International Journal of
Organizational Innovation

THE EVOLUTION OF THE LEADERSHIP THEORIES AND THE ANALYSIS OF NEW RESEARCH TRENDS

Yuan-Duen Lee*
Professor, The Department Of International Business,
College Of Management, Chang Jung Christian University, Taiwan

Pi-Ching Chen
Professor, The Department Of International Business,
College Of Management, Chang Jung Christian University, Taiwan

Chin-Lai Su
Ph.D. Student, Doctoral Program Of Business And Operations Management,
College Of Management, Chang Jung Christian University, Taiwan

*Corresponding Author: ydlee@mail.cjcu.edu.tw

Abstract

This study examines the status of contemporary leadership research over the last decade. With SSCI citation data from the top leadership journal: The Leadership Quarterly, including 696 journal articles and 63,407 cited references, we conducted a co-citation analysis to explore the intellectual structure of leadership studies. The results show that contemporary leadership studies focus on transformational leadership, LMX theory, implicit leadership theories, authentic leadership, charismatic leadership, ethical leadership, and leadership affect and emotions. This study thus identifies the knowledge essentials of leadership research and profiles the most influential journals, publications and scholars and their relationships in this field. The results of this study also provide a useful tool for researchers to access the literature of leadership research.

Keywords: Leadership theory, Intellectual structure, Knowledge network, Co-citation analysis

Introduction

As the field of leadership is very broad and fragmented, leadership research remains predominantly focused on the influence process between leader and employees (Bass, 1990; Rost, 1991; Yukl, 2006). The past decade has seen a growth in research on the field of leadership, and thus pro-

88

duced an impressive array of leadership-related studies. The objective of this study is therefore to provide leadership researchers with an overview of contemporary leadership-related publications in the last decade, and to map the intellectual structure of different research topics and relationships in the development of this field. This study also attempts to help identify the linkages among different publications and confirm their status and positions with regard to their contributions to the development of leadership. The principal methods used are citation and co- citation analysis, social network analysis, plus a factor analysis which is performed to identify the invisible network of knowledge generation underlying the leadership literature.

The Social Sciences Citation Index (SSCI) is used for the analysis. This is a widely used database, which includes citations published in over 3,000 of the world's leading scholarly social sciences journals, covering more than 55 disciplines. The SSCI thus provides the most comprehensive and widely accepted database of leadership publications. Among the journals included in the SSCI, the Leadership Quarterly is arguably the most influential one publishing leadership-related papers, and so is used as the core source for analysis. The advantage of using journals instead of keywords to generate the needed citation data is the "guaranteed quality" of their published papers, and their clear boundaries with regard to the acceptable methods and topics as defined by their specific editorial policies. This study thus included all the papers published in leadership from 2008 to 2017. The results included 696 journal articles in total, which further cited 63,407 other pub-

lications as references. The cited publications in these papers include both books and published journal articles.

The author co-citation analysis (ACA) method is commonly used to group authors of reference papers. Since the traditional ACA method analyzes only the first authors of reference papers, it disregards the contributions of the coauthors and can only group each first author into one cluster. In contrast, this study uses an article co-citation analysis method, which groups complete author sets of reference papers into clusters, and thus finds authors who may have expertise in more than one area. Based on the article co-citation analysis of these data in leadership, this study first reports the relative academic importance of journals and articles (in terms of number of citations) in the leadership literature, and then points out the historical stages in the development of the field. This study further maps the co-citation networks and reveals the top 50 articles in the past 10 years, and predicts the future directions of this field.

Review of the Academic Literature on Bibliometric Studies

In bibliometric studies, mathematical and statistical techniques are applied to the analysis of large volumes of documentation (Diodato, 1994). These studies are usually performed to reconstruct the history of various sciences and to question traditional dogmas, and their results allow researchers of the focal discipline to correct any errors of perception that may have arisen (Mariluz & Antonio, 2009). Within the field of the sociology of science, bibliometric studies provide

89

valuable data on scientific communication. The study of references can highlight whether a discipline has an inward- or outward-looking approach (from both the thematic and geographic perspectives); the circulation of new ideas; and the existence of barriers between the applied and basic sciences, and between specialists and the scientific communities to which they belong (Ferreiro, 1993; Mariluz & Antonio, 2009).

The quantitative analysis of literature is called bibliometrics, and this can provide more objective views by examining citations, co-citations, or a combination of the two. Among the various methods developed in the last three decades, citation analysis is the earliest and the most widely used approach that can be used to quantify this process. Merton (1979) claimed: "Citation indexing has been a standard of scientific bibliography for more than a decade but its sociological and historical research potentials have not yet been fully realized." Within all academic disciplines, researchers typically cluster into informal networks that focus on common questions in common ways (Price, 1963), and within these networks one scholar's concepts and results may be picked up by another, to be extended, tested, and refined.

Therefore, the history of the exchanges among members of these networks, as revealed in patterns of citations, describes the intellectual structure of a field. When one scholar cites the prior work of another, citation analysis provides a means of documenting this process. Citation analysis is based on the premise that authors cite papers they consider to be important to the development of their re-

search. As a result, heavily cited articles are likely to have exerted a greater influence on the subject than those less frequently cited (Culnan, 1986, 1987; Sharplin & Mabry, 1985; Tahai & Meyer, 1999). Similarly, co-citation analysis of documents records the number of papers that have cited any particular pair of documents, and is interpreted as a measure of the similarity of the content of the two documents (Ramos-Rodriguez & Ruiz-Navarro, 2004). As such, bibliometrics can be said to give "the field's view of itself" (White & Griffith, 1981).

