Emergent trends and passing fads in project management research: A scientometric analysis of changes in the field

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Abstract

This research uses quantitative techniques to reveal trends in project management related research published between 1962 and 2012. The data set for this research includes 94,472 unique records sourced from the Scopus and ISI Web of Science databases. The keywords and abstracts that authors have used to describe their work have been analysed in terms of word frequency, rate of change and the co-occurrence of keywords and abstract terms. This data has been used to construct network maps of the field, depicting the relative association between key topics. Comparisons are made between the frequencies of key terms and rapid changes in the ways that terms are used in the literature to identify emergent trends and passing fads. Amongst other findings, this research has revealed evidence to indicate a change in emphasis in project management research from a technical engineering orientation to one which encompasses a broader organisational perspective.
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1. Introduction

Project management (PM) is a diffuse field of research, contributed to by practitioners and researchers publishing in a wide variety of sources, from journals exclusively focusing on PM, to publications targeted to the specific industries or areas of application where projects are managed. Research into PM continues to change, a phenomenon which can be attributed to developments in the body of knowledge, but also to the multi-disciplinary nature of the field, and the expansion of PM into new practice domains. In addition, "Fad effects affect the field of project management…" (Urli & Urli, 2000, p. 40), lending additional diversity to PM research, as academics draw on learning from related disciplines to address new issues in the field.

However, it can be difficult for an individual to develop a holistic perspective of the whole of project management research. Individual researchers tend to remain entrenched in local research collaborations and institutional boundaries, focusing on necessarily myopic research topics, and the particular research papers that result from a limited range of search terms. It can become difficult to perceive the emergent changes in a field from a small number of its parts. Other authors have noted that "…changes in the contexts for project management are an important consideration for research" (Carden & Egan, 2008, p. 7), providing benefit to those who seek to understand how the field as a whole is developing.

The research presented in this paper will particularly be of interest to academics, researchers and research students interested in understanding how research into project management is changing. This research will be of interest to management consultants looking to anticipate changes to the field, while it is also anticipated that the methodological findings will be of interest to the scientometric research community.

2. Previous research

Developing an understanding of the ways in which a whole field of research is developing is a problematic issue which a

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wide variety of authors has considered important. Evidence for this can be seen in the large number of previous articles which have addressed aspects of this issue, and the variety in techniques authors have employed. The earliest study of changes in project management research was conducted by Betts and Lansley (1995), who reviewed publications from 1983 to 1992 in the International Journal of Project Management (IJPM). This study used an a priori classification of publications, and an analysis of how frequently individual authors and institutions contributed to the journal. Comparable analyses of changes in PM research were made by Themistocleous and Wearne (2000) and Zobel and Wearne (2000), two papers which used the same methods to classify PM research. The first of these papers classified articles published between 1984 and 1998 in IJPM and the Project Management Journal (PMJ), while the second focused on four PM conferences that were held between 1996 and 1997. Both papers classified research according to its alignment with the Association for Project Management's Body of Knowledge.

Prior to the research presented in this paper, the three largest studies enquiring into general trends in PM research were arguably those conducted by Urli and Urli (2000), Kloppenborg and Opfer (2002), and Crawford et al. (2006). Urli and Urli (2000) studied PM research in the ABI-Inform database from 1987 to 1996. Their research brought together 3565 PM-related articles using a scientometric keyword analysis technique. Kloppenborg and Opfer (2002) also drew upon the ABI-Inform database, amongst other sources, to review PM research from 1960 to 1999, in a study which has been referred to as "…the most comprehensive review to date of the project management literature…" (Carden & Egan, 2008, p. 7). Their research also involved workshops to review the abstracts of 3554 records, categorising research against PMBOK Guide (PMI, 1996) knowledge areas and process groups. Crawford et al. (2006) also enquired into changes in keyword use, this time from IJPM and PMJ articles from 1994 to 2003 using a keyword analysis technique based on corpus linguistics and an a priori classification based on competency based standards. Their paper is also significant in that it is one of the few that have attempted to consolidate the findings from earlier studies.

More recently, Carden and Egan (2008) conducted a qualitative study of the literature, reviewing a selection of publications that the authors considered relevant from non-traditional industries published from 1968 to 2004. Kwak and Anbari (2009) have also recently conducted research into the content of publications in 18 general management and business journals from 1950 to 2007, grouping articles relevant to PM according to eight categories. Similarly, Söderlund (2011) has reviewed the content of 30 journals from general management and allied disciplines, identifying seven different schools of thought in project management research. Other comparable research has been conducted by Artto et al. (2009) and Hanisch and Wald (2012); however these papers have limited the scope of their research to a small subset of publications, focusing on program management in the former case and theoretical perspectives in the latter. Biedenbach and Müller (2011) applied an a priori classification method to reflect on research presented at the IRNOP (International Research Network on Organising by Projects) conferences held in 1994, 2000 and 2007 to investigate the relationship between research methods, epistemology, and ontology. Other recent studies of the PM literature focusing on trends in how PM research is conducted include those by Smyth and Morris (2007) and Söderlund (2004a, 2004b).

As previously identified by Crawford et al. (2006), review of this literature reveals not just the variety of research that has been conducted into changes in PM research, but also the number of different methods that have been used. A criticism that can be raised against some of the previous research relates to the use of a priori, rather than emergent, classification systems. In using an a priori classification system, researchers attempt to understand their findings through categories they have brought to the research, rather than ones that are directly related to the research data. A consequence of this approach is that new developments are communicated through earlier dominant structures, which may limit the ability of the researcher to see or communicate significant developments which fall between or outside pre-determined categories. An exception to this is the study by Urli and Urli (2000) who used scientometric techniques to uncover "…the most significant themes as defined by academics themselves rather than by an a priori classification" (p. 34). The research presented in this paper builds on Urli and Urli's study, using similar scientometric techniques across a broader time scale and range of sources. Key characteristics of previous studies have been summarised in Table 1.

Three key factors distinguish the research presented in this paper from previous studies. This research draws on a considerably larger data set, over a longer period, than previous studies. Unlike most of the earlier research, this paper has not distinguished between sources specific to project management or sources from specific industries, arguably allowing the data to provide a more accurate perspective on the field as a whole. Furthermore, unlike many previous studies, this research has not applied an a priori classification system, instead letting the findings emerge directly from the research data.

3. Research methodology

This research provides a holistic analysis of the field of project management research using scientometric techniques, a research method which has also been referred to as knowledge domain visualisation or domain mapping (Hook & Börner, 2005), and can be considered a part of the more general field of information visualisation (Hook, 2007: 442). It is a quantitative method, used to study academic and other scientific publications, which has emerged from citation based domain visualisation (Chen et al., 2011: 131). Scientometric research aims to provide:

"…the graphic rendering of bibliometric data designed to provide a global view of a particular domain, the structural details of a domain, the salient characteristics of a domain (its dynamics, most cited authors or papers, bursting concepts, etc.) or all three" (Hook & Börner, 2005: 201).

Given the volume of data available to researchers, images of changes and developments in academic disciplines help to support