A Review of Epistemology and Subject Areas in MIS Research

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Abstract

The purpose of this paper is to classify the most cited papers in Management Information Systems (MIS) by theoretical perspective and subject area. The determination of the underlying theoretical perspective of these papers facilitates and verifies the dominance of positivist perspectives. Our analysis indicates that 74% of the most cited articles are positivist and 26% are interpretivist. The presence of a significant percentage of interpretive work suggests that differing theoretical perspectives are being considered relevant to solving the problems identified in the current research streams. Our results also indicated User Satisfaction and Instrument Development and Group Support Systems as the most cited articles subject areas, 16% and 14% respectively. The significance of these subject areas promotes and supports that systems is the foundation of MIS.

Keywords: Theoretical perspectives, citation analysis, article rankings, Management Information Systems.

Introduction

The primary objective of this study is to examine the trends in research conducted in the Management Information Systems (MIS) field over the past twenty-five years. This study evaluated the most cited articles in mainstream MIS journals based on theoretical perspectives and subject area of research. Trends are discussed with regard to three main theoretical perspectives (positivism, interpretivism, and critical theory) and fifteen subject areas.

There are many terms used to identify the MIS field. For the purpose of this paper, MIS will be used to include computer-based information systems used to support management functions as well as non-management oriented information systems (Ives et al., 1980). Although the terms MIS, Information Technology (IT), and Information Systems (IS) are sometimes used to make subtle distinctions, they are often used synonymously. Concepts introduced in this paper will use terminology consistent with that of the original author. The use of MIS by the current authors encompasses the uses of MIS, IT, and IS as utilized by the referent concepts included in this paper.

First, we define theoretical perspective and its three main categories. Next, we discuss the importance of citation analysis and develop a basis for journal and article rankings and categorization of subjects. Then, we report the results of our analysis and the trends of the most cited articles. Finally, we conclude with limitations and recommendations for future research.

Theoretical Foundation

Theoretical perspective is defined as "a non-explanatory, general framework that defines a point of view within a discipline, including basic assumptions that draw attention to particular aspects of a phenomenon and, therefore, generate particular kinds of questions about it" (Webref, 2003). Theoretical perspectives are the underlying terms by which papers may be categorized. Although there are several categories and taxonomies by which to categorize each paper, we have chosen to focus on theoretical perspectives. The theoretical perspective represents the philosophical stance that provides the context used. It is the best picture of the author's scientific assumptions, which serve as the grounding for his/her logic and criteria (Crotty, 1998).

Each work is examined and its underlying theoretical perspective is deduced in accordance with the work of Orlikowski and Baroudi (1991) and based on the criteria outlined by Gephart (1999). Theoretical perspectives are categorized as positivist, interpretivist or critical theory. While this is not an exhaustive list of existing theoretical perspectives, these three categories encompass a broad portion of the theoretical perspectives present in contemporary literature.

Positivism

A positivist researcher has a belief that the world conforms to fixed laws of causation; that there is a complexity that can be tackled by reductionism; and that asserts an emphasis on objectivity, measurement, and repeatability. These researchers have both a realist and an objective view of the world. The methodologies most often used by positivist researchers include quantitative analysis, confirmatory analysis, deduction, laboratory experiments, and nomothetic experiments (Fitzgerald & Howcroft, 1998).

Papers driven by a positivist perspective are designed to predict and explain causal relationships, and assume an a priori causal relationship between observable phenomena. In this analysis, papers containing formal propositions, quantifiable experiments or quantifiable questionnaires, or the goal of predicting or explaining causal relationships were categorized as positivist work. These papers are used to test theories and produce models that can be used to draw accurate predictions based on available information.

Interpretivism

An interpretivist researcher believes there is no universal truth. This type of researcher understands and interprets from his/her own frame of reference. He/She believes that uncommitted neutrality is impossible and realism of context is important. These researchers have both a relativist and a subjective view of the world. The methodologies most often used by interpretivist researchers include qualitative analysis, exploratory analysis, induction, field experiments, and idiographic experiments (Fitzgerald & Howcroft, 1998).

Papers that take an interpretivist perspective are developed with the goal of understanding phenomena by analyzing the meaning that individuals associate with the phenomena. In the identification of an interpretivist paper, we looked for discussion of observations and meaning, ethnography, interviews, and observation, and the classical goal of interpretivist work, grounded theory development: development of a theory where none existed (Glaser & Strauss, 1967).

