

A Content Analysis of Design Management Studies from 1989 to 2005

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Abstract: Design management has become a critical facet of corporate management for leveraging strategic and competitive advantages. In order to identify the pattern and the development of design management studies, we investigated contents of the periodical journals published by Design Management Institute (DMI): the *Design Management Review* and the *Academic Review*. An in-depth analysis was performed on 64 themes, 722 articles, and 704 authors of these two journals between 1989 and 2005, and the primary research topics and authorship patterns were identified. Based on these findings, several directions for advancing design management studies were suggested.

Key words: *Design Management Studies, Content Analysis, Authorship Pattern*

1. Introduction

An increasing number of business journals and periodicals have dealt with the importance of design management in business over the decades, as there have been numerous cases around the world where leading companies are gaining huge profits through design. In February 2004, the *Harvard Business Review* published a special article entitled "The MFA is the New MBA." This article emphasized that an arts degree is now the hottest credential to obtain in business as corporations have realized that the only way to differentiate their goods and services is to make their offerings beautiful and emotionally compelling. Consequently, many prominent business schools and MBA programs, such as Harvard University, Stanford University, and London Business School, are now teaching how to use design in business and to cultivate their students' design awareness and leadership. Moreover, Roger Martin, a Dean at the Rotman School of Management, at the University of Toronto, argued business people do not just need to understand designers better, but they need to become more like designers.¹

At the 2006 World Economic Forum annually held in Davos, Switzerland, "Innovation, Creativity &

¹ Martin, R. (2004) 'The Design of Business', *Rotman Management of University of Toronto Winter*: 7-10.

Design Strategy” was one of hottest issues declaring the importance of breakthrough innovation via creative-design thinking. Furthermore, well-known designers, who no one thought were qualified to join the forum a few years ago, were invited as speakers. Recently, the Boston Consulting Group announced the top 25 most innovative companies such as Apple, Google, 3M, Toyota, etc., through a survey on innovation consisting the participation of 1,070 executives from many of the large global corporations. The survey results discovered that design played a critical role in establishing a company’s product, manufacturing process, and business model for innovation.

In light of the rapidly growing awareness on the important role of design and design management in creating a successful business, it appeared in an appropriate time to investigate the current stream and progress of design management studies in the literature. We conducted a content analysis² of the articles published in DMI’s two periodicals: the *Design Management Review* (formerly the *Design Management Journal*) inaugurated in 1989 and the *Academic Review*³ issued since 2000.

One of the main reasons for this content analysis is that these publications have published various articles on the interrelationship between design and management, as well as having case studies on how the two disciplines can form a symbiotic collaboration in order to enhance a company’s competitiveness. On the other hand, the 17-year period from 1989 to 2005 provides an adequate timeframe to discern meaningful patterns of design management studies. In retrospect of research priorities, the contents analysis results can support the “2006 – 2007 Top Tier Research Priorities”⁴ that were recently announced by the DMI: (1) design and design management competency, (2) design and design management valuation, and (3) design management for the 21st century.

In order to reflect the challenges and practices of design management, several questions are worth exploring such as:

- What topics in design management are scholars and practitioners attending to or neglecting?
- What fields of design are receiving more attention or less attention?
- What patterns are characterized in the researchers’ authorship?
- And finally, what do all these suggest about the ways to advance design management knowledge and research?

² This content analysis has been frequently applied in literature reviews, because it is an appropriate approach for understanding developments in and patterns of scholarly research.

³ The Academic Review is compiled from papers from DMI’s International Forum on Design Management Research and Education which is held bi-annually.

⁴ DMI (Retrieved in 2006) 'Overview of DMI Research Programs', http://www.dmi.org/dmi/html/research/research_s.htm.

The purposes of this study are threefold: firstly, to describe the priorities of design management studies by analyzing the 62 issues and the 722 articles published in the *Design Management Review* and the *Academic Review* between 1989 and 2005; secondly, to identify authorship patterns based on 704 authors' biographies; thirdly, to suggest directions for future study in light of these findings. This paper has been sequentially organized in accordance with those aims.

