

## **PROJECT MANAGEMENT RESEARCH TRENDS OF ALLIED DISCIPLINES**

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### **Abstract**

This study looks at project management from the perspective of its relationship to allied disciplines in the management field. By exploring, identifying, and classifying management journal articles of project management-allied disciplines, the evolution and trends of project management research are revealed. This study specifically investigates the research in allied disciplines from the management academy's viewpoint, instead of looking at project management research trends from the project management community's perspective. The goal of this research is to better understand project management from the management world, and argues that project management is a legitimate academic discipline by reviewing research trends of its allied disciplines. To thoroughly investigate project management research in allied disciplines, it is necessary to review major journal publications in the management and business field. Because the management and business field is very broad, this research identified and defined eight different categories of allied disciplines in project management. Then, we selected 18 top business and management academic journals that published articles related to project management to review and categorize journal articles into these eight different areas. By chronologically analyzing and categorizing more than 500 journal articles from the 18 journals in the business field published from the 1950s to the summer of 2007, this study analyzes publications trends of different domains (operations research vs. organizational behavior vs. practice) and different journals and predicts the future of project management as an academic discipline in the mainstream management research.

### **Introduction**

Project management has been practiced for thousands of years, as evidenced by the pyramids, the Great Wall of China, Greek architecture, and Roman roads and viaducts. In the 1930s, the construction project planning, controlling, and coordination of six general contractors were required for the Hoover Dam project. In the 1940s, project management techniques were applied to the Manhattan Project. In the 1950s, the U.S. Navy employed modern project management methodologies in its Polaris project. During the 1960s and 1970s, the U.S. Department of Defense, NASA, and large engineering and construction companies used project management principles and tools to manage large-budget, schedule-driven projects. It has been about a half a century since organizations started applying systematic project management tools and techniques to complex projects. During that time, researchers and practitioners conducted theoretical research and initiated discussions related to project management organizational structures, tools, techniques, and principles.

Project management as a discipline has evolved from three very different management fields. One was from management science (MS) and operations research (OR) applications, where researchers are interested in quantitative formulation, modeling, analysis, and applications. Good examples are the introduction in the 1950s of the Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT) as extensions of OR applications. Project management research related to MS/OR applications during the 1950s and 1960s included linear programming (Charnes & Cooper, 1957), economic lot scheduling (Rogers, 1958), production and inventory control (Zangill, 1966; Schussel & Price, 1970), CPM computations and applications (Crowston & Thompson, 1967), and decision-making applications (Kunreuther, 1969).

Organizational behavioral (OB) science and practice-oriented management were two other management entities that showed great interest in project management. From the late 1950s to 1960s, *Harvard Business Review* (practice) and *Academy of Management Journal* (OB) published numerous articles related to project management, discussing the project manager (Gaddis, 1959), PERT applications (Miller, 1962), Research and Development (R&D) project applications (Roman, 1964), project organization (Middleton, 1967), project control (Howell, 1968), and project leadership (Hodgetts, 1968). It is important to note that even in the late 1960s, organizational scientists struggled to understand the ambiguous roles, responsibilities, and authorities of project management (Goodman, 1967).

## **Project Management Research in the Management Field**

There has been a long debate in the management education community as to whether “project management” is a practice or an academic discipline. In the engineering field, where the tools and techniques of project management have been applied and implemented successfully, the answer to this question is yes. The civil engineering field has the construction engineering and management discipline, where people learn and implement planning, managing, and controlling engineering construction projects. The industrial engineering field applies quantitative methods to manufacturing systems analysis and production planning and scheduling to achieve effective productivity. However, when it comes to the business and management field, business scholars appear puzzled and unconvinced of the notion that project management is an academic discipline. The origin, history, and evolution of project management, and its academic background, foundations, and underlying theory, have been debated and studied only to a limited extent from the management field’s academic perspective, and supporting literature is greatly lacking. There has been some study among project management researchers to identify and rethink project management (Winter & Smith, 2006), but the summary was conceptual in nature and the research failed to transfer the message outside of the project management field to a broader management audience.

This study investigates project management research from the perspective of its relationship to allied disciplines in the management field. By exploring, identifying, and classifying top management journal articles related to project management research in its allied disciplines, the origin, evolution, and trends of project management research in the management field are revealed. This study specifically investigates project management research in allied disciplines from the management academy’s perspective, by not observing project management research trends from the perspective of the project management community. The goal of this research is to better understand project management from the perspective of the management world and the trends of specific disciplines, and to provide compelling arguments that project management is a legitimate academic discipline.