Critical Theory

Critical theory is the form of analysis best known from the Frankfurt School. It takes the form of a critique of ideology by attempting to uncover distorting forms of consciousness, or ways of thinking. This technique draws heavily from the model of psychoanalysis proposed by the Austrian physician Sigmund Freud in his attempt to liberate people from illusions and constraints of their own making (Crotty, 1998).

Papers employing a critical perspective aim to remedy logical contradictions and correct injustice. Critical theory papers challenge questionable assumptions about organizations, and often take a dialectic approach (Orlikowski & Baroudi, 1991). To identify critical theory papers, logical challenges to the status quo and challenges to generally accepted assumptions about information systems (challenging assumptions and outlining structured contradictions is a common practice in critical theory driven research) were sought as well as a call for change within the IS research community (Gephart, 1999; Orlikowski & Baroudi, 1991).

Analysis

Understanding the writing styles of the most cited and referenced authors provide a broad realm of opportunities for aspiring researchers. Before we can evaluate the theoretical perspective of papers in MIS, we must determine the most prominent papers of our current era.

Citation Analysis

Citation analysis has emerged as an important technique for studying behavioral science. It is considered one of the best objective methodologies for assessing the impact of a journal and its papers (Katerattanakul et al., 2003). Previous research has employed various forms of citation analysis to investigate the structure and status of MIS as a scientific discipline.

Journal Rankings

In selecting the journals for our study, we identified the journals that represented a multi-disciplinary cross section of MIS literature. Management science, computer science, and management studies are the three reference disciplines of study most associated with MIS (Culnan & Swanson, 1986; Westin et al., 1994). Three criteria were followed to determine whether to retain a journal for the final analysis. First, each journal, in its primary area, must be well recognized through its mission and editorial policy. Second, these journals were ranked highly on the Association for Information Systems (AIS) website. Third, these journals have been employed by researchers to represent the disciplines of MIS. To this end we chose to include *MIS Quarterly (MISQ), Information Systems Research (ISR), Communications of the ACM (CACM), Management Science,* and *Harvard Business Review (HBR).*

Article Rankings

In collecting the citation counts, we used the online resource, ISI Web of Knowledge (Webref, 2003), which includes the citation databases *Science Citation Index Expanded (SCI-EXPANDED)*, *Arts & Humanities Citation Index (A&HCI)*, and *Social Sciences Citation Index* (SSCI). The first step was to draw a large sample pool and to subsequently narrow the pool down to the most cited authors. Web of Knowledge provides a link, 'Cited Ref Search,' which searches for the number of citation hits by author, journal, and/or year. The search for the most cited papers spanned the past 25 years (1978–2003). Entering the journal title and the year populated a list of authors, the associated paper, the year, and the number of "hits" or the number of times a paper is cited overall. Due to the high variability in the number of times that a paper may be cited (from 1 to infinity) we used a cut-off number of 100 citations. This process created a listing of over 150 papers. At this point, the search was narrowed to include only papers that were directly related to topics in MIS (such as information systems, media richness, user acceptance, etc.). Topic areas were determined by title, abstract, and other journals in which the article was cited. These papers were ranked in order of number of citations from highest to lowest. Due to time restrictions, only the top 50 most cited MIS papers were evaluated.

Subject Classification

For classifying subject areas, we used the keyword classification scheme by Barki, Rivard, and Talbot (1993). This scheme is a comprehensive classification list, which contains several levels. Each article was assessed for their keyword search and placed under the appropriate category listing. The final subject classification list is presented in Table 1 in alphabetical order.

Table 1. Subject Classification List

1. Decision Support Systems
2. Economics
3. End user computing
4. Group Support Systems
5. Individual Differences
6. IS and Organizational Change
7. Managing Information Technology
8. Media richness and cross-media comparisons
9. Theory of MIS

10. Strategic Information Systems
11. System Success
12. Systems Development and Implementation
13. User Acceptance
14. User Satisfaction and Instrument Development
15. Intelligent Agents

Categorization

Journals hold a great responsibility in emphasizing the theoretical perspectives of highest value to the current paradigm. In our study, we found that the journals containing the top 50 most cited MIS papers overlap with the quality rankings of MIS journals (**http://www.aisnet.org**). In the top 50, 38% of the papers were published in *Management Science*, 30% in *CACM*, 18% in *MISQ*, 10% in *HBR* and 4% in *ISR*. These numbers continue to support the rankings of *Management Science* and as primary journals in multidisciplinary fields and *MISQ* as the number one ranked journal by citation-based indices in the MIS field (Katerattanakul et al., 2003).

