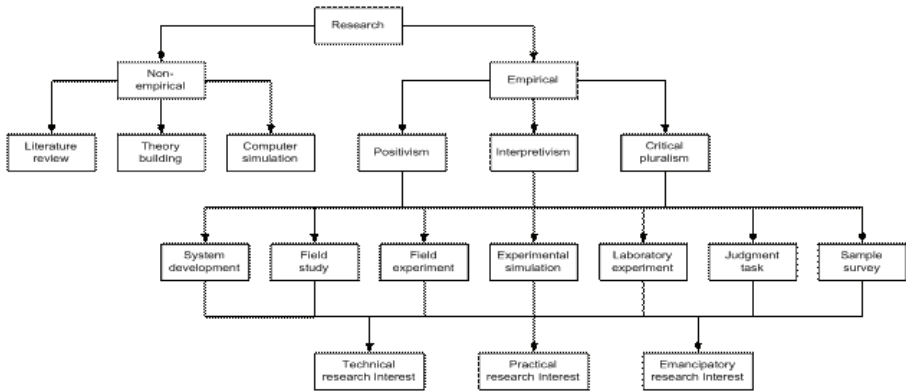


Figure 2 The modified classification scheme used in the present study

be *positivist, interpretivist, or critical pluralist*. Careful attention is given to research aims, stance of the researcher, types of reasoning, research plan, research methods, and the writing style. (Cavana et al., 2001)

- D. *Research Methods*: The research method of an empirical article is judged as *system development, field study, field experiment, experimental simulation, laboratory experiment, judgment task, or sample survey*. Particular attention was paid to the way the researcher designs and undertakes the research, i.e. its generality, precision, and realism of context; universal vs. particular behavior systems; and obtrusive vs. unobtrusive research operations.
- E. *Research Interests*: The research interest of an empirical article is classified historically as *technical, practical, or emancipatory*. Attention is given to surfacing the researcher’s motivation, domain of the research problems, research foci, and the overall “payoff” of the research.

3.2 Framing of the sample

Journal rankings are reviewed and 11 top-tier journals in information systems and management science are chosen. The journals are listed below. Abbreviations are used to identify each journal. (Table 3)

In summary, the sample frame is all articles published in the 11 journals over the five-year period 2000-2004 whose primary focus is knowledge management, organizational learning, or organizational memory.

3.3 Sampling procedure

The sampling procedure is summarized as follows. All copies of these journals for the five-year period 2000-2004 are searched for knowledge management research articles. All articles in all volumes in the sample frame were located and the abstracts read to confirm relevance.

Two non-author reviewers were trained in a formal face-to-face one-hour class. One of the non-author reviewers was an “extra” whose services proved not to be required. A total of three reviewers were expected to participate in this literature survey. One of the authors and a non-author served as primary reviewers. The second author served as a potential third reviewer.

Journals in Information Systems	Journals in Management Science
MIS Quarterly (MISQ)	Management Science (MS)
Information Systems Research (ISR)	Organization Science (OS)
Communications of the ACM (ACM)	Academy of Management Journal (AMJ)
Journal of Management Information Systems (JMIS)	Administrative Science Quarterly (ASQ)
Decision Sciences (DS)	
Decision Support Systems (DSS)	
European Journal of Information Systems (EJIS)	

Table 3 *List of journals surveyed*

The two primary reviewers classified the articles separately, and then met to compare ratings. When disagreement occurred, the two reviewers attempted to resolve the disagreement through communication. If disagreement persisted, the decision was to be adjudicated by the third reviewer.

It transpired that disagreements were invariably settled by the primary reviewers via one or more iterations of discussion. This collaborative process produced a history of judgment calls that was codified into a formal protocol. The development of a formal protocol enabled the two primary raters to achieve 100% inter-rater concordance or reliability.

4. Survey findings

4.1 Annual output of KM journal articles

The purpose of this subsection is to establish the relevance. The ABI/Global database was searched for those scholarly papers that had “knowledge management” in the citation or abstract fields. The count of articles for each of the years 1995-2004 is reported in Figure 3.

4.2 Distribution of articles

The issues of the 11 journals between 01 January 2000 and 31 December 2004 contained 174 research articles relevant to knowledge management. The counts are reported in Figure 4.

4.3 Country affiliation

The country affiliations of the authors are categorized into three regions, namely, North America, Europe, and Asia-Pacific. Since some articles are co-authored by researchers from different countries, the number of country affiliations (194) exceeds the number of articles (174).

