Evolution of the Intellectual Structure of Operations Management: A Citation/Co-Citation Analysis

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Introduction

Overview of Bibliometric analysis
- “field’s view of itself” (White and Griffith, 1980)

Illustrative study: Exactly what is OM?

Referencing Software

To collect, manage and publish reference lists
- All software is very similar in function
  - EndNote – needs to be installed on PC
  - Refworks – on line via browser
  - JabRef – open source
  - Can import and export between these very easily
- Barrier was getting the information into...
- Now can import full information direct from databases:
  - SCOPUS
  - ZETOC
  - Other databases

Bibliometrics: definition

- Scientific study of data in literature
- Patent citation analysis
  - Provides map of how technology develops
  - Linkages between
    - Technology fields
    - Inventors
    - Firms
- Citation study of literature
  - Main contributors
  - Ranking of journals
  - Themes and how they emerge
Bibliometrics: data
- Data sources
  - ISI Web of Science Citations Index
  - Patent databases
  - Any other source
- Analyse the publications themselves
  - Authors/co-authors
  - Titles
  - Keywords
  - Abstract words
- Analyse Citations
  - Frequencies and patterns

ISI Raw Data to tagged format
- Tools to help: Bibexcel, SITKIS
  - Tutorial: http://www4.rhbnc.ac.uk/~uhtm001/bibexcel-primer.pdf

Data Preparation - standardise
- Author names
  - How many initials?
- Journal/Book Title Variations
  - Many different ways need correcting
- Book editions
- Use search and replace routines based on ranked frequency lists
- Construct database/excel files to analyse

Bibliometrics: measures
- Many different ways to examine data
  - Frequency tables and rankings
  - Groups in the data: Co-words, authors, citation frequency networks
    - Inter- and intra-discipline linkage
    - Concentrations of themes and their relations
  - Bibliometric coupling
    - How close are papers based on common citations?
- Some Measures
  - Journal impact factor
    - No. citations relative to number of articles published
  - Immediacy index
    - Initial rate of citation
    - How quick are ideas spreading?
  - Citation half-life
    - How long does the impact last?

Analysis tools
- Frequencies
  - Tables and rankings
- Network Data (co-citations, coupling, etc)
  - SPSS/SAS etc
    - Principal components
    - MDS
    - Clustering routines
  - UCINET/Netdraw/Pajek/Gephi
    - Network measures and graphs

OM Study: Method and Data
- Citation/co-citation analysis
- Full contents (1980 to 2006) of:
  - JOM and IJOPM and POM (started 1990)
- Sources:
  - Social Science Citations Index – not complete
  - Own generated – html, pdf’s, import and convert
- Source articles: 2,978
- Giving 80,917 citations
- Data standardisation – missing data, spellings, book editions, author initials
Tips for getting cited

- No substitute for publishing in the top journals
  - If looking at 2nd tier (i.e. none FT-40 list), ensure journal is indexed full text in one of the big databases
- Review type articles are easily cited as they justify many arguments
- Tell everyone about the article, including personal web pages, citeulike, etc.

Conclusions

- Citation/co-citation provides field’s view of itself
- Intellectual structure of OM
  - 12 areas identified
  - Shift away from Inventory and process design
  - Focus towards robust research methods and integrated ideas (SCM)
  - Manufacturing strategy lost importance recently
- OM journals have different focus
- Future work: location of OM within the journal space – where is OM cited outside OM?