Many scholars have begun to use citation and co-citation analysis to examine the knowledge network of various management literatures. For example, Ponzi (2002) mapped the intellectual structure and interdisciplinary breadth of knowledge management in its early stage of development, using principle component analysis on a co-citation matrix. Ramos-Rodriguez and Ruiz-Navarro (2004) examined the intellectual structure of strategic management research with a similar analysis on papers published in the Strategic Management Journal. Acedo and Casillas (2005) explored the research paradigms of international management research with an author co- citation. More recently, Nerur, Rasheed and Natarajan (2008) examined the intellectual structure of strategic management field by applying factor analysis, multidimensional scaling, and co-citation analysis, Ma, Wang and Lee (2012) examined the dynamic change in the research paradigms of ethnic entrepreneurship studies, and Wang, Lee and Lee (2013) examined the intellectual structure of expatriate field by applying social network analysis, factor analysis, and co-citation

90

analysis. The current study will follow this line of research to examine the intellectual structure of contemporary leadership research and to map its invisible knowledge network and key research clusters in the past ten years in order to provide a broader picture of contemporary leadership studies.

Research Methodology

In order to provide an overview of contemporary leadership research, this study explored the intellectual structure of leadership between 2008 and 2017. Citation and co-citation analysis were the main methods used for this. With citation and co- citation analysis, this research proceeded in four stages, each of which required different approaches to examining the evolution of leadership studies (see Figure 1).

In the first stage, databases were identified as the sources of leadership publications. Then data collection and analysis techniques were designed to collect the desired information about the topics, authors, and journals on leadership research. In the second stage, citation analysis was tabulated for each of the 63,407 source documents using the MS Excel software. After a series of operations, key nodes in the knowledge network in leadership studies were identified and the structures developed.

The third stage was to perform an article co-citation analysis based on the most cited article of each sub-period, to trace the relationships among them and identify schools of thought and key topics of research. The results of the article co-citation analysis were also tabulated for each of the source documents using Excel. Article co- ci-

tation analysis is based on the distribution frequencies obtained from the citation count, and this is obtained by examining all the possible pairs from the 50 most frequently cited articles and counting all the articles that cite both of these (see Figure 2). The top articles were identified on the basis of the total number of citations in the selected articles, and then a co-citation matrix was developed before a pictorial map was drawn to describe the correlations among different articles (see Table 1). In the final stage, article co-citation analysis was conducted to carry out social network analysis and factor analysis in order to map the intellectual structure of leadership studies and to explore the invisible knowledge nodes that have contributed most to such studies and their possible evolutionary patterns.

Results and Discussions

Citation Analysis

Data mapping was conducted and an intellectual structure of leadership research was revealed by using article co-citation analysis. To identify the key publications and scholars that have laid down the groundwork of leadership research, citation data were tabulated for each of the 63,407 source documents using Excel. The citation analysis produced some interesting background statistics, as shown in the following tables. Tables 2 lists the most cited journals in leadership studies in the last decade, among which The Leadership Quarterly, Journal of Applied Psychology, Academy of Management Journal, Journal of Personality and Social Psychology, and Academy of Management Review are the top five, followed by Journal of

91

Choose sample articles from the SSCI databases from 2008 to 2017

Divide sample articles into two stages: 2008-2012; 2013-2017

Analyze citation counts and identify articles that are frequently cited by sample articles