2. How to analyze articles: Developing the "PaperSort" Program

The *Design Management Review* and the *Academic Review* compile articles under a theme, which is suggested by the editors as a focal point for each issue to correspond with the trends and issues in the current business environment. In addition, the theme is in accordance with topics selected using the following criteria: (1) the importance of the topic to design managers; (2) practice-driven research design; (3) the potential for synergy among research projects.⁵ The suggested theme works as a guideline for contributors when preparing articles for a specific issue; therefore, the research priorities of design management can be identified by analyzing the articles of each journal which clearly demonstrate the different themes.

Moreover, the themes and articles are distributed under the predetermined 30 topics, and lists of themes and articles in relation to each topic can be searched through the "Publications Search" function on the DMI websites.⁶ As a result, the 30 topics have been adopted to analyze articles for discovering primary research patterns and streams of design management studies. However, it takes lots of time to manually classify 722 articles into 30 topics; hence, the "PaperSort," shown in Figure 1, was developed solely for this study as an automatic paper sorting program.

This purpose-designed program can reclassify the articles according to the following search options: (1) by the publication date: "year" and "season," (2) the topics: "and" and "or," (3) by each author's: "name," "occupation," and "affiliation," and (4) utilizing keywords such as: "in the title" and "in the abstract." Additionally, these search results can be saved in several ways by checking the required items.

⁵ Powell, E. (1997) 'Research Priorities: 1999-2000,' *The Design Management Institute*.

⁶ DMI (Retrieved in 2006) 'DMI Publications', http://www.dmi.org/dmi/html/publications/pubs_d.jsp.