It is found that North America is by far the biggest contributor with 140 articles. Europe contributes 31 articles. Asia-Pacific contributes 23 articles.

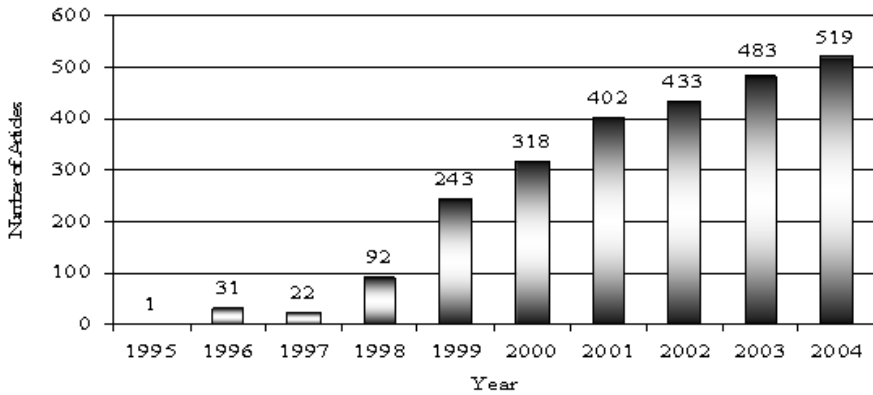


Figure 3 Trend in the number of articles for the ten-year period 1995-2004

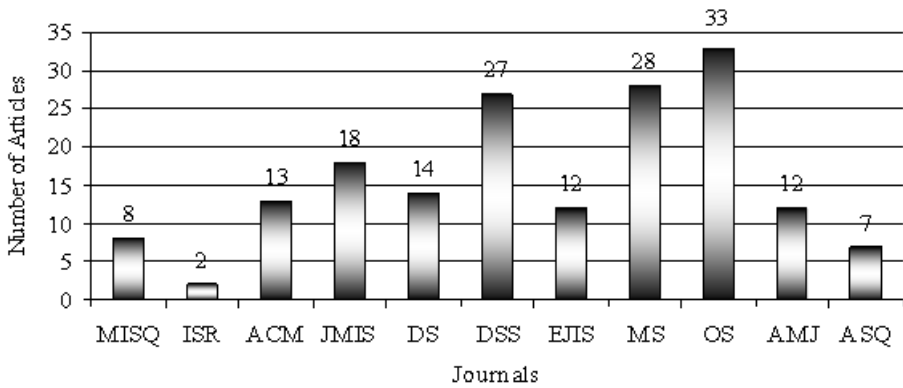


Figure 4 Distribution of articles for the survey period 2000-2004

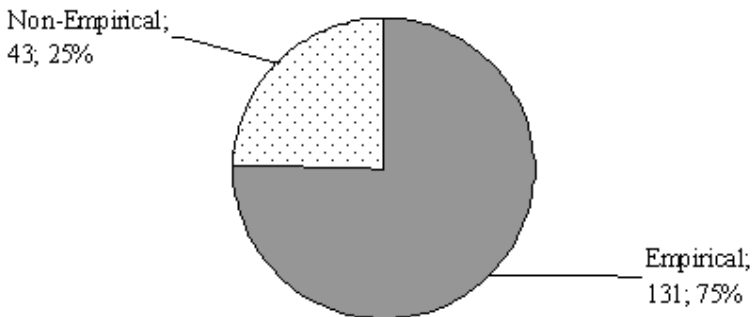


Figure 5 Distribution of empirical and non-empirical articles

4.4 Non-empirical or empirical

Among the 174 articles, 25% (43 articles) represent non-empirical research whilst 75% (131 articles) represent empirical research. (Figure 5)

4.5 Types of non-empirical research

Among the 43 non-empirical articles, 60% represent theory-building research; 35% represent literature review research; 5% represent computer simulation research. (Figure 6)

4.6 Research paradigms

Among the 131 empirical articles, 76% are positivist; 22% are interpretivist; and only 2% are critical pluralist. One article reported both an interpretive field study and a positivist sample survey, making the total 132 rather than 131. (Figure 7)

4.7. Research methods

Among the 131 empirical articles, sample survey is found to be the most widely adopted research method - 48% were sample surveys; 31% were field studies. The counts are reported below. One article reported both an interpretive field study and a positivist sample survey, making the total 132 rather than 131. (Figure 8)

Research methods adopted to support positivist, interpretivist, and critical pluralist articles are analyzed separately. The results are presented in Figures 9, 10, and 11.