## **Previous Research on Analyzing Publication Trends**

For the purpose of this study, we have conducted extensive literature reviews and categorized previous research on analyzing publication trends into four different domains: (1) Operations Research/Management Science/Productions and Operations Management (OR/MS/POM); (2) Technology Management and Entrepreneurship, and Information Technology/Information Systems (IT/IS); and (3) Project Management and Construction Management.

### **OR/MS/POM**

Reisman and Kirschnick (1994) investigated U.S. flagship OR/MS journals over a 30-year period. They specifically analyzed *Operations Research*, *Management Science*, and *Interfaces*, the key OR/MS journals, published by INFORMS. One of their major findings was a devolution or natural drift toward “professional regression where a small professional elite core maintains intellectual control over a much wider jurisdiction.” Ormerod and Kioussis (1997) reviewed four journals based in the United Kingdom/Europe, which were *Journal of the Operational Research Society*, *OMEGA*, *OR Insight*, and *European Journal of Operational Research*. They categorized the journal articles into “theory” and “applications” for in-depth analysis. The study found that most journal papers were theoretical in nature, and practical applications of OR/MS for practitioners were limited and declining. Corbett and Van Wassernhove (1998) analyzed the trends of OR in the United Kingdom, and highlighted the development of soft OR and the governmental pressure for assessing research quality of OR applications. Barman, Hanna, and LaForge (1991, 2001) reviewed the perceived relevance and quality of production and operations management

(POM) journals by academicians, Soteriou, Hadjinicola, and Patsia (1999) looked at the POM journals from the European perspective, and Vokurka (1996) analyzed the journals using journal citation analysis.

Goh, Holsapple, Johnson, and Tanner (1997) conducted periodical citation analysis of three prominent POM journals and analyzed the articles by using four different dimensions: breadth, consistency, trend, and intensity of recognition. Prasad and Babbar (2000) reviewed literature on international operations management from 28 leading operations management, international business, and management journals over a 10-year timeframe. They found that international operations management research provided economic benefits to firms. They also suggested expanding research and application of international operations management to non-profit organizations.

Keefer, Kirkwood, and Corner (2004) analyzed trends in decision analysis applications by looking at top English-language operations research and related journals. They found that overall rate of publication in applications of decision analysis has increased from the 1970s to the 1990s, and the research covered a wide area of spectrum, ranging from private and public sectors to strategic and tactical decisions. They also suggested future needs for advancing decision analysis practice. Recently, Olson (2005) analyzed journals in the operations management field and related disciplines. She conducted two surveys (in 2000 and 2002) of faculty members at top 25 US business schools, obtained quality ratings and rankings of 39 journals, computed five-year impact factors for 29 of these journals, and developed a ranking based on these impact factors.

### **Technology Management, Entrepreneurship, and IT/IS**

Reisman (1994) reviewed the last 40 years of the technology management discipline and predicted the future of technology management. He predicted that concerns for the environment and innovations in small and medium-sized corporations for process and product will lead to new areas of research. He particularly mentioned that academics should view technology management with flexibility rather than fixed phenomenon, and allowed for inputs from nontraditional fields of practice. He emphasized the importance of bringing practical real-world problems into the classroom setting and to research.

Liao (2005) surveyed technology management development using a literature review and classification of articles. Based on 546 articles he reviewed, he categorized technology management into eight areas: technology management framework, general and policy research, information systems, information and communication technology, artificial intelligence/expert systems, database technology, modeling, and statistics methodology. Science Citation Index from Thomson ISI and the Emerald Group Publishing's Index were used as a basis to characterize and analyze the development and evolution of *Technovation* (Merino, Pereira do Carmo, & Alvarez, 2006). Linton and Thongpapanl (2004) conducted a citation analysis of 10 leading technology and innovation management (TIM) specialty journals. They found that TIM journals have specific concentrated areas in addition to traditional management disciplines. More recently, Linton (2006) developed a Modified Impact Factor (MOF) to analyze TIM journals.

*Academy of Management Journal* reviewed entrepreneurship research to report on what has been published, and what the future might hold in the area of entrepreneurship (Ireland, Reutzell, & Webb, 2005). Ireland et al. (2005) categorized focal areas of entrepreneurship into seven areas: small business, institutional entrepreneurship, international entrepreneurship, corporate entrepreneurship, initial public offerings, individuals or entrepreneurs, and new ventures. The authors suggested that there is large progress in entrepreneurship research and concluded that the research has positive trends in the future.

Lee, Gosain, and Im (1999) investigated the evolution of information system themes and differences between research and practice. *Information & Management (I&M)* journal profiled research it published over a period of 13 years (Palvia, Pinjain, & Sibley, 2007). The study reported that IS research is dominated by U.S.-based universities, but international researchers are catching up, and survey methodology is still the most popular research methodology. The paper concluded that the trends of IS research are promising.