Each paper was read by at least two people and evaluated for its theoretical perspective (Table 2). If the two individuals reached different outcomes then the paper was read by the entire group (consisting of five people) and submitted to at least one faculty member to obtain a final decision. Once all 50 papers were read and categorized, we obtained a better understanding of which theoretical perspective attained dominance in the MIS pre-paradigm stage.

Table 2. Criteria for Classification of Theoretical Perspectives

Positivist	Interpretivist	Critical Theory
• Formal Propositions • Quantifiable Experiments/Quantifiable Questionnaires • Goal of Predicting or Explaining Causal Relationships	• Discussion of Observation and Meaning • Ethnography/Interview/Observation • Grounded Theory Development	• Logical Challenges to the Status Quo • Challenges to Generally Accepted Assumptions • A call for change within the IS research community

Results

The trends in the theoretical perspectives in use by researchers in MIS research are consistent with the general mindset that positivist research dominates the MIS pre-paradigm (Goles & Hirschheim, 2000). Table 3 shows the percentage of theoretical perspective papers over the past 25 years.

Table 3. Theoretical Perspective Frequency

| Theoretical Perspective	Frequency	Percentage
Positivism	37	74%
Interpretivism	13	26%
Critical Theory	0	0%
Total	50	100%

Our research found that 74% of the top 50 most cited papers employ a positivist perspective. The remaining 26% are interpretivist, while 0% are categorized as critical theory. The consensus of studies that have investigated information systems research is that positivism dominates the field (Goles & Hirschheim, 2000). Although critical theory is not represented in our survey, we believe the critical perspective remains a valid classification for MIS research. We believe that positivism and interpretivism are independent research perspectives that can and should be used separately in MIS research.

Table 4 and Figure 1 show trends over 25 years that depict the time periods in which certain theoretical perspectives dominated publications. Although, throughout the time period, positivism appeared to dominate, it is valuable to see how interpretivism increased from the 1978 to 1987. The increase in interpretivist publications may be due to a call for interpretivism and other methodologies made by researchers and journals alike. Again, critical theory is not evident during the 25 years, but it may be due to the limitations of studying only journal publications.

Table 4. Theoretical Perspective Over Years

Years	Positivism	Interpretivism	Critical Theory
1978 – 1982	3	3	0
1983 – 1987	19	7	0
1988 – 1992	12	3	0
1993 – 1997	3	0	0
1998 – 2003	0	0	0