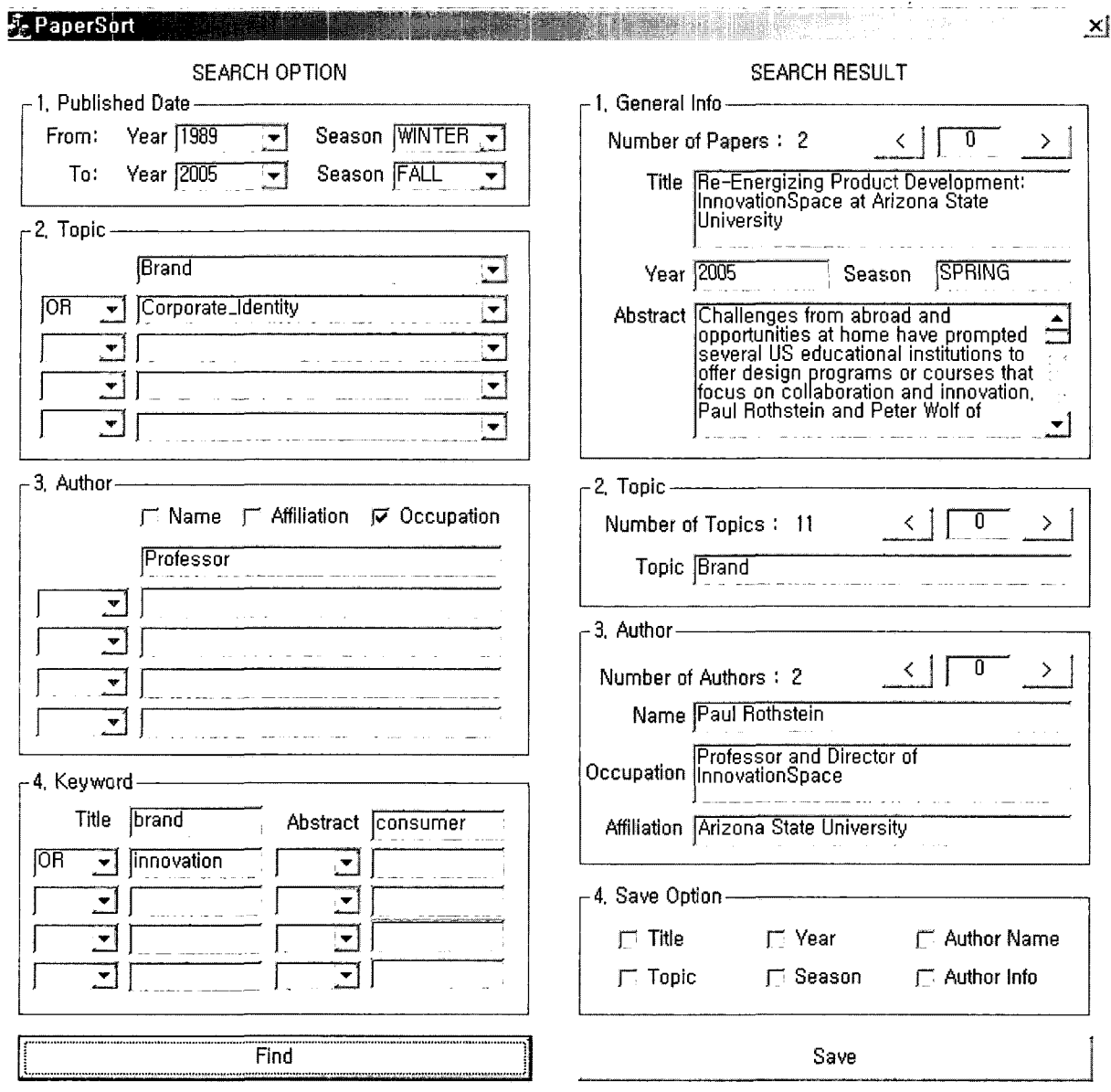


Fig.1 The "PaperSort" program using Visual C++ language

3. Topics and Streams of Design Management Studies

The articles under each topic have been categorized from the sorting results of the program. Figure 2 shows the distribution of articles by topic in the order of the frequency with which they have occurred. The most popular areas of inquiry include "Research" (266, 9.3% of all articles), "Design Process" (209, 7.3%), "Design as Strategic Resource" (199, 7.0%), "Strategy" (191, 6.7%), "Brand" (182, 6.3%), "Corporate Identity" (156, 5.4%), and "Innovation" (145, 5.1%).

"Research" is ranked in the highest position because it has played a role in linking between details of particular business situations and broader design management principles. Comparing the rest of the highly ranked topics, we noticed that approaches to design management were diversified and its scope has expanded from the product design level into the strategic management level. The interest in the second

highest topic, “Design Process,” can be correlated with broadening the role of design from styling products into coordinating the total process of product development. In fact, design-inspired companies consider design as the whole decision-making process that deals with the manifestation of objects with consideration to economy and technical function and in response to various consumer demands.⁷

Rank	Article Topic	Num	%	Rank	Article Topic	Num	%
1	Research	281	9.8	16	Organizational Structure	85	3.0
2	Design Process	225	7.8	17	Graphic Design	80	2.8
3	Strategy	211	7.3	18	Design Management Education	67	2.3
4	Design as Strategic Resource	202	7.0	19	Consulting	62	2.2
5	Brand	197	6.9	20	Internet	60	2.1
6	Corporate Identity	158	5.5	21	Teams	55	1.9
7	Innovation	145	5.1	22	Environment Design	52	1.8
8	Design Management	144	5.0	23	Government Policy	44	1.5
9	Product Design	136	4.7	24	Service Industries	41	1.4
10	Consumer	133	4.6	25	Package Design	35	1.2
11	Industrial Design	122	4.2	26	Quantifying Value of Design	31	1.1
12	Corporate Culture	113	3.9	27	Globalization	28	1.0
13	Marketing	109	3.8	28	Ethics	24	0.8
14	Digital Technologies	101	3.5	29	Sustainability	13	0.5
15	Communication Design	86	3.0	30	Law and Design	9	0.3
					Total	2871	1.0