### **Project Management and Construction Management**

In project management, Betts and Lansley (1995) investigated papers published in *International Journal of Project Management* for first 10 years of its publications and found that papers mainly reviewed practical experience and literature, contributed to interesting insights and new tools and techniques, and the construction industry remained predominant, followed by the service sector (Themistocleous & Wearne, 2000). In terms of theory-building and the

theoretical basis of project management, there was large room for improvement. The authors concluded that the future development of project management as a discipline should be done by building and testing different research models so that a theory of project management may emerge. Crawford, Pollack, and England (2006) analyzed the trends of emphasis within project management literature by investigating two flagship project management journals, *Project Management Journal* and *International Journal of Project Management*. They found a reduced focus on interpersonal issues and quality management and increased research in project evaluation, improvement, and strategic alignment.

In construction management, historical background and perspectives on engineering and construction research trends were examined by reviewing articles published in *Journal of Construction Engineering and Management (JCEM)* for 18 years (Abudayyeh, Dibert-DeYoung, & Jaselskis, 2004). The study found an increasing number of international submissions to *JCEM*, and suggested increasing research collaboration between industry and academia, and government and academia. The paper emphasized practical research and concluded with a note that without industry's input and collaboration, advancement of construction management research would be isolated and alienated.

## Research Approach

To thoroughly investigate project management research in allied disciplines, this research reviewed major journal publications from the management and business field. Respected journals in the management community, including The Institute for Operations Research and the Management Sciences (INFORMS), Academy of Management (AOM), Institute of Electrical and Electronics Engineers (IEEE) and others, were analyzed in detail. Since the management and business field is very broad, in this research we identified and defined eight different categories of project management-allied disciplines. Then we selected 18 top business and management academic journals that published articles related to project management to review and categorize journal articles into these eight different areas. By chronologically analyzing and categorizing more than 500 journal articles from 18 top journals in the business field published from 1950s to summer of 2007, this study analyze publications trends of different domains (OR vs. OB vs. Practice) in different journals. This study will help us better understand the evolution of project management as a field and discipline, and provides suggestions for future project management research.

## Top Management Journals

Business schools appear to be obsessed with their annual rankings by different entities such as *Business Week*, *Wall Street Journal*, *U.S. News and World Report*, and *Financial Times*. For the *Financial Times*, one of the criteria used to rank the business school is to look at faculty publications in their pre-defined top 40 journals (a.k.a. FT40). This study investigated journal articles from the FT40 (including publications from INFORMS and AOM), and *IEEE Transactions on Engineering Management* as a primary data set. One can argue that the FT40 list is a specific list solely used to rank business schools in the world and may not represent the management research properly. We used FT40 list as a starting point. Rather than trying to define top journals in their represented fields in management, we thought that reviewing articles from this list will give us more legitimacy and a firm grounding in project management research and its relationship to allied disciplines. As a result, we have identified 18 top academic mainstream research journals that represent OR, MS, OB, and Practice:

### Academy of Management

1. *AOM Perspectives/Executives (AMP)*
2. *AOM Journal (AMJ)*
3. *AOM Review (AMR)*

### INFORMS

4. *Operations Research (OR)*
5. *Management Science (MS)*
6. *Organization Science (OS)*
7. *Information Systems Research (ISR)*
8. *Interfaces (INTFCS)*

#### Practitioners

9. *Harvard Business Review (HBR)*
10. *California Management Review (CMR)*
11. *Sloan Management Review (SMR)*
12. *Long Range Planning (LRP)*

#### IEEE Engineering Management Society

13. *IEEE Transactions of Engineering Management (IEEE-TEM)*

#### Other Journals from FT40

14. *Journal of Operations Management (JOM)*
15. *MIS Quarterly (MISQ)*
16. *Strategic Management Journal (SMJ)*
17. *Administrative Science Quarterly (ASQ)*
18. *Journal of Small Business (JSB)*

One can argue that project management is a focused field and there are specific journals dedicated to project management research, such as *Project Management Journal* and *International Journal of Project Management*, as well as construction management-related journals, such as *Journal of Construction Engineering and Management* and *Journal of Management in Engineering*, published by the American Society of Civil Engineers and *Construction Management and Economics*, published in the U.K., and others. These journals are flagship journals that very well represent the project management field and every article in these journals discusses project management principles, tools, and techniques. The project management community already acknowledges that project management is an academic discipline with practical applications. To establish a strong foundation in the management field, it is essential that we review journal papers that are not published in the project management research domain but in key management disciplines, and analyze the trends of project management research in allied disciplines. Therefore, this study selected the FT40 list as a basis to identify journal articles that are related to project management in their representative management field.