4.8 Research interests

Among the 131 articles of empirical research, 78% of the total represents technical research interest, 20% represent practical research interest, and 2% represent emancipatory research interest. One article reported both an interpretive field study and a positivist sample survey, making the total 132 rather than 131. The distribution of research interests is illustrated in Figure 12.

5. Discussion of key findings

Firstly, the results show that *positivism is the dominant research paradigm*. This confirms findings of other studies (Arnott & Pervan, 2005; Chen & Hirschheim, 2004; Hopp, 2004; Schultze & Leidner, 2002). The results also show that interpretivism (22%) has taken its foothold in the KM research community. However, it is notable that critical pluralist research (2%) remains marginalized.

Secondly, the results show that *sample survey is the most widely used method of acquiring evidence*. Field study is the second most used method. It is possible that the significant volume of field studies may reflect the increasing acceptance of interpretivism, and the need for deep involvement of the researcher in the research "site". (Cavana et al., 2001) It may also confirm the immature, theory-building stage of KM research. (Croasdell et al., 2003)

Thirdly, the results show that *technical research interest dominates the research community*. Practical research interests motivate 20% of the empirical research surveyed. The emancipatory research interest is rare and marginalized.

Fourthly, the findings show that *the constructs underlying the research are valid*. This permits a degree of confidence in the findings on constructs that were directly measured (Figure 2) as well as those that are integral to the logic, but were not directly measured.

This finding is the evidence required to demonstrate a certain pattern in the

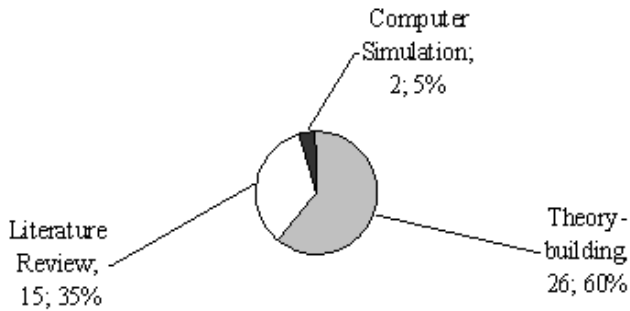


Figure 6 Distribution of types of non-empirical articles

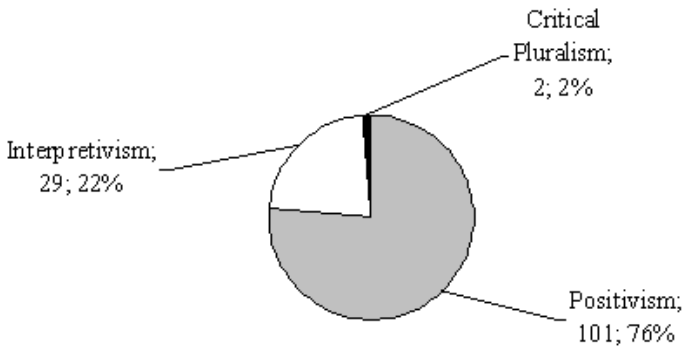


Figure 7 Research paradigms of empirical research

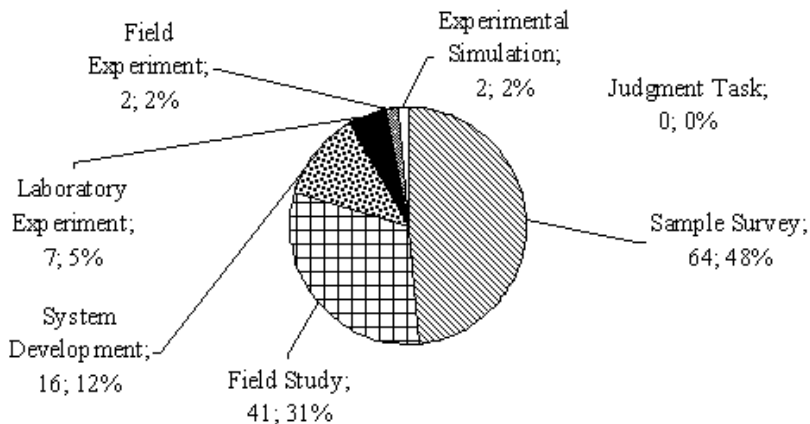


Figure 8 Overall distribution of research methods in empirical research

above findings, viz, that researchers align their choices of a research paradigm, a research method, and a research interest. For example, the positivist paradigm, with its deductive reasoning, champions objectivity and generalizability (Table 2). It is not surprising that sample survey, which is adjacent to the point maximizing generality in McGrath’s circumplex (Figure 1), is the most widely used method for positivist researchers (63%). The use of the positivist paradigm (76%) and research methods

