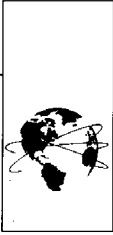


# CRITERIA FOR HIGH-QUALITY INFORMATION SYSTEMS RESEARCH

A Comparison of the Views of North  
American and International Scholars:  
Technical Note



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**EXECUTIVE SUMMARY:** The research tradition in information systems in North America differs from that in many other parts of the world. North American research is generally based on empirical, quantitative, and positivist concepts whereas qualitative, hermeneutic, and post positivist attributes characterize research in other parts of the world. Evaristo, Ang, and Straub investigated the implications of these differences in approach on the perception of research quality among researchers.

Based on a survey of authors and editorial board members from four of the leading information systems journals, Evaristo and his co-workers conclude that IS scholars around the world, be they North American or not, are remarkably similar in how they prioritize criteria for high-quality IS research. The authors do find, however, that some significant differences do exist. North Americans ranked logical rigor and replicability of research more highly, whereas non-North Americans valued contribution to knowledge and topic selection more highly.

**Key words:** *research methodologies, research culture, hermeneutics, positivism*

It is widely recognized that the research culture of North American IS scholars differs from that of other parts of the world.<sup>1</sup> The empirical, quantitative, and positivist paradigm that has dominated research in North America contrasts with a qualitative, hermeneutic, and post-positivist paradigm that has evolved in other regions of the world such as

Europe (Achterberg, Van Es, & Heng, 1991; Olaisen, 1991). In their study of American versus European doctoral dissertations, Evaristo and Karahanna (1989) found that such differences in research culture could be linked to differences in level of doctoral candidate work experience and academic incentives for promotion.

Assuming that the North American research culture does differ from the rest of the world, how do these differences affect scholarly perceptions of the criteria for high quality IS research? It is logically consistent to believe that differences in research culture would lead to a correspondingly different set of standards with which to evaluate research. The literature has been silent on this interesting question.

Exactly why is it important to gain greater insight into this question? Journals are the primary means by which scientific disciplines express themselves; in order to publish, researchers need to be in touch with the values of their intended audience and their surrogates, the reviewers. Knowing whether there are, in fact, differences in the reviewing criteria linked to differences in research culture could affect both form and quality of submitted manuscripts as well as the assignment and use of reviewers by editors.

## EVALUATIVE CRITERIA FOR SOCIAL SCIENCE RESEARCH

Criteria for evaluating the quality of manuscripts have been studied by scholars in other disciplines. They found important distinctions in the criteria as well as the order of these criteria according to disciplinary emphasis. For example, social science research is evaluated by different standards than the natural and physical sciences (Chase, 1970). Moreover, disciplines within the social sciences vary in how they prioritize these evaluative criteria. In a survey of psychology journal editors, Wolff (1970), for example, found "contribution to knowledge" to be the most important criterion, followed closely by "sound research design" and "objectivity" in reporting results. On the other hand, Daft (1985), in an analysis of manuscript reviews submitted to *Administrative Science Quarterly* and the *Academy of Management Journal*, concluded that "lack of theory," "poor construct validation," and "poor research design" were problems that occurred most frequently. Reflecting the practitioner's perspective, Price (1985) contended that "relevance" is crucial in organizational science research.

IS has its own special set of prioritized standards. Based on a review of the research evaluation literature, Straub, Ang, and Evaristo (1991) identified a set of 15 evaluative criteria likely to be used by IS researchers, as shown in Exhibit 1. They polled 583 authors and editorial board members of the *MIS Quarterly*, *Communications of the ACM*, *Management Science*, and *Information and Management* on the relative importance of these standards.<sup>2</sup> A response rate of 28.8% was obtained.

**Exhibit 1: Criteria for High-Quality Research (from Straub, Ang, & Evaristo, 1991)**

**Logical rigor**—tight, logical flow of ideas with clear ties between literature review and method and clear links between method and results.

**Contribution to knowledge**—extending or challenging present beliefs and assumptions in the IS knowledge base.

**Coverage of significant literature**—discussion of relevant literature; explications of underlying assumptions.

**Suggestions for future research**—directions for extending or improving on the present research.

**Replicability of research**—feasibility of conducting the same study based on the information provided by the author.

**Manuscript length**—length of the manuscript within a range of pages considered acceptable for a given journal.

**Topic selection**—high or current readership interest; interesting choice of paradigm or data analysis technique.

**Presentation level**—presented at a level of sophistication and economy of explanation appropriate to the readership of the journal.

**Adherence to scientific ethics**—observing the code of ethics for the conduct of human subjects research to best contribute to science and human welfare.

**Statistical/mathematical analysis**—appropriateness of analytic techniques (e.g., statistics); appropriateness of interpretation of analytical results; magnitude of effects.

**Research design**—appropriateness of the method, subjects, and techniques; appropriate operationalization of theoretical concepts; internal and external validity.

**Contribution to practice**—link to current technological and organizational problems are challenges faced by IS practitioners.

**Theory**—use of theories from IS or reference disciplines to explain the relationship among variables used in the study.

**Reputation**—status and reputation of the author and author's institution.

**Professional style and tone**—appropriate and correct writing style; grammar; clarity of figures and tables; conciseness.

Respondents chose two of the six methodologies proposed by Van Horn (1973) and Vogel and Wetherbe (1984) to rate on a 9-point scale for each of 15 criteria. The six methodologies were case studies, field experiments, field studies, laboratory experiments, conceptual studies, and reviews/tutorials. Ratings for each of two methodologies on 15 criteria were thus pooled to form the sample base.

