MIS Quarterly

RESEARCH COMMENTARY

THE SOCIOTECHNICAL AXIS OF COHESION FOR THE IS DISCIPLINE: ITS HISTORICAL LEGACY AND ITS CONTINUED RELEVANCE

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Appendix A

Literature Review

We conduct a systematic review and coding of all the empirical research published in the two premier journals of our discipline, namely *MIS Quarterly* (MISQ) and *Information Systems Research* (ISR), from 2000 to 2016. We follow a comparable coding procedure to the ones employed by similar published studies (e.g., Grover and Lyytinen 2015), which consists of journal selection, sampling of articles, development of coding schemes, coding, and validation.

Journal Selection

The two journals sampled are MISQ and ISR. Both are consistently the top tier journals in the IS field over the years and are representative of the status of the IS field. Based on expert rankings and bibliometric measures including impact factor, h-index, and social network metrics, Lowry et al. (2013) confirmed that MISQ and ISR continue to occupy the position of the two highest ranked journals in the IS discipline.

Sampling of Articles

Articles published between January 2000 and December 2016 from these two journals are selected and coded. The qualifying criteria for the articles to be included in the sample were that the article (1) employs an empirical component and (2) that the empirical component is examining an IS-related phenomenon.

This excludes empirical papers that examine IS scholars' views on promotion, journal quality, etc. Also, theoretical articles including statistical measuring debates, methodological views, editorials, and literature reviews were omitted from the sample. Further, two more articles were dismissed during the coding process due to their unique nature (see the more detailed explanation below). Therefore, in total, 228 articles are excluded from our review. This left us with 991 articles that were included in the analysis. These consist of 484 articles published in MISQ and 507 articles published in ISR.

Coding Scheme

All articles were coded based on the four attributes regarding (1) the nature of the social component, (2) the nature of the technical component, (3) the nature of the outcome that the social and/or technical components were directed toward, and (4) the relationship between the social and the technical components or components (see Table A1). As shown in Table A1, we predefined the values that could be assigned to three out of the four attributes (1, 2, and 3), and performed the coding deductively for these three aspects (Bandara et al. 2015). As for the attribute regarding the relationship between the social and the technical components, we performed inductive coding (Bandara et al. 2015). In other words, no predefined categories were used in the coding process, but, rather, we developed the categories based on the emergent patterns discerned in the articles based on an initial sample of 50 papers and refined through another sample of 100 papers. As explained in the following section, our efforts eventually led to the development of six categories characterizing how the relationships between the social and the technical components tend to be represented in our discipline.

Coding Procedure and Validity

To verify the reliability of the code, *qualitative inter-rater assessment* was conducted during all the coding stages. The coding and verification was conducted in the following four stages.

In *the first stage*, two of the authors conducted coding of a random sample of 50 articles (25 articles published in each journal). Then, the two authors met to discuss the issues and problems encountered during the initial coding process, which resulted in the refinement of certain aspects of the coding scheme (mostly related to the predefined values). The authors also reflected on the emerged patterns regarding the relationship (between the social and the technical) aspect, and agreed upon precise phrases that they would pay attention to when coding this attribute, such as the direction of the relationship and the nature of the relationship (one-directional, bi-directional, etc.).

In *the second stage,* two of the authors coded an additional 50 papers from each journal and compared notes for the emerging categories, especially regarding the attributes of the relationship between the social and the technical components of the focal study. This coding resulted in eight categories for one author, and six categories for the other author, with a total of nine distinct categories. Discussion between the two authors based on the papers reviewed led to the amalgamation of three of these nine categories, since these three categories represented variations/subtypes of other categories rather than separate categories. At this stage, a six-category coding scheme for relationship between the social and the technical components was agreed upon.

In *the third stage*, all articles were coded. No additional categories for the relationship attribute were discovered. Both coders randomly selected a sample of 50 articles from the other coder's work to check attributes and codes assigned. No new codes emerged at this stage.