Fig.2 A classification of journal articles published between 1989 and 2005

Moreover, there is a tendency that emphasizes the importance of strategic issues in design management for improving design’s contributions. When the two highest topics of “Strategy” and “Design as a Strategic Resource” are combined, the frequency is the highest with 259 articles, following “Research.” Next on the list in terms of frequency, topics including “Brand” and “Corporate Identity” are also critical design management challenges as strategic assets for boosting business competitiveness in today’s global marketplace. Therefore, it is evitable to execute brand design strategies for creating meaningful brand experiences and nurturing brand championship inside organizations. Although “Innovation” ranked seventh among major topics, innovation by design strategies has been essential for differentiating products, creating creative corporate culture, and enhancing business competitiveness.

It is noteworthy that the total number of articles on the list is 2,871 (361% of the sample articles) because most articles were related to more than one topic. The reasons for linking each article with more than one topic could be caused by the inconsistency in types and levels of topics and the similarity between some topics such as “Strategy” and “Design as a Strategic Resource (153/202),” “Brand” and “Corporate

⁷ Cooper, R. and Press, M. (1995). Design Agenda: A Guide to Successful Connection for Competitive Advantage (p. 36). John Wiley & Sons.

Identity (91/158),” and so forth. In this circumstance, a more systematic classification of research topics could be considered. In early 2006, DMI announced professional interest areas designed for finding topical information online: Academic/Education, Brand/Corporate Identity, Client/Consultant Relationships, Industrial Design, Innovation/Creativity, and Package Design. These interest areas could be the result of reclassifying current topics of interest in design and management based on the 30 topics.

In order to identify a priority of design fields, articles were classified according to types of design fields and analyzed during two periods, 1989-1997 and 1998-2005 (Figure 3). These design fields were selected from the 30 topics. Although six topics — “Industrial Design,” “Product Design,” “Graphic Design,” “Communication Design,” “Package Design,” and “Environmental Design” — are referred to design fields (Table 1), some of them were combined into one area in terms of their similarity and correspondence: “Product Design” and “Industrial Design”; “Graphic Design,” “Communication Design,” and “Package Design”; and “Environmental Design.”

Among the three fields of design, “Graphic Design/Communication Design/Package Design” has been predominant in recent years with an increase of 5.6%, while “Product Design/Industrial Design” was a leader in the field between 1989 and 1997. This increase of research on visual communication design has been accelerated by the rapidly expanded internet and virtual business environments utilizing state-of-the-art digital technology. In fact, the growth of Internet business has influenced on not only web design itself, but also culture of design management in the advent of digital management; therefore, it is necessary to explore how to manage design as a strategic tool for mediating corporate business goals and consumer needs in Internet business environments. The proportion of articles in environmental design is always small compared to the other two fields; however, research in this field will be more frequently conducted with the proliferation of interests in redesigning retail environments for conveying meaningful consumer experiences, building creative and productive work environments, increasing attention to entertainment space design, increasing the emphasis on the ecological and social responsibility of design, etc.

Design Field	89-97		98-05		▲%
	Num	%	Num	%	
<i>Industrial/Product Design</i>	82	44.6	94	42.3	-2.2
<i>Graphic/Communication Design/Package Design</i>	75	40.8	103	46.4	5.6
<i>Environmental Design</i>	27	40.8	25	11.3	-3.4
<i>Total</i>	184	100	229	100	0.0

Fig.3 A classification of articles according to fields of design during two periods

4. Authorship Patterns

By referring to biographies in the “About the Authors” section at the end of each issue, authorship patterns were investigated. A list of authors for each issue was made in conjunction with the author’s name,

occupation, and affiliation through the “PaperSort” program. The gender of authors was examined through their pictures appearing on the front page of their articles. Detailed information on the authors, such as name, gender, occupation, affiliation, and country, were arranged based on the data obtained using these two methods.