Retrieve co-citation counts for each pair of articles

Compile the matrix of raw co-citations and Pearson's correlations

Perform the following analyses:
1. Social network analysis to highlight core themes and strong links
2. Factor analysis and multidimensional scaling to identify subfields
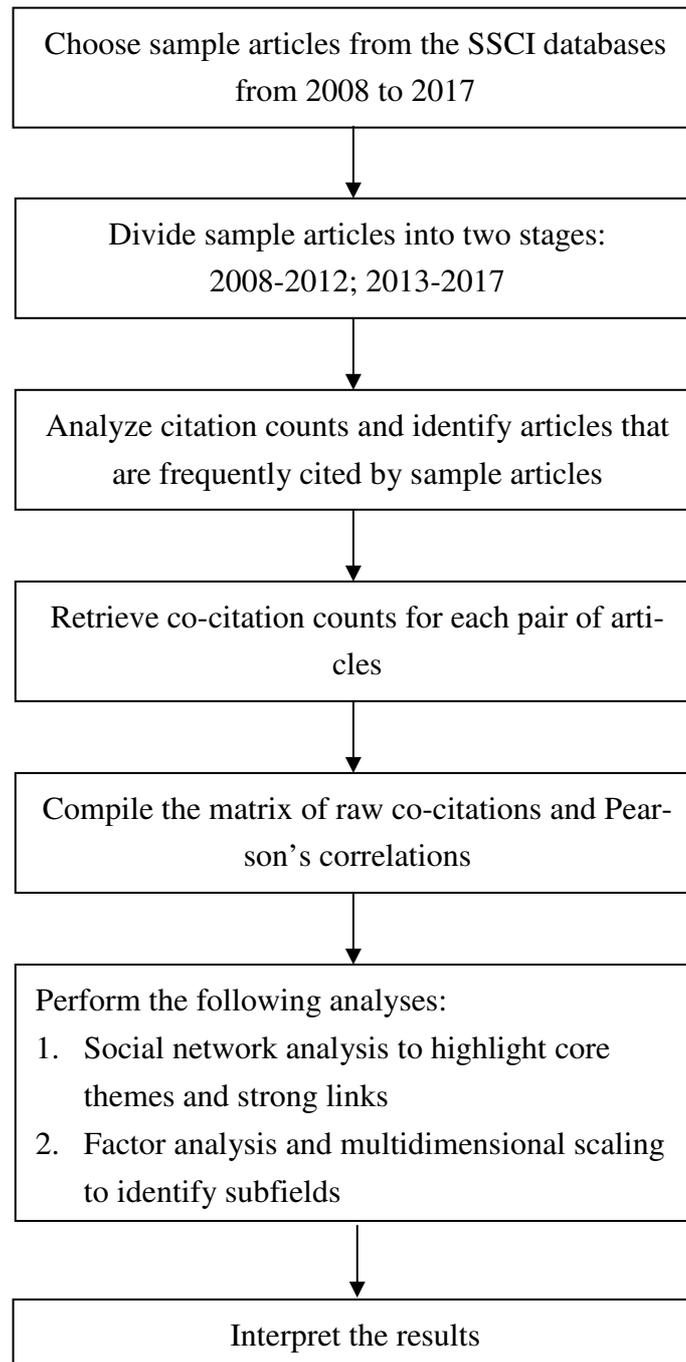
Interpret the results
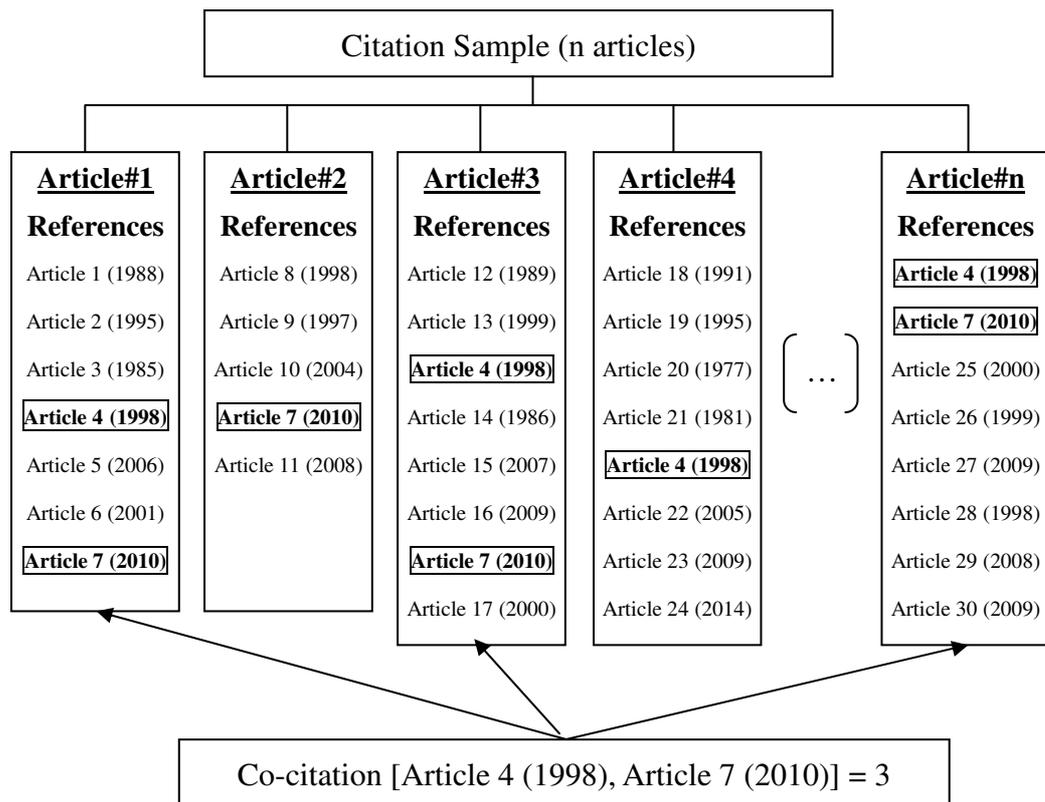
Figure 1. Design of the Study

Figure 2.   Article Co-citation Count

Table 1. Article Co-Citation Matrix (Extract)

	Article 1	Article 2	Article 3	Article 4	Article 5	Article 6	Article 7	Article 8	Article 9
Article 1		18	20	9	28	28	16	12	10
Article 2	18		15	17	11	14	15	9	17
Article 3	20	15		11	10	8	8	8	9
Article 4	9	17	11		4	8	3	6	14
Article 5	28	11	10	4		10	8	6	7
Article 6	28	14	8	8	10		9	7	6
Article 7	16	15	8	3	8	9		7	5
Article 8	12	9	8	6	6	7	7		3
Article 9	10	17	9	14	7	6	5	3	

Management, Journal of Organizational Behavior and Administrative Science Quarterly.

The most cited scholars and the most influential publications were then identified by their total counts of citations within relevant time frames. These scholars were superstars in the field of leadership research, had the most influence on the development of leadership research, and to certain ex-tent, collectively defined this field. The 50 most highly cited articles in two different periods, 2008-2012 and 2013-2017, were selected, as shown in Tables 3 and 4, respectively. The authors of these papers were then used as key nodes before conducting social network analysis and factor analysis, following the procedures recommended by White and Griffith (1981).