### DATA ANALYSIS

Using data from the study by Straub, Ang, and Evaristo (1991), we tested whether differences in research culture could explain differences in evaluative criteria. This was done by dividing the sample into two groups: North American versus International researchers. A breakdown of the respondents by geographical area is presented in Table 1.

An overall *t*-test showed that there was a difference in the average responses, with the North Americans generally valuing the entire set of criteria at a higher level ( $t = 3.190, p = .001$ ). Pairwise *t*-test comparisons on each of the 15 criteria revealed the same basic patterns as the overall *t*-test. These differences could be due simply to an overall shift in scores, with no difference in the relative value or ordering of the different criteria. Therefore, we rank-ordered scores given to the criteria and determined, for each criterion, whether rankings of North American respondents differed from rankings of International respondents. Table 2 presents both the mean rank scores for each criterion and the results from Mann-Whitney U-tests, appropriate for ordinal data, comparing North American and International responses. Results significant at the .05 level are highlighted by double asterisks. Since SAS (1985) calculates a normal approximation of this statistic, the Z-value is also given.

**TABLE 1: Sample Distribution by Geographical Area**

	Frequency	Percent
<b>North Americans</b>		
U.S.	119	70.8
Canada	16	9.5
<b>Internationals</b>		
Europe	13	7.7
Far East	8	4.8
Australia	5	3.0
Others	3	1.8
<b>Non-identifiable</b>	4	2.4
<b>Totals</b>	168	100.0

**TABLE 2: Mean Rank of Scores for North Americans and Internationals**

	North Americans	Internationals	Z	p
Logical rigor	11.40	10.09	3.160	.002**
Contribution to knowledge	11.21	11.66	2.172	.030**
Coverage of significant literature	9.66	9.33	.309	.757
Theory	9.63	8.88	1.510	.131
Research design	9.41	9.56	.095	.924
Presentation level	8.96	9.25	.628	.530
Professional style and tone	8.69	8.56	.237	.813
Statistical/mathematical analysis	7.82	6.96	1.306	.192
Topic selection	7.61	8.91	2.591	.010**
Contribution to practice	7.61	8.62	1.709	.087
Adherence to scientific ethics	7.60	7.82	.413	.680
Suggestions for future research	7.10	7.90	1.692	.091
Replicability of research	6.43	5.32	1.971	.049**
Manuscript length	4.37	5.02	1.032	.302
Reputation	2.49	2.12	.851	.394

N.B. Larger rank scores signify greater importance.

\*\*Indicates results significant at the .05 level.

Tests for rank differences of evaluation criteria were insightful. The first observation is that strikingly few differences in ranks were statistically significant, and, in fact, the overall Spearman correlation between the two sets of rankings was .944 ( $p$ -value = .001). This result may reflect the intellectual synergy that has been created through the international conferences on IS research and research methodologies held during the latter part of the 1980s.<sup>3</sup>

Out of 15 criteria, however, 4 did show significant differences. North Americans ranked "logical rigor" and "replicability of research" more highly, whereas Internationals valued "contribution to knowledge" and "topic selection" more highly.

There are a number of interpretations of these differences. The higher importance North Americans place on "logical rigor" may be a result of the strongly positivist tradition predominant in North America. The socialization process in researchers' training affects their values regarding research. Therefore, this higher importance on "logical rigor" may be tied to the North American emphasis on conventions of how to structure and express the results of empirical research (e.g., Davis & Parker, 1979; Huck, Cormier & Bounds, 1974). "Research replicability" is also a philosophical hallmark of the positivist approach to research, which would explain its higher valuation by North American respondents.

On the other hand, Internationals ranked "contribution to knowledge" and "topic selection" higher than did their North American counterparts. One explanation of this difference is that Internationals, many of whom are invested in the hermeneutic tradition, may be reacting more

strongly to specific terms in the definitions of "contribution to knowledge" and "topic selection." Those specific terms include *challenging present beliefs* in the definition of "contribution to knowledge" and *paradigm* and *data analysis technique* in the definition of "topic selection."

## IMPLICATIONS

The results of this study suggest that there is a remarkably similar set of worldwide evaluative criteria for IS research. Although there is no hard evidence in the present study for why this shared understanding of IS research has evolved, one possibility is that it has been achieved through the intellectual exchanges in international conferences. Exploring this subject in greater detail can be an agenda for further research.

The differences found in the ranking of evaluative criteria by North American and International IS scholars ("logical rigor," "research replicability," "contribution to knowledge," and "topic selection") may be the result of differences in research cultures. For an international scholarly community like IS, this finding highlights key likenesses and differences between research cultures.

From a practical standpoint, journal editors and associate editors may want to keep these findings in mind when selecting reviewers. Conflicting reviews, especially when related to the criteria identified in the study, may be inevitable. Moreover, journal editors need to be explicit on criteria for acceptance, and editors need to take special note of the criteria that might show cultural differences. The price of choosing reviewers from the same research heritage, though, is to lose dissenting but enlightening perspectives.

Authors submitting manuscripts to journals which have actively increased the number of reviewers from different research cultures should be aware of these differences, anticipate conflicts among reviewers, and revise manuscripts accordingly.

## NOTES

1. For simplicity of exposition, we use the term *Internationals* for non-North Americans throughout this paper.
2. The journals selected for creation of the sample base represent highly rated journals in MIS. It is possible that this selection bias would lead to disproportionately more agreement among respondents than if the sample had been more broadly selected.
3. Among the conferences specifically addressing topics on IS research and research methodology in the last decade were the 1990

International Conference in Information Systems, Copenhagen; the 1990 IFIP TC8/WG 8.2 Working Conference on the IS Research Arena; the 1984 IFIP WG 8.2 Colloquium, Manchester; and the Harvard Business School Research Colloquia on the IS Research Challenge, Boston (1984) and Vancouver (1988).

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