Firstly, an authors’ list covering 704 individuals including co-authors was made. The majority of articles (72.4% of all articles) have been written by a single author, and about 25% have been written by two or three co-authors. In the case of the frequency of each author’s contribution, 80.7% of authors (568) wrote just one article, while 12.5% (88) and 4.4% (31) contributed 2 and 3 articles respectively. Dr. Thomas Walton contributed 60 articles as the editor of the journal (Figure 4).

Next, authors were classified according to their gender for knowing a ratio of males to females. The proportion of male authors is about 3.3 times higher than that of female authors, as shown in Figure 5. Authors’ affiliations were identified to determine the degree of participation of practitioners in firms and academia in universities. The number of authors working in firms was 433 (61.5% of all authors), the number of academic researches including professors, students, and researchers was 197 (28%), and authors belonging to both a firm and a university were 12 (1.7%). Practitioners in the firm were more predominant than researchers in other affiliations. From this result, it was assumed that design management research was conducted largely focused on practical case studies of firms. However, in order to enhance a role of the publications as a vehicle for dialogue among practitioners and scholars, more participation of academic researchers are needed.

Num of authors	Num of articles	%	Num of articles	Num of authors	%
1	480	72.4	1	568	80.7
2	137	20.7	2	88	12.5
3	39	5.9	3	31	4.4
4	3	0.5	4	13	1.8
5	3	0.5	5	2	0.3
6	1	0.2	6	1	0.1
<i>Total</i>	<i>663</i>	<i>100</i>	<i>60</i>	<i>1</i>	<i>0.1</i>
			<i>Total</i>	<i>704</i>	<i>100</i>

Fig. 4 (Left) Number of authors for each article
(Right) Number of each author’s articles