Table 2. Top 10 Most Cited Journals in Leadership Literature

2008–2012		2013–2017	
Journal	Citations	Journal	Citations
The Leadership Quarterly	3686	The Leadership Quarterly	3852
Journal of Applied Psychology	2195	Journal of Applied Psychology	2522
Academy of Management Journal	1081	Academy of Management Journal	1312
Academy of Management Review	868	Journal of Personality and Social Psychology	915
Journal of Personality and Social Psychology	739	Academy of Management Review	818
Journal of Management	597	Journal of Management	794
Journal of Organizational Behavior	478	Journal of Organizational Behavior	578
Administrative Science Quarterly	453	Administrative Science Quarterly	472
Personnel Psychology	362	Organizational Behavior and Human Decision Processes	426
Psychology Bulletin	345	Psychology Bulletin	407

Table 3. Top 50 Publications Selected for Co-citation Analysis: 2008–2012

ID Publication	Citations	ID Publication	Citations
1 Bass BM (1985)	100	26 Lord RG & Maher KJ (1991)	32
2 Graen GB & Uhl-Bien M (1995)	81	27 Yukl GL (1999)	32
3 Podsakoff PM et al. (2003)	66	28 Osborn RN et al. (2002)	31
4 Bass BM (1990)	62	29 Meindl JR et al. (1985)	30
5 Shamir B et al. (1993)	61	30 Dansereau F et al. (1975)	29
6 Judge TA & Piccolo RF (2004)	53	31 House RJ (1977)	29
7 Burns JM (1978)	51	32 Hunt JG et al. (1999)	29
8 Lowe KB et al. (1996)	51	33 Liden RC & Maslyn JM (1998)	29

9	Conger JA & Kanungo RN (1998)	45	34 Bass BM & Steidlmeier P (1999) 28
10	Gerstner CR & Day DV (1997)	45	35 Gardner WL & Avolio BJ (1998) 28
11	Yammarino FJ et al. (2005)	44	36 Klein KJ et al. (1994) 28
12	Judge TA et al. (2002)	43	37 Blau PM (1964) 27
13	Conger JA & Kanungo RN (1987)	42	38 Gardner WL et al. (2005) 27
14	House RJ & Aditya RN (1997)	42	39 Graen GB & Scandura TA (1987) 27
15	Baron RM & Kenny DA (1986)	37	40 Mumford MD (2006) 26
16	Bliese PD (2000)	37	41 Pearce CL & Conger JA (2003) 26
17	Lord RG et al. (1984)	37	42 Avolio BJ et al. (2004) 25
18	Yukl GL (2006)	36	43 Bass BM (1998) 25
19	Aiken LS & West SG (1991)	33	44 House RJ et al. (1991) 25
20	Podsakoff PM et al. (1990)	33	45 Howell JM & Shamir B (2005) 25
21	Avolio BJ & Gardner WL (2005)	32	46 Lord RG et al. (1986) 25
22	Bono JE & Judge TA (2004)	32	47 Marion R & Uhl-Bien M (2001) 25
23	Bono JE & Ilies R (2006)	32	48 Mumford MD et al. (2002) 25
24	Dansereau F et al. (1984)	32	49 Schriesheim CA et al. (1999) 25
25	James LR et al. (1984)	32	50 Shamir B et al. (1998) 25

Table 4. Top 50 Publications Selected for Co-citation Analysis: 2013–2017

ID	Publication	Citations	ID	Publication	Citations
1	Bass BM (1985)	77	26	Brown ME & Treviño LK (2006)	26
2	Podsakoff PM et al. (2003)	66	27	Bono JE & Ilies R (2006)	25
3	Graen GB & Uhl-Bien M (1995)	63	28	Conger JA & Kanungo RN (1987)	25
4	Aiken LS & West SG (1991)	47	29	Dansereau F et al. (1975)	25
5	Shamir B et al. (1993)	45	30	Day DV (2000)	25
6	Judge TA & Piccolo RF (2004)	40	31	Yammarino FJ et al. (2005)	25
7	Antinakis J et al. (2010)	39	32	Conger JA & Kanungo RN (1998)	24
8	Judge TA et al. (2002)	39	33	Eagly AH & Karau SJ (2002)	24
9	Bliese PD (2000)	37	34	Gooty J et al. (2010)	24
10	Lord RG et al. (1984)	35	35	Meindl JR (1995)	24
11	Avolio BJ & Gardner WL (2005)	34	36	Walumbwa FO et al. (2008)	24
12	Brown ME et al. (2005)	34	37	Bono JE & Judge TA (2004)	23
13	Podsakoff PM et al. (1990)	33	38	Carson JB et al. (2007)	23
14	Van Knippenberg D & Sitkin SB (2013)	33	39	Howell JM & Shamir B (2005)	23
15	Burns JM (1978)	32	40	James LR et al. (1984)	23
16	Hogg MA (2001)	32	41	Sy T et al. (2005)	23
17	Hu LT & Bentler PM (1999)	32	42	Yukl GL (1999)	23
18	Lowe KB et al. (1996)	32	43	Antonakis J et al. (2012)	22