In *the fourth stage*, the entire team checked the coding based on a sample of articles. Also two papers of a relatively unique nature were discussed. These papers were coded by the first two coders as non-IS papers and the team was consulted regarding these particular papers. The team decided that these two articles were not addressing, directly or indirectly, any technical component (one article focusing on movie broadcast and piracy, while the other focusing on general decision making of agents), and hence dismissed these two articles from the final analysis. In the end, the team agreed on the six categories that represent the distinct patterns of existing IS literature in terms of how published articles enacted the relationship between the social and the technical components. See Table A2 for a description for each of the six categories.

Table A1. Coding Scheme

Attributes	Explanation	Possible Values
Social component	The nature of the social component, if any, being investigated in the study	Nation/Society, Industry, Network, Government, Organization/Company, Community, Project Group/Team, Individual, Process, Multiple
Technical component	The nature of the technical component, if any, being investigated in the study	Web/Internet, Infrastructure, System, Platform, Hardware, Software, Data Sources, Multiple
Objectives	The nature of the outcome of the study	Instrumental, Humanistic, Both
Relationship	How the relationship between the social component and the technical component was captured in the study	No predefined values

Table A2. Summary of the Six Categories with Examples

Type	Name/Label	Description	Examples
I	Predominantly Social	Either the investigation only focuses on the social component, and does not directly address technical component OR the investigation mostly focuses on the social component, and the technical component is addressed in an indirect or contextual way	**Banker et al. (2011), MISQ**: Exploration of how firms' strategic positioning influences their CIO reporting structure, and how alignment of strategic positioning with reporting structure leads to improved firm performance **Gopal and Koka (2012), MISQ**: Investigation of the effects of formal contracts and relational governance on vendor profitability and quality in the CONTEXT of software outsourcing industry
II	Social Imperative on the Technical	Technology as a predominant outcome of social structures or processes	**Beaudry and Pinsonneault (2010), MISQ**: Exploration how human emotions influence the use of IT **Venkatesh et al. (2011), ISR**: Investigation of how network positions of health care professionals influence electronic healthcare system use and hence quality of care and patient satisfaction
III	Social and technical as additive antecedents to outcomes	Both social component and technical component are antecedents to certain outcomes; however there is generally no evidence of any interaction between the components themselves while producing these outcomes.	**Tanriverdi et al. (2007), ISR**: Investigation of how business process modularity and underlying IT infrastructure together influence the choice of sourcing mechanism **Wixom and Watson (2001), MISQ**: Examination of how a range of social factors (e.g., management support, resources, user participation) and technological factors (e.g., development technology and team skills) influence implementation success of data warehousing and hence system success.
IV	Social and technical as interactive to produce outcomes	Social and technical are both considered as critical to produce outcomes, but the focus is on the interplay between the two components (such as fit/alignment, reciprocal interactions, or entanglement/imbrication) that produce those outcomes	**Goh et al. (2011), ISR**: Investigation of how work routines and HIT (Healthcare IT) co-evolve and interact with each other in a HIT implementation **Strong and Volkoff (2010), MISQ:** Identification of different domains of organization-enterprise system misfit, and discussion of the problems experienced by users because of the misfit
V	Technical imperative on the social	Technology as the major antecedent to social outcomes, such as those in impact or evaluation studies	**Aron et al. (2011), ISR**: Investigation of how automation of core error prevention functions in hospitals influences medical error rates **Deng and Poole (2010), MISQ**: Exploration of how web interfaces (order and visual complexity) impact online behavior (approach tendency towards the website)
VI	Predominantly Technical	Focusing solely on how to develop or improve the technical (e.g., database algorithm) and very limited and direct concern about the role of the social.	**Arazy and Woo (2007), MISQ**: Study of the usefulness of statistical natural language processing techniques, and specifically of collocation indexing **Li and Sarkar (2011), ISR**: Development of a data-masking method for protecting private information against record linkage disclosure

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