### **Eight Allied Disciplines**

Eight allied disciplines were identified and defined to incorporate broad research publications in the project management field. The study team believed that these eight categories well represent the allied disciplines where one can find project management research. They are the following:

1. Operations Research/Decision Sciences/Operation Management/Supply Chain Management (OR/DS/OM/SCM) refers to the discipline associated with quantitative decision analysis and management principles, including various optimization tools and techniques, network analysis, resource leveling, simulation, and so forth.
2. Organizational Behavior/Human Resources Management (OB/HR) refers to the discipline associated with organizational structure, organizational dynamics, motivation, leadership, conflict management, and so forth.
3. Information Technology/Information Systems (IT/IS) refers to the discipline associated with the use of computers and computer systems to process, transmit, store, and retrieve information for better management decisions.
4. Technology Applications/Innovation/New Product Development/ Research and Development (TECH/INNOV/NPD/R&D) refers to the discipline associated with the concepts of making innovative and technological improvements and the research and development of entirely new products, services, and processes.
5. Engineering and Construction/Contracts/Legal Aspects/Expert Witness (EC/CONTRACT/LEGAL) refers to the discipline associated with the use and application of a broad range of professional expertise to resolve issues related to engineering and construction, contracts, expert witnesses, and their legal implications.

6. Strategy/Integration/Portfolio Management/Value of Project Management/Marketing (STRATEGY/PPM) refers to the concepts of organizing and managing resources to maximize profit, minimize cost, and support the overall strategy of the organization.
7. Performance Management/Earned Value Management/Project Finance and Accounting (PERFORMANCE/EVM) refers to the concepts and techniques that measure project progress objectively by combining measurements of technical performance, schedule performance, and cost performance.
8. Quality Management/Six Sigma/Process Improvement (QM/6SIGMA/PI) refers to the concepts of improving processes, minimizing defects, and reducing costs by implementing continuous improvement principles and specific measures and metrics.

The research team used these eight categories as the basis for analyzing allied disciplines in project management.

### Journal Publications Trend Analysis

Eighteen journals were reviewed and analyzed by using EBSCOhost research database. EBSCO is popular among libraries, schools, and other institutions. It serves thousands of libraries and other institutions with premium content in every subject area. EBSCOhost has archived manuscripts from the very first journal issues going back to the late 1950s.

Papers published in IEEE-TEM were searched by using *IEEE Xplore* journal database run by IEEE. It is important to note that *IEEE Xplore* only allows searching papers for the last twenty years; therefore, for IEEE-TEM papers we were able to identify papers related to project management research in allied disciplines since 1988. The research team believed that this limitation would not affect the overall analysis of the papers published.

The research team applied a broad definition of project management, and included anything that has to do with planning, managing, controlling, and executing projects and resources. The journal papers we analyzed were published up to June of 2007. We identified 537 papers published in 18 top management journals. Table 1 shows the overall distribution of journal papers that were published that dealt with project management and its allied disciplines and Figure 1 shows the distribution of papers for the 18 journals.

**Table 1. Trends of Journal Publications of Allied Disciplines in Project Management**

Rank	18 Journal Lists	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2007	Total	%
1	<i>IEEE-TEM</i>	0	0	0	3	39	54	96	18%
2	<i>MS</i>	2	8	20	18	16	27	91	17%
3	<i>LRP</i>	0	0	10	17	18	11	56	10%
4	<i>HBR</i>	2	9	8	12	7	10	48	9%
5	<i>INTFCES</i>	0	0	6	13	6	8	33	6%
6	<i>JOM</i>	0	0	0	8	12	13	33	6%
7	<i>AMJ</i>	0	5	8	3	8	8	32	6%
8	<i>OR</i>	1	3	6	3	10	3	26	5%
9	<i>CMR</i>	0	4	3	2	6	10	25	5%
10	<i>MISQ</i>	0	0	1	13	5	1	20	4%
11	<i>AMP</i>	0	0	0	0	9	9	18	3%
12	<i>ISR</i>	0	0	0	0	7	10	17	3%
13	<i>SMR</i>	0	0	4	4	5	0	13	2%
14	<i>AMR</i>	0	0	2	3	2	4	11	2%
15	<i>SMJ</i>	0	0	0	1	4	4	9	2%
16	<i>OS</i>	0	0	0	0	1	4	5	1%
17	<i>ASQ</i>	0	1	1	1	0	0	3	1%
18	<i>JSB</i>	0	0	0	0	1	0	1	0%
	<b>Total</b>	<b>5</b>	<b>30</b>	<b>69</b>	<b>101</b>	<b>156</b>	<b>176</b>	<b>537</b>	<b>100%</b>
	<b>Percentage</b>	<b>1%</b>	<b>6%</b>	<b>13%</b>	<b>19%</b>	<b>29%</b>	<b>33%</b>	<b>100%</b>	