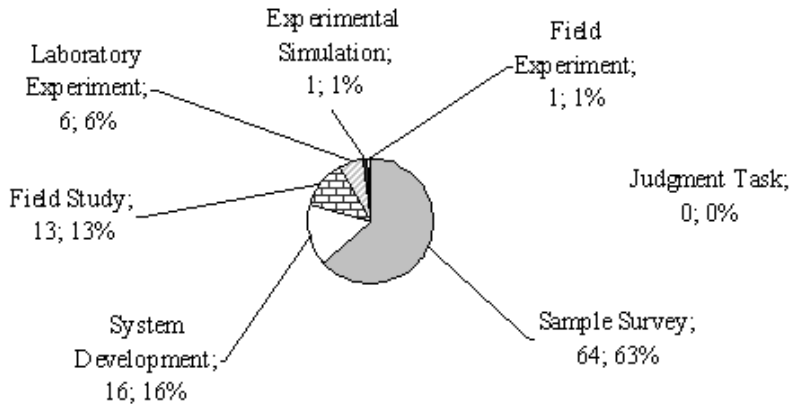


Figure 9 Research methods for positivist research

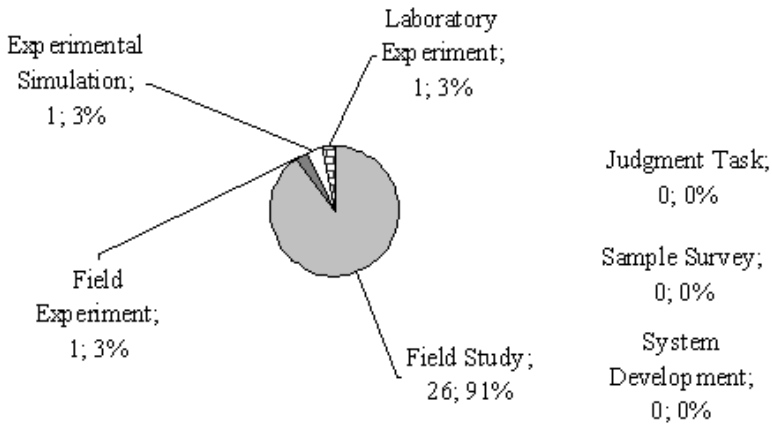


Figure 10 Research methods for interpretive research

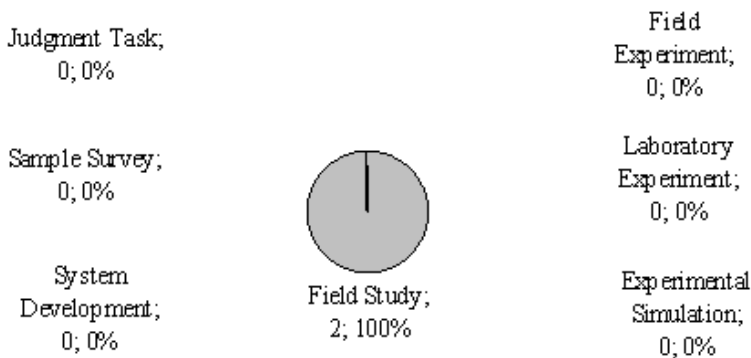


Figure 11 Research methods for critical research

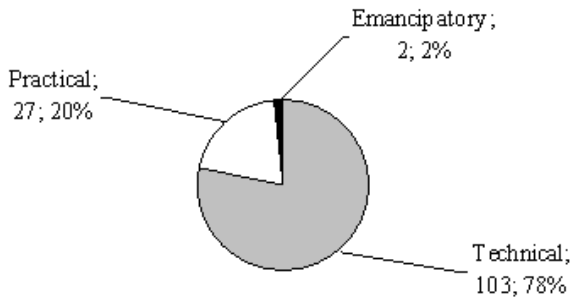


Figure 12 *Distribution of research interests*

such as sample survey can be linked with confidence to the reviewers' identification of a technical research interest (78%). This logic also holds true for interpretive research and critical pluralist research.