95

19	Bass BM & Bass R (2008)	31	44	Avolio BJ et al. (2009)	22
20	Blau PM (1964)	31	45	Baron RM & Kenny DA (1986)	22
21	Dulebohn JH et al. (2012)	30	46	Bass BM (1990)	22
22	DeRue DS et al. (2011)	29	47	Kark R et al. (2003)	22
23	Gerstner CR & Day DV (1997)	29	48	Liden RC et al. (2008)	22
24	Epitropaki O & Martin R (2004)	28	49	Offermann LR et al. (1994)	22
25	Preacher KJ & Hayes AF (2008)	27	50	van Knippenberg D et al. (2004)	22

Co-citation Analysis

Co-citation analysis is a bibliometric technique used by information scientists to map the intellectual structure of a research field. It involves counting co-cited documents from a certain field and compiling co-citation counts in matrix form, then statistically scaling these to capture a snapshot of the field at a distinct point in time. The co-citation correlation matrix was factor analyzed in this study using varimax rotation, a commonly used process which attempts to fit a maximum number of articles on a minimum number of factors, with the diagonals considered missing data (McCain, 1990).

The results of the factor analysis of the co-citation matrix yielded many insights on the evolution of leadership research, and the core research clusters were identified along with representative articles that received high citations over the period examined. The following discussion focuses on these clusters in each of the two stages in order to describe the changing patterns of leadership research.

Network analysis of articles

Social network analysis tools can be used to graph the relations in the co-citation matrix and identify the strongest links and the core areas of interest in leadership (Pilkington & Teichert, 2006). A co-citation matrix is inherently very similar to social networks, a network of linked papers. The core division of the co-citation matrix representing the key publications from the leadership research can be shown diagrammatically as a network with locations determined using Euclidian distances. Using the graphing programmer NETDRAW Version 2.0, which comes with the social network software suite UCINET (Borgatti, Everett, & Freeman, 2002), we select the 50 most highly cited articles in the two different periods 2008-2012 and 2013-2017. The cutoff points are 25 and 22 for Stage 1 and 2, respectively. We employ these articles as key nodes before conducting a factor analysis (see Tables 6 and 7 for the list). Similarly, we also mapped the co-citation networks of the top 50 articles in each stage (see Figure 3 and 4). These graphs show only those links with at least two co-citations, and factor loadings of at least 0.7, in order to keep that diagram relatively uncluttered and easier to interpret.

The Intellectual Structure of Stage 1 (2008-2012)

Table 5 and Figure 3 report the results of the factor analysis of the leadership publications for the period
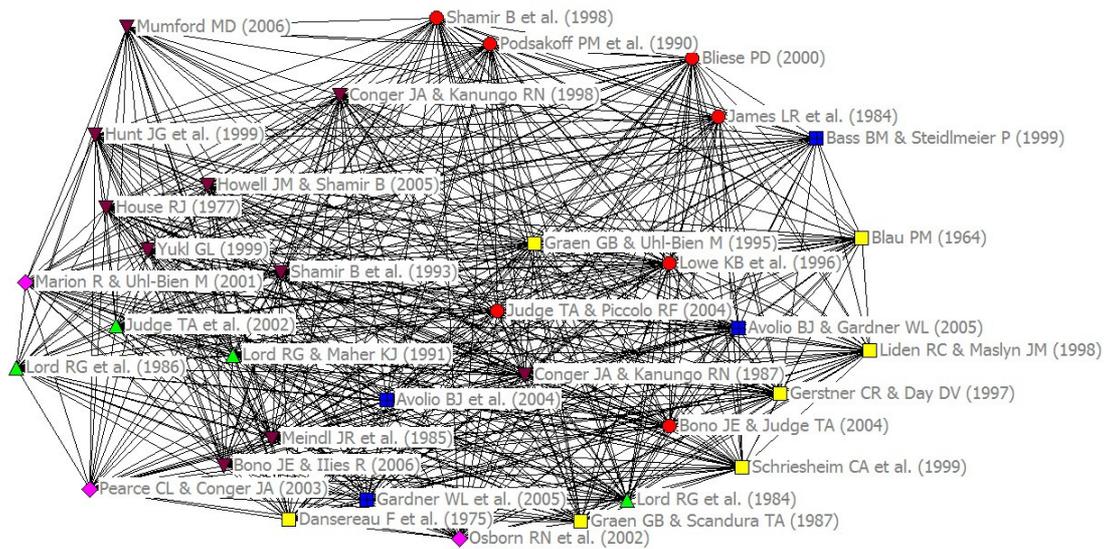
96

Figure 3. Research Clusters in Leadership Literature: 2008–2012
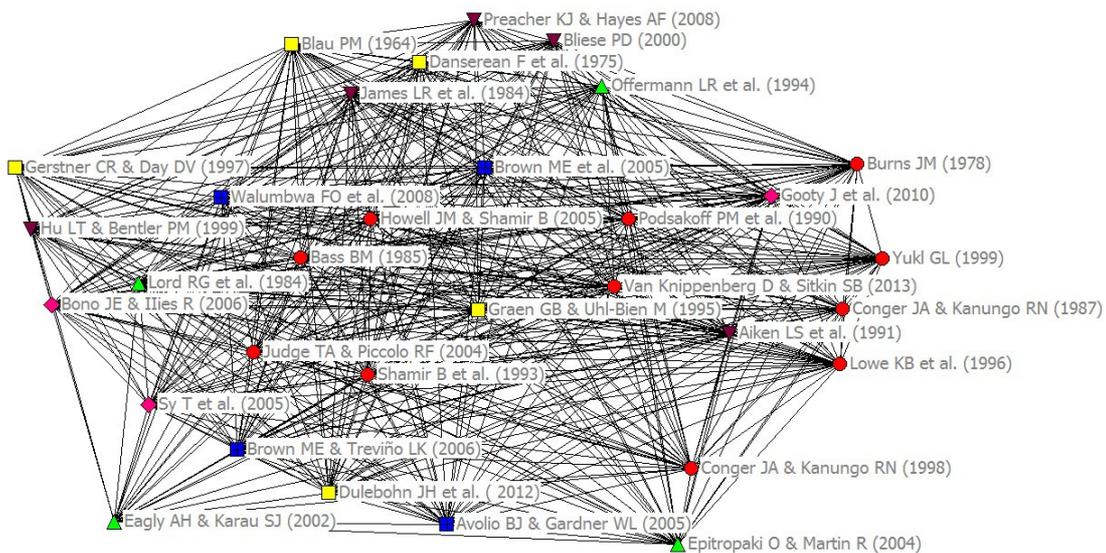