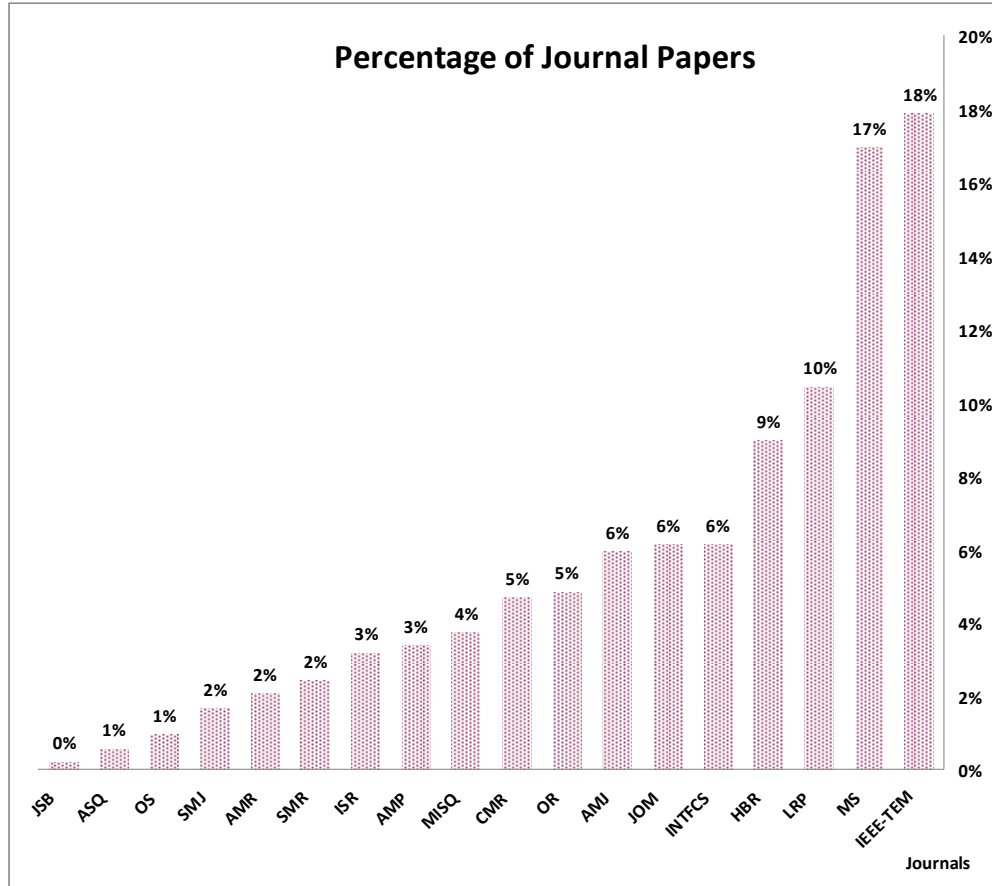


Figure 1. Percentage of Papers Published in Eighteen Journals

*IEEE-TEM* (18%) had the most papers (even though the database only allowed us to search for papers published in the last 20 years), followed by *Management Science* (17%), *Long Range Planning* (10%), and *Harvard Business Review* (9%). Papers published in these four journals (two journals were practice-oriented, and two were more theory-oriented) added up to 55% of the total papers published in project management-allied disciplines. *Interfaces* (6%), *Journal of Operations Management* (6%), *Operations Research* (5%), and *California Management Review* (5%) followed next in the list of journals. It is interesting to note that the top nine journals published more than 80% of the total papers related to project management. *Strategic Management Journal* (9 papers), *Organization Science* (5 papers), *Administrative Science Quarterly* (3 papers), and *Journal of Small Business* (1 paper) had the least number of papers.

Publications related to project management research in allied disciplines started to increase substantially in the 1980s. In fact, over 80% of the papers were published after 1980. This is when project management principle, tools, and techniques started to gain wide interest among academicians and practitioners. Project management tools and techniques started to be applied beyond large engineering-construction or aerospace-defense projects, and widespread use of personal computers greatly contributed to the popularity of project management and related research. Since the 1990s, project management-related papers can be seen in every journal.

Figure 2 presents journal publication trends since from 1980. *Academy of Management Review*, *Information Systems Research*, *California Management Review*, *Harvard Business Review*, *Management Science*, and *IEEE Transactions on Engineering Management* are the key journals that showed an increase in publication of 50–100% from the 1990s to the 2000s. Overall, there is a strong positive publications trend of project management-related research in all 18 journals.