6. Recommendations for knowledge management research

The long-standing problem in KM research of lack of cumulativeness is addressed by an intensive review of the KM literature that identifies gaps and recommends how these should be filled.

Major gaps are found. Current research on KM is unbalanced in its methods of inquiry. The majority of researchers embrace technical and/or practical knowledge interests, leaving emancipatory interest largely unattended.

Firstly, Habermas' *personal rationality* is barely recognized. KM research that overemphasizes technical rationality and social/organizational rationality leads to an unquestioned reinforcement of existing social systems. This constitutes a colonizing force of the life-world; it leaves little room for ethical consideration.

Secondly, the treatment of Churchman's role of *client* is cursory. KM research that focuses on measures of performance to serve the *decision maker* largely ignores the will of the individual, reducing him/her to a functional unit valued only as an organizational resource.

Thirdly, attention to personal aspects of *knowledge creation* is limited. Research that is only interested in organizational knowledge, as it is normalized, in relation to its perceived value at the technical level fails to fully comprehend the process in which personal knowledge is transformed into organizational knowledge. KM research associated with sense-making and organizational change will be curtailed.

Fourthly, the lack of *interpretive* and *critical pluralist* KM research needs to be addressed. Overuse of the positivist paradigm and its dominant research method (sample survey) prevents the exploitation of the highly relevant insights available via the interpretivist and critical pluralist paradigms. Approaches such as Grounded Theory and Participatory Action Research are recommended to correct this imbalance.

Finally, increased use of both *interpretive and critical field studies* is required to make KM research more relevant and value-sensitive. It is significant that the only two critical research articles found in this survey were published in a non-USA journal. None of the editors of the 10 prestigious US-based journals published any

critical research articles in the period 2000-2004. However editors of MISQ and perhaps other prestigious US journals currently welcome a broad range of methodological approaches including those that surface personal experience via first-person accounts that directly addresses the subjective nature of deciding on the nature of the problem to be addressed (“*Why I feel?*”).

In summary, the dominant knowledge interest is *technical*, focusing on objective measures of performance.

A more balanced recognition of all three knowledge interests is required. The triangulation of multiple paradigms and methods produces a more holistic appreciation of knowledge-related phenomena, and contributes more to a management science that “searches for truths about the ways in which men work and live together”. (Churchman, 1955)

References

Note: References to *all* of the 174 knowledge management articles that form the database for this literature review are omitted.

- Adams, L. A., & Courtney, J. F. (2004). *Achieving relevance in IS research via the DAGS framework*. Paper presented at the 37th Hawaii International Conference on System Sciences, Hawaii, USA.
- Alavi, M., & Carlson, P. (1992). A review of MIS research and disciplinary development. *Journal of Management Information Systems*, 8(4), 45-62.
- Arnott, D., & Pervan, G. (2005). A critical analysis of decision support systems research. *Journal of Information Technology*, 20(2), 67-87.
- Burrell, G. (1994). Modernism, postmodernism and organizational analysis 4: The contribution of Jurgen Habermas. *Organization Studies*, 15(1), 1-19.
- Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organizational analysis: Elements of the sociology of corporate life*. Brookfield: Ashgate Publishing Company.
- Cavana, R. Y., Delahaye, B. L., & Sekaran, U. (2001). *Applied business research : Qualitative and quantitative methods*. Milton, Qld, Australia: J. Wiley.
- Chen, W. S., & Hirschheim, R. (2004). A paradigmatic and methodological examination of information systems research from 1991 to 2001. *Information Systems Journal*, 14, 197-235.
- Churchman, C. W. (1955). Management science. *Management Science*, 1(2), 187-188.
- Collis, J., & Hussey, R. (2003). *Business research: A practical guide for undergraduate and postgraduate students* (2nd ed.). New York, NY: Palgrave Macmillan.
- Courtney, J. F. (2001). Decision making and knowledge management in inquiring organizations: Toward a new decision-making paradigm for DSS. *Decision Support Systems*, 31(1), 17.
- Courtney, J. F., Croasdel, D. T., & Paradice, D. B. (1998). Inquiring Organizations. *Australian Journal of Information Systems*, 6(1), 3-14.
- Croasdel, D. T., Jennex, M., Yu, Z., Christianson, T., Chakradeo, M., & Makdum, W. (2003). *A meta-analysis of methodologies for research in knowledge management, organizational learning and organizational memory: Five years at HICSS*. Paper presented at the 36th Hawaii International Conference on System Sciences, Hawaii, USA.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. St Leonards, Australia: Allen & Unwin.
- Deetz, S. (1996). Describing differences in approaches to organization science: Rethinking Burrell and Morgan and their legacy. *Organization Science*, 7(2), 191-207.
- Guo, Z., & Sheffield, J. (2006). *Habermasian Inquiring System: Toward a General Framework for Knowledge Management Research*. Paper presented at the 39th Hawaii International