Figure 4. Research Clusters in Leadership Literature: 2013–2017

Table 5. Core Research Themes: 2008–2012

Factor 1: Transformational leadership (Eigenvalue: 19.33 % Variance: 38.2)						
ID	Articles	Key theme's word		ID	Articles	Key theme's word	
25	James LR et al. (1984)	Estimating within-group interrater reliability	0.86	22	Bono JE & Judge TA (2004)	Personality and transformational and transactional leadership	0.74
16	Bliese PD (2000)	Within-group agreement, non-independence, and reliability	0.83	18	Yukl GL (2006)	Leadership in organizations	0.62
20	Podsakoff PM et al. (1990)	Transformational leader behaviors	0.83	1	Bass BM (1985)	Leadership and performance	0.61
6	Judge TA & Piccolo RF (2004)	Transformational and transactional leadership	0.82	36	Klein KJ et al. (1994)	Levels issues	0.54
50	Shamir B et al. (1998)	Charismatic leadership	0.81	7	Burns JM (1978)	Leadership	0.51
8	Lowe KB et al. (1996)	Transformational and transactional leadership	0.76				
Factor 2: LMX theory (Eigenvalue: 9.61 % Variance: 19)							
ID	Articles	Key theme's word		ID	Articles	Key theme's word	
33	Liden RC & Maslyn JM (1998)	Leader-member exchange	0.97	2	Graen GB & Uhl-Bien M (1995)	Relationship-based approach to leadership	0.88
10	Gerstner CR & Day DV (1997)	leader-member exchange	0.96	3	Podsakoff PM et al. (2003)	Behavioral research	0.67
39	Graen GB & Scandura TA (1987)	A psychology of dyadic organizing	0.95	19	Aiken LS et al. (1991)	Multiple regression	0.67
49	Schriesheim CA et al. (1999)	Leader-member exchange	0.94	24	Dansereau F et al. (1984)	Leadership in formal organizations	0.60
30	Dansereau F et al. (1975)	Leadership in formal organizations	0.91	15	Baron RM & Kenny DA (1986)	Social psychological research	0.59
37	Blau PM (1964)	Exchange and power in social life	0.90				
Factor 3: Implicit leadership theories (Eigenvalue: 4.39 % Variance: 8.7)							
ID	Articles	Key theme's word		ID	Articles	Key theme's word	

46	Lord RG et al. (1986)	The relation between personality traits and leadership perceptions	0.91	26	Lord RG & Maher KJ (1991)	Leadership and information processing	0.73
17	Lord RG et al. (1984)	Leadership categorization theory	0.87	4	Bass BM (1990)	Leadership	0.56
12	Judge TA et al. (2002)	Personality and leadership	0.85	14	House RJ & Aditya RN (1997)	Social scientific study of leadership	0.48

Factor 4: Authentic leadership (Eigenvalue: 3.6   % Variance: 7.1)

ID	Articles	Key theme's word		ID	Articles	Key theme's word	
38	Gardner WL et al. (2005)	Authentic leadership	0.93	21	Avolio BJ & Gardner WL (2005)	Authentic leadership development	0.92
42	Avolio BJ et al. (2004)	Authentic leadership	0.92	34	Bass BM & Steidlmeier P (1999)	Ethics, character, and authentic transformational leadership behavior	0.72

Factor 5: Charismatic leadership (Eigenvalue: 2.56   % Variance: 5.1)

ID	Articles	Key theme's word		ID	Articles	Key theme's word	
32	Hunt JG et al. (1999)	Charismatic leadership	0.88	23	Bono JE & IIies R (2006)	Charismatic leadership	0.76
45	Howell JM & Shamir B (2005)	Charismatic leadership	0.85	5	Shamir B et al. (1993)	Charismatic leadership	0.76
40	Mumford MD (2006)	Pathways to outstanding leadership	0.83	31	House RJ (1977)	Charismatic leadership	0.74
9	Conger JA & Kanungo RN (1998)	Charismatic leadership in organizations	0.79	29	Meindl JR et al. (1985)	The romance of leadership	0.73
13	Conger JA & Kanungo RN (1987)	Charismatic leadership	0.78	44	House RJ et al. (1991)	Charismatic leadership	0.65
27	Yukl GL (1999)	Transformational and charismatic leadership theories	0.77	35	Gardner WL & Avolio BJ (1998)	The charismatic relationship	0.64

Factor 6: Complexity leadership (Eigenvalue: 1.7   % Variance: 3.4)