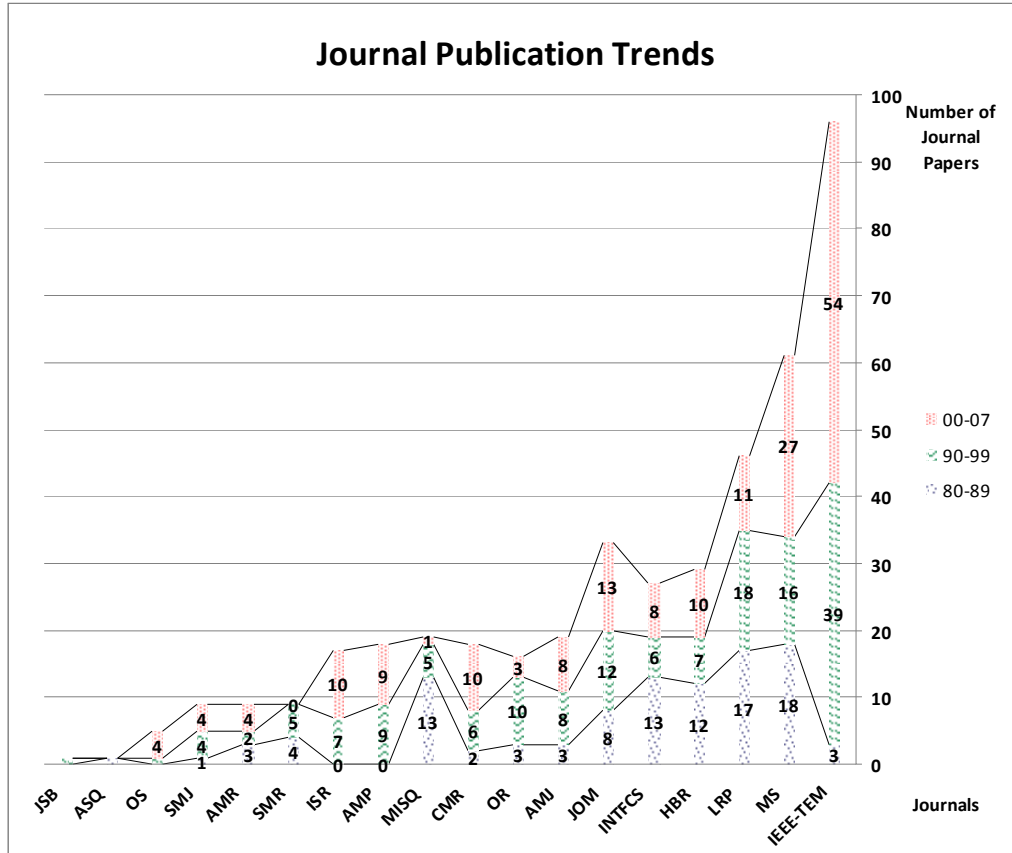


Figure 2. Eighteen Journal Publication Trends from 1980 to 2007

### Allied Disciplines Trend Analysis

The research team also wanted to learn more about what kind of allied disciplines covered project management research, and further analyzed the trends of occurrences of allied disciplines in top management journals using eight categories. Based on the 537 papers that we investigated, we coded each paper in up to three categories. For example, let us say that there is a paper dealing with “Information Technology implementation project measuring performance using earned value management in an R&D organization.” The paper would be coded as covering IT/IS (IT implementation issues), PERFORMANCE/EVM (project effectiveness measurement using EVM), and TECH/INN/NPD/R&D (new product development projects). Some papers were coded for only one or two categories. Based on this coding scheme, we identified 980 total occurrences using eight disciplines/categories from the 537 papers, as shown in Table 2.

Overall, more papers were published in different disciplines in the 1980s (19%), 1990s (30%), and continuing into the 2000s (31%), showing a greater interest in project management research in allied disciplines. STRATEGY/PPM (30%) and OR/DS/OM/SCM (23%) appeared most among allied disciplines. In particular, STRATEGY/PPM was always the most popular subject, starting in the 1950s, with a strong and continued upward trend in research interest. Scholars and practitioners have been interested in applying project management principles, tools, techniques, and concepts to organize and manage resources for maximizing profit, minimizing cost, and supporting the overall strategy of the organization. Regarding OR/DS/OM/SCM, it is only natural that OR/DS/OM/SCM ranked second, since project management has strong roots in OR/DS/OM/SCM. The appearance and research interest in OR/DS/OM/SCM seem to be slowing down in the 2000s and recently flattened out.