Conference on System Sciences, Hawaii, USA.

- Habermas, J. (1968). *Knowledge and human interests*. Boston: Beacon Press.
- Hopp, W. J. (2004). Fifty years of *Management Science*. *Management Science*, 50(1), 1-7.
- Marshall, N., & Brady, T. (2001). Knowledge management and the politics of knowledge: Illustrations from complex products and systems. *European Journal of Information Systems*, 10, 99-112.
- McGrath, J. E. (1982). Dilemmatics: The study of research choices and dilemmas. In *Judgment Calls in Research* (pp. 69-102). Beverly Hills: Sage Publications.
- Morgan, G., & Smircich, L. (1980). The case of qualitative research. *Academy of Management Review*, 5(4), 491-500.
- Nunamaker, J. F., Chen, M., & Purdin, T. D. M. (1990-91). System development in information systems research. *Journal of Management Information Systems*, 7(3), 89-106.
- Panagiotidis, P., & Edwards, J. S. (2001). Organisational learning - A critical systems thinking discipline. *European Journal of Information Systems*, 10(3), 135.
- Peachey, H., & Hall, D. (2005). *Knowledge Management and the Leading IS Journals: An Analysis of Trends and Gaps in Published Research*. Paper presented at the 38th Hawaii International Conference on System Sciences, Hawaii, USA.
- Pervan, G. P. (1998). A review of research in group support systems: Leaders, approaches and directions. *Decision Support Systems*, 23(2), 149-159.
- Richardson, S. M., & Courtney, J. F. (2004). *A Churchmanian theory of knowledge management system design*. Paper presented at the 37th Hawaii International Conference on System Sciences, Hawaii, USA.
- Richardson, S. M., Courtney, J. F., & Paradise, D. B. (2001). An assessment of the Singerian inquiring organizational model: Cases from academia and the utility industry. *Information Systems Frontiers*, 3(1), 49-62.
- Rubenstein-Montano, B., Liebowitz, J., Buchwalter, J., McCaw, D., Newman, B., Rebeck, K., et al. (2001). A systems thinking framework for knowledge management. *Decision Support Systems*, 31, 5-16.
- Schultze, U., & Leidner, D. E. (2002). Studying knowledge management in information systems research: Discourse and theoretical assumptions. *MIS Quarterly*, 26(3), 213-242.
- Sheffield, J. (2004). The design of GSS-enabled interventions: A Habermasian perspective. *Group Decision and Negotiation*, 13(5), 415-436.
- Sheffield, J. (2005). *The evaluation of GSS-enabled interventions: A Habermasian perspective*. Paper presented at the 38th Hawaii International Conference on System Sciences, Hawaii, USA.
- Ulrich, W. (2001). A philosophical staircase for information systems definition, design, and development: A discursive approach to reflective practice in ISD (Part 1). *Journal of Information Technology Theory and Application*, 3(3), 55-84.

Jim Sheffield graduated with a PhD from the University of Arizona in 1990. His doctoral work in group support systems led to the creation of a Decision Support Centre at the University of Auckland and participation in major policy development exercises. Action research initiatives include the development of economic strategy, science policy, and comprehensive regional planning. He has published in *Journal of MIS*, *Group Decision and Negotiation* and *International Journal of Business Information Systems*. Current interests include: Churchmanian and Habermasian inquiring systems, knowledge management, collaborative learning, and research methods.

Zining Guo holds a Mater of Commerce (First Class Honors) in Information Systems from the University of Auckland. He is currently serving as Associate Consultant at Xelocity Limited, Auckland, New Zealand. He has published in Hawaii International Conference on System Sciences. His primary areas of research interest include knowledge management, systems approaches, organization sciences, research methods, and philosophical foundations of inquiry.