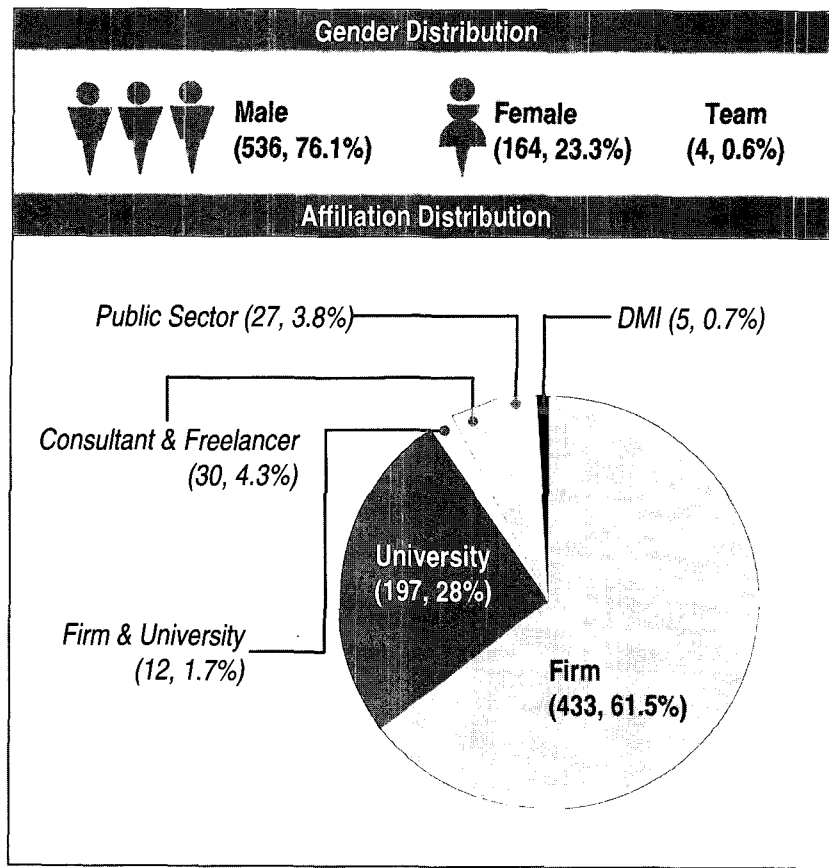


Fig.5 Gender and affiliation of author

Lastly, in order to assess the globalization of the participation in the journals, the location (country and region) of the researchers' institutions were examined, as shown in Figure 6. As evidenced in this figure, U.S.-based researchers dominated the field, producing roughly three-fourths of all authors (70.3% of all authors). Second after the United States was the United Kingdom with 13.3%. A smaller number of authors came from Canada (2.8%), Netherlands (2.4%), Germany (1.7%), and France (1.3%). Each of other countries contributed to lower than 1% of the total number of authors.

In terms of regions, Americans led the field, accounting for 8 out of 10 authors (73.9%). Europeans followed next, generating approximately a fifth (23.3%) of the authors. Asia Pacific researchers were next with just 2.7%. These findings suggested that design management research has been largely driven or characterized by work conducted by researchers at American institutions; however, the number of Asian researchers tended to increase with the remarkable growth of industries and brand value in recent years.⁸

⁸ In Interbrand's 100 Top Brands in 2006, leading Korean companies such as Samsung (ranking 20), Hyundai (75), and LG (94) are acknowledged as high-valued brands along with well-known Japanese companies including Toyota (7), Honda (19), and Sony (26).