**Table 2. Journal Publications Trends based on Eight Allied Disciplines**

Allied Disciplines	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2007	TOTAL	%
<b>OR/DS/OM/SCM</b>	3	20	37	49	65	54	<b>228</b>	<b>23%</b>
<b>OB/HRM</b>	1	5	18	14	46	43	<b>127</b>	<b>13%</b>
<b>IT/IS</b>	2	2	7	22	35	37	<b>105</b>	<b>11%</b>
<b>TECH/INNOV/NPD/R&amp;D</b>	0	1	12	13	39	46	<b>111</b>	<b>11%</b>
<b>EC/CONTRACT/LEGAL</b>	1	4	2	4	10	7	<b>28</b>	<b>3%</b>
<b>STRATEGY/PPM</b>	2	10	48	74	78	83	<b>295</b>	<b>30%</b>
<b>PERFORMANCE/EVM</b>	1	6	10	11	12	28	<b>68</b>	<b>7%</b>
<b>QM/6SIGMA/PI</b>	0	1	2	1	7	7	<b>18</b>	<b>2%</b>
<b>Total</b>	<b>10</b>	<b>49</b>	<b>136</b>	<b>188</b>	<b>292</b>	<b>305</b>	<b>980</b>	<b>100%</b>
<b>Percentage</b>	<b>1%</b>	<b>5%</b>	<b>14%</b>	<b>19%</b>	<b>30%</b>	<b>31%</b>	<b>100%</b>	

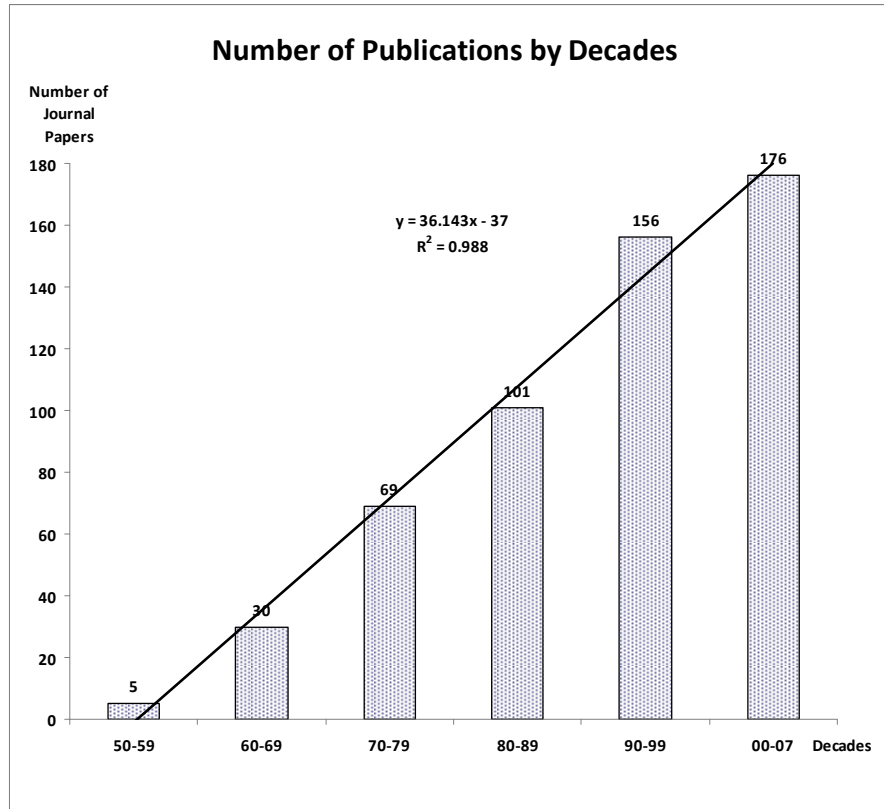
In OB/HRM, another major field that has a strong theoretical foundation related to project management, research interests peaked in the 1990s and started to flatten out as well. IT/IS and TECH/INNOV/NPR/R&D showed a steady increase in the number of papers categorized from the 1990s. Interest in PERFORMANCE/EVM spiked more than 100% in the 2000s. However, in terms of overall research interest, the proportion was very small (7%). This could be interpreted as researchers realizing the benefits of applying and implementing project management concepts and techniques that measure project progress objectively by combining measurements of technical performance, schedule performance, and cost performance.

EC/CONTRACT/LEGAL (3%) and QM/6SIGMA/PI (2%) had the least appearance of related publications. It is important to note that if we broaden the journals that we analyzed and investigated, the result could be totally different for these two categories. EC/CONTRACT/LEGAL is probably the most published area in project management among all the allied disciplines if we included the construction engineering and management-related journals, as well as project management-focused journals. The same applies to QM/6SIGMA/PI, as project management and QM/6SIGMA/PI share many of the key principles, tools, and techniques, and there are plenty of QM-dedicated journals.