Figure 1. Theoretical Perspective Trend
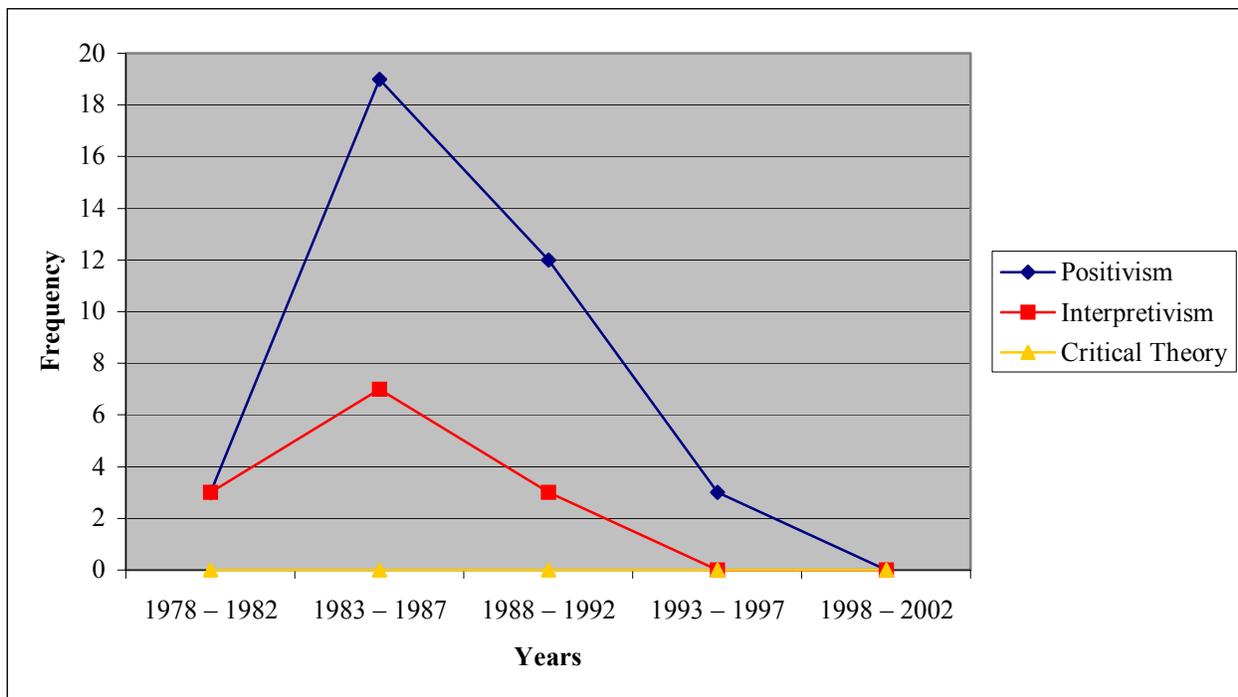
The highest rated subject over the 25 years is User Satisfaction and Instrument Development, followed by Group Support Systems, and Systems Development and Implementation at third (shown in Table 5). This is no surprise, as the foundation of MIS is systems development. The current interests of MIS, such as electronic commerce or IS security, is not seen on this chart since we are looking at the most cited articles over the MIS lifespan of 25 years. The bottom of the table includes subject areas such as end user computing, individual differences, and system success. This does not mean that these are not important areas to our field, but by our definition of a most cited article did not appear high on the table.

Table 5. Subject Area Trends

Subject Area	Frequency	Percentage
User Satisfaction and Instrument Development	8	16%
Group Support Systems	7	14%
Systems Development and Implementation	5	10%
Managing Information Technology	4	8%
IS and Organizational Change	4	8%
Media richness and cross-media comparisons	3	6%

User Acceptance	3	6%
Expert Systems	3	6%
Strategic Information Systems	3	6%
Decision Support Systems	3	6%
Theory of MIS	2	4%
Economics	2	4%
End user computing	1	2%
Individual Differences	1	2%
System Success	1	2%

Conclusion

Our analysis confirms that the top articles are dominated by positivist methods with calls being made to utilize other perspectives. Researchers stipulate reasons for and consequences of the dominance of positivist research. Despite the supposed acceptance of non-positivist research, our analysis shows a brief answer to the call for non-positivist research followed by a return to the trend of positivist research. The choice of theoretical perspective should depend on the characteristics of the research phenomenon (Orlikowski & Baroudi, 1991). Researchers should try to reduce bias when choosing research perspectives and keep theoretical consistency.

We note that there are limitations to our study. The length of time to analyze and evaluate the papers into appropriate categories prevented us from reviewing a larger body of work. Due to time constraints, we were unable to use long-term information we have obtained to produce a longitudinal study. Potential errors may have inhibited our search due to the variety of spellings and abbreviations used by Web of Knowledge. Second authorship was not included in the actual counts and citations from other types of publications, such as books or conference papers, were not included. The inability to include books and conference papers may have contributed to the low count for the critical theory perspective. Citation counts may be lower due to spelling errors of the journal and author names in the databases. The determination of each paper's theoretical perspective was subjective and we were unable to obtain absolute confirmation of the author's intent. Finally, by reviewing several journals with multidisciplinary foci, it was difficult to exclusively capture all aspects of MIS. However, the Web of Knowledge databases create their citation list only from journal articles where the author is listed first.

In the future, we would like to expand this paper into a longitudinal study of the direction of the MIS paradigm and its theoretical perspectives. The top 50 most cited MIS papers is only the tip of the iceberg in developing a longitudinal schema that produces a pathway to visualizing the future characteristics of the theoretical perspectives of today and of tomorrow. Overall, it is important to note that although we are in a positivist dominated realm; there are other theoretical perspectives that may better suit the needs of our subject matter and to continue to help researchers keep an open mind to all theoretical perspectives.

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