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Pondering the Fault Lines of Anywhere Working (Telework, Telecommuting): A Literature Review

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Longitudinal Author Cocitation Mapping: The Changing Structure of Decision Support Systems Research (1969–2012)

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Contents

Abstract

The objective of this research is to map the scholarly landscape of the decision support systems (DSS) field. Author cocitation analysis (ACA) of a total of 3,602 citing DSS articles over the past 43 years (1969–2012) reconstructed a bird's eye view of the decision support system field through the identification of a group of 339 influential and responsible DSS researchers. ACA concludes that the DSS community has achieved several important prerequisite conditions defined by Kuhn to advance DSS as a coherent field.

Cocitation analysis uncovered several decision support system research subspecialties and revealed an ongoing change in the intellectual structure of the DSS field. It also identified a dynamic dimension of the DSS field to account for the ongoing changes in its "disciplinary matrix".

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Introduction

The word "history" comes from the Gr. Ἱστορία, which was used by Ionians in the 6th century B.C. for the search for knowledge in the widest sense. It meant inquiry, investigation, nor narrative. It was not until two centuries later that historikos, the reciter of stories, superseded the hitoreōn ἱστορέων the seeker after knowledge. Thus history began as branch of scientific research — much the same as what the Athenians later terms philosophy [Shortwell, 1964, p. 125].

The term "decision support systems" (DSS) was coined in the early 1970s [Alter, 1974, Meador and Ness, 1974, Keen and Morton, 1978]. Before the term DSS had formally been used, there were many other similar terms to refer to the same or similar systems such as computer-aided decision systems [Ferguson and Jones, 1969], computer-based decision systems [Seaberg and Seaberg, 1973], computer-based management decision systems [Sprague Jr. et al., 1974], decision calculus [Little, 1970], decision and information systems [King and Cleland, 1973, Bonini, 1963], decision-information systems [Montgomery and Urban, 1970], decision-oriented information systems [Boer, 1972], information and decision systems [Bonini, 1963], interactive computer systems [Keen, 1976], management information decision systems [Dickson,

1968], man–machine decision systems [Gerrity, Jr., 1971], man–machine planning systems [Vasarhelyi, 1977], and management support systems [Scott Morton, 1971].

Although the idea of using computers for making better decisions was published as early as 1963 [Bonini, 1963], the idea described by Ferguson and Jones [1969] is considered to be the first one discussing the basic idea of DSS in the DSS literature. Since this is the oldest article in the citing article databases I have created, my intellectual history of DSS begins in 1969. Over the past four decades (1969–2012), DSS has made progress toward becoming a solid academic field. This monograph documents a piece of the intellectual history of DSS concerning the progress of ideas made through the work of the combined labors of 339 authors in information systems (IS) and many other reference disciplines.[1] The term "history" refers to an account of past events. The definition of history used here is "the scientifically elaborated knowledge of the past" [Marrou, 1966]. The events can be broadly categorized as "management/governance of the IS function", "technology", "research themes", "research methodology", "education", and "infrastructure" (organizations, conferences, journals, etc.) like Hirschheim and Klein [2012] did.

The objective of this longitudinal study is to narrowly focus on the following aspects of DSS history,[2] by means of an empirical assessment

[1]Throughout this monograph, the term DSS field is used as a concentration in academic field of information systems (IS) which consist of transaction processing systems (TPS), management information systems (MIS), decision support systems (DSS), expert systems (ES), and executive information systems (EIS). In the 1970s, the term MIS was used as an umbrella term of all five subsystems. Now, to avoid possible confusion, many use MIS as a subsystem of IS to serve the needs of primarily middle management. Nevertheless, the other terms area and discipline are often used interchangeably.

[2]This monograph represents part of the DSS history of the collective "field view" of all authors' 2,769 DSS articles. Some [Hirschheim and Klein, 2012] may say "all histories are biased" and "what constitutes the key aspects of history is in the eye of the beholder." "Bias" is defined by the online dictionary (http://dictionary.reference.com/) as "a strong inclination of the mind or a reconceived opinion about something or someone." Reaching full consensus on the state of the field is in all probability not realistic. But the empirically derived grouping do provide the "best fit" in identifying the intellectual structure of the field [Bayer et al., 1990].

of the DSS literature over three consecutive time periods, 1969–1990, 1991–2005, and 2006–2012.

- patterns of social constructions (the intellectual structure and) of the DSS field
  - major schools of thoughts
  - cumulative research tradition
  - reference disciplines
- ongoing dynamic changes in the intellectual structure
- diffusion of ideas
  - From the reference disciplines to DSS research subspecialties
  - Within DSS research subspecialties.

Since the early 1980s, DSS as an academic field has been challenged and criticized. In 1980, a founding father of DSS stated at the first international conference on information systems that "At present, MIS research is a theme rather than a substantive field" [Keen, 1980, p. 9]. Keen's statement was not specifically referring to the DSS field. Rather, it referred to information systems in which DSS is a subsystem. Another notable criticism came from Naylor [1982, p. 94], who said that "DSS is not based on any formal conceptual framework, and this lack casts serious doubts on its substantive underpinning" and that DSS "exists primarily in the minds of academic visionaries." In a reply to Naylor, Blanning [1983, p. 76] stated that "If DSS is a response to a change in the real world of information processing for which new research is required, it will survive temporary exuberance, and if not, the exuberance will bring it to an end quickly." Furthermore, he suggested that "the DSS area must establish a research tradition that identifies researchable questions (that is, questions that both respond

to the changes that are taking place in the market for information services and that are amenable to research."

Keen defined cumulative tradition as the one where "researchers build on each other's and their own previous work" and "definitions, topics and concepts are shared." Cumulative traditions refer to the long-established way of increasing the knowledge by successively building new knowledge and adding it to previous knowledge of either his own or other researchers.

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