### Future Project Management Research Trends

Table 1 showed detailed distributions by journals and decades. Figure 1 showed that the top four journals published more than 50% of the total papers related to project management. Figure 2 presented journal publication trends since the 1980s. Figure 3 represents the number of journal publications by decades.

We identified 537 papers from 18 prestigious journals that cover subjects related to project management in allied disciplines. We conducted a simple linear regression analysis to better understand and possibly extrapolate future trends of project management research in top management journals. The analysis result was surprising, in that the  $R^2$  was 0.99 and in every decade publications increased by approximately 40 (~36.143) papers. Regression analysis shows a strong positive upward trend in project management research in allied disciplines.



**Figure 3. Number of Journal Publications by Decades**

From the project management community, project management-oriented journals, including *International Journal of Project Management*, *Project Management Journal*, and *Journal of Construction Engineering and Management*, all have had rapid growth in the number of publications. The size and publication frequency of those journals have more than doubled over the last 20 years. A new journal, *International Journal of Managing Projects in Business*, starts publication in 2008. Based on our analysis, this same trend also applies to the 18 selected top management journals that we have analyzed from the perspectives of management disciplines. It is predicted that more integrated, interdisciplinary, and convergent project management research will appear in the future. Project management research in three or more combined allied disciplines will be common and new allied disciplines such as politics, social, ethics, sports, events, and entertainment will also adopt project management as one of the major research themes to conduct research related to project management in their disciplines.

### Discussions and Conclusion

Project management is one of the youngest, most vibrant, and dynamic fields among different management disciplines, along with other established business fields such as operations research, organizational behavior, strategy, and so forth. The roots of project management might have come from quantitative research in planning-oriented techniques, as well as an application of engineering science and optimization theory (Söderlund, 2004). In recent years, research interests in cross-disciplinary studies between project management and allied disciplines have become more popular, evidenced by increased publications on these integrated subjects in mainstream management journals. We have seen an explosion of popularity and strong interest in project management research, starting in the 1980s, and the trends are likely to continue in the future. It is important to note that project management is no longer merely a practice to plan, schedule, and execute projects effectively, but it is an academic field and one of the key management disciplines that consist of both practical/empirical research and theoretical research based on solid academic theory and foundations.

It is interesting to look into the history of business and management education in the U.K. In the 1960s, the U.K. government offered Oxford and Cambridge money to set up management faculties. Both institutions said that “management” was not a proper discipline, so the funds went to London and Manchester instead (J. R. Turner, personal communication, October 11, 2007). London Business School and Manchester Business School became the beneficiaries of Oxford and Cambridge snobbery (*Franks Report*, 1963).

Mcfarlane and Ottewill, in *Effective Learning and Teaching in Business and Management*, noted that “The derivative and vocational nature of knowledge in business and management has led critics to argue that the study of business is a spurious discipline with a dubious claim to academic legitimacy” (2001, p.7). They also noted that Bain (1990, p. 13) quoted a Professor of English who said:

Business is educationally suspected because it is not a discipline ... The syllabus is an agglomeration of several disciplines, and the student may not get an adequate grounding in any of them. The department tends to be so large, and so closely linked to industry, that they threaten to be a Trojan horse inside the university. (Bain, 1990, in Mcfarlane & Ottewill, 2001, p. 8)

Furthermore, O’Hear (1988, p. 14) claimed,

Such business and management departments are in fact simply training schools for management, and live off the fruits from other trees of knowledge. While there can be no objection to such school[s] in their proper place, it is quite unclear why they should exist in universities, or why people working in them should enjoy the specific academic freedom which involves their having tenure. Those who live by the market should die ... by the market. (in Mcfarlane & Ottewill, 2001, p. 8)

These quotes basically show that some humanities and social science scholars are still not convinced of management education and research. In the case of project management, the field is more applied and interdisciplinary than any other management discipline, so naturally it is more difficult to justify the field as an academic discipline within the academic management community, and more obstacles lie ahead. However, there are some positive signs. Our analysis shows more project management research is being published in allied disciplines, more papers are being recognized and published in mainstream management journals, and the trends of future research are strong and healthy.

Scholars and practitioners in the project management community may need to further justify, defend, and promote project management as an academic discipline by being more vigilant of allied disciplines and continue to spread understanding of project management, not only within the project management domain, but to other management fields. The analysis of project management research in allied disciplines shows strong evidence that this phenomenon is happening now and we are witnessing that the future has arrived.

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