ID	Articles	Key theme's word		ID	Articles	Key theme's word	
28	Osborn RN et al. (2002)	Theory of leadership	0.79	48	Mumford MD et al. (2002)	Leading creative people	0.47
47	Marion R & Uhl-Bien M (2001)	Leadership in complex organizations	0.77	43	Bass BM (1998)	Transformational leadership	0.45
41	Pearce CL & Conger JA (2003)	Shared leadership	0.76				

2008–2012. Six research clusters were extracted from the data, and together they explained over 81.4 per cent of the variance. Table 5 also lists the six most important clusters along with the articles that had factor loadings of .40 or above. As is common in this type of analysis, articles with loadings of less than .40 or with cross loadings were removed from the final results (White & Griffith, 1981). The results clearly showed that the most influential articles on leadership clustered together, and the first major research cluster was 'transformational leadership.' The second cluster was related to 'LMX theory.' The third cluster in leadership research focused on 'implicit leadership theories.' The fourth cluster was related to 'authentic leadership.' The fifth cluster in leadership research focused on 'charismatic leadership.' The last research cluster for leadership in the period of 2008–2012 was focused on 'complexity leadership.'

The Intellectual Structure of Stage 2 (2013-2017)

Table 6 and Figure 4 present the results for the period 2013–2017, and six major research clusters were extracted from the literature, together explaining over 74.1 per cent of the variance. The first research cluster was also about 'transformational leadership.' The second major research cluster was also about 'LMX theory.' The third cluster in leadership research also focused on 'implicit leadership theories.' The fourth cluster was related to 'ethical leadership.' The fifth cluster in leadership research focused on 'multilevel theory and methods in organizations.' The last research cluster for leadership in the period of 2013–2017 was focused on 'leadership affect and emotions.'

Implications and Conclusions

The past decade has seen extensive research on leadership. This study investigates leadership research using citation and co-citation data published by The Leadership Quarterly in SSCI between 2008 and 2017. Our future study may also focused for the same style research on IJOI in EI database. With the help of social network analysis tools and a factor analysis of the co-citation data, this study maps the intellectual structure of leadership over the past decade. A factor analysis of the co- citations suggests that the field is organized six into different concentrations of interest in Stage 1 (2008-2012): transformational leadership, LMX theory, implicit leadership theories, authentic leadership, charismatic leadership and complexity leadership, with some discussions on the development of leadership. In addition, the field is organized into six different concentrations in Stage 2 (2013-2017): transformational leadership, LMX theory, implicit leadership theories, ethical leadership, multilevel theory and methods in organizations, and leadership affect and emotions, with some discussions on the development of leadership. Future leadership studies will probably continue to focus on transformational leadership, LMX theory and implicit leadership theories. In addition, leadership affect and emotions has become a new issue of concern for the field of leadership. More specifically, although transformational leadership still remains the most influential in this field of research, complexity, ethical, shared, and collective types of leadership are the approaches that show the next greatest intensity of

100

Table 6. Core Research Themes: 2013–2017

Factor 1: Transformational leadership (Eigenvalue: 16.99 % Variance: 33.6)						
ID	Articles	Key theme's word		ID	Articles	Key theme's word
42	Yukl GL (1999)	Transformational and charismatic leadership theories	0.90	15	Burns JM (1978)	Leadership
14	Van Knippenberg D & Sitkin SB (2013)	Charismatic-transformational leadership	0.88	28	Conger JA & Kanungo RN (1987)	Charismatic leader
1	Bass BM (1985)	Leadership and performance	0.87	18	Lowe KB et al. (1996)	Transformational a leadership
13	Podsakoff PM et al. (1990)	Transformational leader behaviors	0.86	6	Judge TA & Piccolo RF (2004)	Transformational a leadership
39	Howell JM & Shamir B (2005)	Charismatic leadership	0.84	7	Antinakis J et al. (2010)	On making causal
5	Shamir B et al. (1993)	Charismatic leadership	0.83	47	Kark R et al. (2003)	Transformational l
32	Conger JA & Kanungo RN (1998)	Charismatic leadership in organizations	0.83	35	Meindl JR (1995)	The romance of lea
Factor 2: LMX theory (Eigenvalue: 7.54 % Variance: 14.9)						
ID	Articles	Key theme's word		ID	Articles	Key theme's word
23	Gerstner CR & Day DV (1997)	Leader-member exchange	0.92	3	Graen GB & Uhl-Bien M (1995)	Leader-member ex
29	Danserean F et al. (1975)	Leadership in formal organizations	0.87	20	Blau PM (1964)	Exchange and pow
21	Dulebohn JH et al. (2012)	Leader-member exchange	0.87	45	Baron RM & Kenny DA (1986)	Social psychologic
Factor 3: Implicit leadership theories (Eigenvalue: 4.6 % Variance: 9.1)						
ID	Articles	Key theme's word		ID	Articles	Key theme's word
49	Offermann LR et al. (1994)	Implicit leadership theories	0.92	33	Eagly AH & Karau SJ (2002)	Role congruity the toward female lead
24	Epitropaki O & Martin R (2004)	Implicit leadership theories	0.90	8	Judge TA et al. (2002)	Personality and lea
10	Lord RG et al. (1984)	Leadership categorization theory	0.83	43	Antonakis J et al. (2012)	Leadership and ind
Factor 4: Ethical leadership (Eigenvalue: 3.76 % Variance: 7.4)						