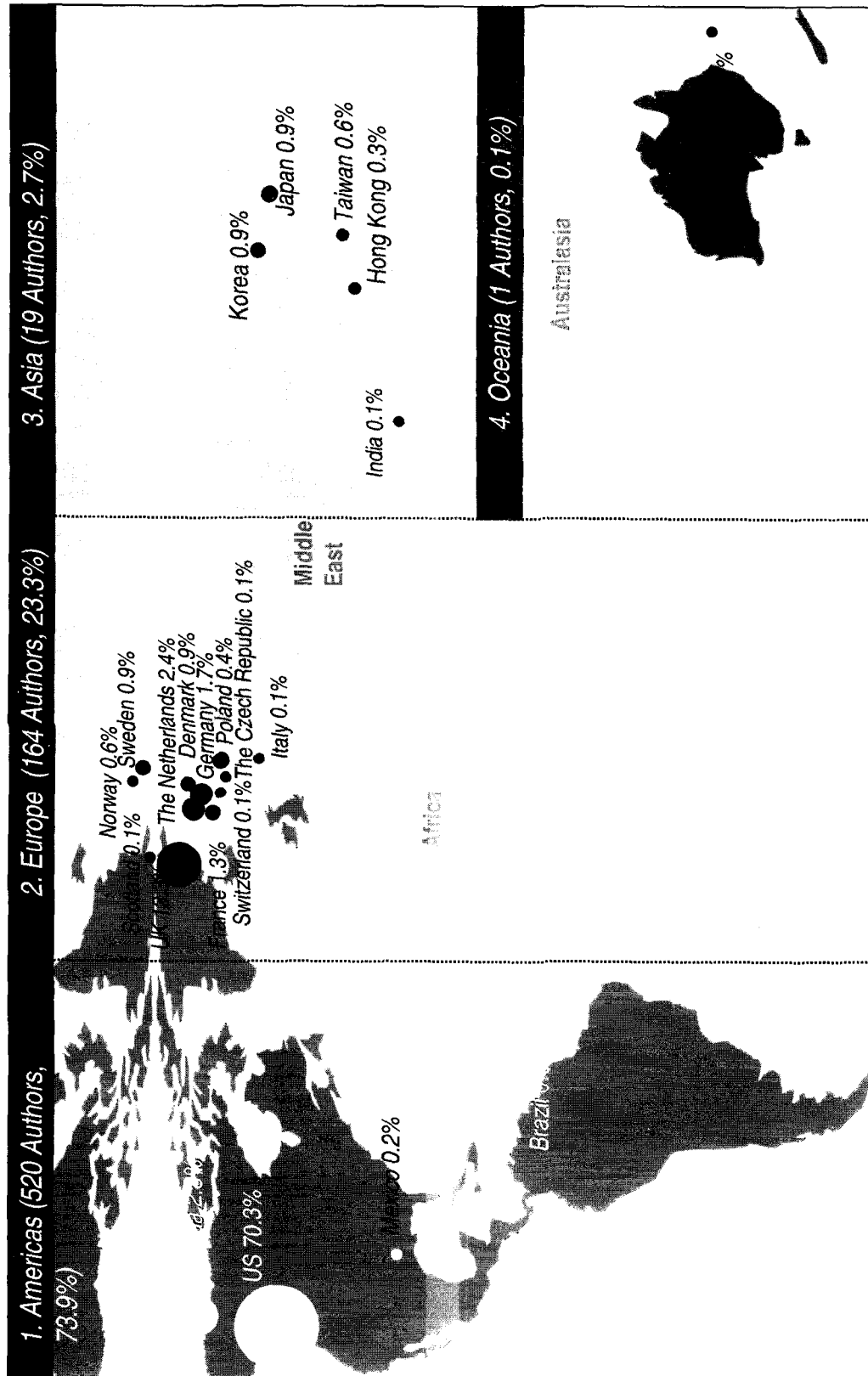


Fig.6 Authorship by country and region

5. Conclusions and Prospects

This study identified major research streams and authorship patterns of design management studies. From the major topics and streams, we identified that the strategic uses of design in business management have been demonstrated with increasing frequency by practitioners and scholars over the past two decades. Along with this strategic issue in design management, the role of design management has expanded from managing product development into leveraging strategic and competitive advantages, managing identity and brand as strategic assets, and maintaining the cutting edge in the global and digital markets. Design matters now more than ever before. In fact, designers have begun to more broadly expand their boundaries and concretely embody their design thinking and processes into corporate management as a strategic resource.

Over the decades, by building the body of knowledge on design management, the publications have greatly accomplished their duties as a vehicle for dialogue among practitioners and scholars and a catalyst for thinking about problems in design management. Indeed, they have been open forums for the design community to share knowledge on design as well as to exchange findings of design management studies. Concomitant with these contributions of the publications, the balance of contributors' perspectives and knowledge on design management is possible if there is increased involvement of Asian, academic, and female researchers.

Firstly, there are growing opportunities for design management to expand its sphere of influence in Asia in conjunction with the rapid industrialization of countries like China and India. The 12th DMI Academic Forum held in Seoul, Korea in November 2004 can be a good example for vitalizing design management movement in the Asian region. It was the first forum held in Asia since former forums were alternately held in America and Europe every other year. Following this first highly successful conference, DMI successfully held the international conference dedicated to promoting the importance of design management again in Seoul in November 2006.

Secondly, efforts on expanding opportunities to academic researcher's participation by revitalizing the academic journals like the *Academic Review* will make design management more disciplined practically and theoretically. It will be very helpful for cementing a bridge between the academy and business.

Thirdly, more contributions of female academics as well as practitioners in design management research are expected as the number of female CEOs and business executives has been increased. Although gender issues seem not critical in this field, there has been relatively lower number of female contributions. So far less than one-fourth of authors were female.

In conclusion, it is with the hope that these findings will be helpful for companies who suffer from the difficulties of adapting design as a strategic tool and putting it at the top of the strategic agenda for successful innovation, as well as for researchers who want to know the current distribution of research topics and to predict research trends. Meanwhile, there are still issues that should be solved by practitioners and academics for treating design management as the crowing jewel of a company, as well as a strategic navigator in digital business environments. As more design management studies are carried out, this issue

will become better positioned and will contribute significantly to the evolution of competitive dynamics in a growing number of industries.

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