ID	Articles	Main Topic		ID	Articles	Main Topic
26	Brown ME & Trevino LK (2006)	Ethical leadership	0.87	48	Liden RC et al. (2008)	Servant leadership
36	Walumbwa FO et al. (2008)	Authentic leadership	0.85	31	Yammarino FJ et al. (2005)	Leadership and lev
12	Brown ME et al. (2005)	Ethical leadership	0.82	30	Day DV (2000)	Leadership develop
11	Avolio BJ & Gardner WL (2005)	Authentic leadership development	0.77			

Factor 5: Multilevel theory and methods in organizations (Eigenvalue: 2.39   % Variance: 4.7)

ID	Articles	Main Topic		ID	Articles	Main Topic
40	James LR et al. (1984)	Within-group interrater reliability	0.88	17	Hu LT & Bentler PM (1999)	Covariance structu
9	Bliese PD (2000)	Within-group agreement, non-independence, and reliability	0.83	25	Preacher KJ & Hayes AF (2008)	Asymptotic and res
4	Aiken LS et al. (1991)	Multiple regression	0.74	2	Podsakoff PM et al. (2003)	Common method b behavioral research

Factor 6: Leadership affect and emotions (Eigenvalue: 2.22   % Variance: 4.4)

ID	Articles	Key theme's word		ID	Articles	Key theme's word
34	Gooty J et al. (2010)	Leadership affect and emotions	0.90	27	Bono JE & IIies R (2006)	Charisma, positive mood contagion
41	Sy T et al. (2005)	The contagious leader				

research. These results help to profile the invisible network of knowledge production in leadership and provide important insights with implications for current and future research directions of leadership studies for both management scholars and practitioners.

This paper presents the most influential scholars, identifies the links among them, and confirms the status of each scholar with regard to their contributions to the leadership field. This paper also profiled the major themes, concepts and relationships discussed within each domain, and the results show the scope of leadership research has been broad, and that many research opportunities are now emerging in the field. The contributions of this paper are thus that it provides valuable research directions for scholars investigating leadership, and also proposes an objective and systematic means of determining the relative importance of different knowledge nodes in the development of this field.References

Acedo, F. J., & Casillas, J. C. (2005). Current paradigms in the international management field: An author co-citation analysis. International Business Review, 14: 619-639.

Bass, B. M. (1990). Bass and Stogdill's handbook of leadership: Theory, research, and managerial applications (3rd ed.). New York: Free Press.

Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). Ucinet 6 for Windows. Harvard: Analytic Technologies.

Culnan, M. J. (1986). The intellectual development of management information systems, 1972-1982, a co-citation analysis. Management Science, 32(2): 156-172.

Culnan, M. J. (1987). Mapping the intellectual structure of MIS, 1980-1985: A co-citation analysis. MIS Quarterly, September: 341-353.

Diodato, V. (1994). Dictionary of bibliometrics. Binghamton, New York: The Haworth Press.

Ferreiro, A. L. (1993). Bibliometría: Análisis bivariante [Bibliometrics: Bivariate analysis]. Madrid, Spain: EYPASA.

Ma, Z, Wang, T. T. & Lee, Y. D. (2012). The status of international ethnic entrepreneurship studies: A co-citation analysis. The Journal of Entrepreneurship, 21(2): 173-199.

Mariluz, F, A., & Antonio, R. R. (2009). Intellectual structure of human resources management research: A bibliometric analysis of the Journal Human Resource Management, 1985-2005. Journal of the American Society for Information Science, 60: 161-175.

McCain, K. W. (1990). Mapping authors in intellectual space: A technical overview. Journal of the American Society for Information Science, 41: 433-443.

Merton, R. (1979). Foreword to E. Garfield, Citation Indexing: Its Theory and Application in Sci-

ence, Technology, and Humanities. New York: John Wiley.

Nerur, S. P., Rasheed, A. A., & Natarajan, V. (2008). The intellectual structure of the strategic management field: An author co-citation analysis. Strategic Management Journal, 29(3), 319-336.

Pilkington, A., & Teichert, T. (2006). Management of technology: Themes, concepts and relationships. Technovation, 26: 288-299.

Ponzi, L. J. (2002). The intellectual structure and interdisciplinary breadth of knowledge management: A bibliometric study of its early stage of development. Scientometrics, 55: 259-272.

Price, D. J. D. S. (1963). Little Science, Big Science, and Beyond. New York: Columbia University Press.

Ramos-Rodriguez, A. R., & Ruiz-Navarro, J. (2004). Changes in the intellectual structure of strategic management research: A bibliometric study of the Strategic Management Journal, 1980-2000. Strategic Management Journal, 25: 981-1004.

Rost, J. (1991). Leadership for the twenty-first century. New York: Prager.

Sharplin, A., & Mabry, R. (1985). The relative importance of journals used in management research: An alternative ranking. Human Relations, 38: 139-149.

Tahai, A., & Meyer, M. J. (1999). A revealed preference study of management journals' direct influences. Strategic Management Journal, 20: 279-296.

Wang, T. T., Lee, Y. D., & McLee, Y. D. (2013). Evolution of the intellectual structure of expatriate studies in the last five decades: Themes and relationships. Journal of Human Resource Management, 13(4): 39-76.

White, H. D., & Griffith, B. (1981). Author co-citation: A literature measure of intellectual structure. Journal of the American Society for Information Science, 32: 163-171.

Yukl, G. L. (2013). Leadership in organizations (8th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.