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Academy of Management Journal 1958-2014: A citation Analysis

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Academy of Management Journal 1958-2014: A citation Analysis

This paper provides a citation network analysis of the publications of *Academy of Management Journal* from 1958 to 2014 inclusive. This represents the entire history of the journal to date. It analyses the most published authors, most cited articles, most cited authors, top institutions, and the top countries the articles emanate from. 2304 articles containing 114,550 references were taken from Web of Science™ as a source of primary data. 114,550 Analysis was carried out using the Web of Science™ online analytics tool and Excel®. A data visualisation and manipulation software, Gephi™, was used to provide a visual representation of the associated citation networks. Results indicate that the most published authors throughout the journal's history are Ivancevich, Golembiewski and Hambrick. The three most cited authors are Pfeffer, Porter and Thompson. The single most cited article is Pfeffer and Salancik's 1978 article *The external control of organizations: a resource dependence perspective*. An analysis of keywords revealed 'Performance', 'Organization'

and 'Work' as the most important terms in the journal's history. Results from this paper shed light into the evolving concerns of the journal and its readership and provide an alternative form of analysing and visualising large citation data.

Keywords: citation analysis, Academy of Management Journal, network analysis, Gephi™

Academy of Management Journal 1958-2014: A Citation Analysis

INTRODUCTION

Based in the US, the *Academy of Management Journal (AMJ)* is one of the leading journals in business and management. According to its website, it claims to be the “flagship empirical journal in management” that enjoys wide readership, a high impact factor, and top ranking among business and management journals (*Academy of Management*, 2015: 1). Since 1958, it has contributed significantly to the theory and practice of the discipline of Management. Nearing its 60th anniversary in 2018, we think it is important to look back at its achievements. How will *AMJ* mark this milestone?

One way is to assess *AMJ*’s impact and influence over the years through impact factor and ranking, and in which *AMJ* has had considerable success. The Academy of Management (2015) reports that *AMJ*, according to the 2013 Journal Citation Reports, gained an impact factor of 4.974 and is ranked 5 of 172 ‘management’-categorised journals and ranked 3 of 110 journals in the category of business. Although impact scores may be seen by researchers as evidence of excellence in scholarship, rigour and wide readership, it is a blunt instrument and sometimes researchers are more interested in the scholars that publish in *AMJ* and how well-cited they are. While impact factors reflect the average number of citations to recent articles, it is sometimes useful to know academics-as-experts; i.e., whether they publish in *AMJ*, how often do they do, and how often their work is cited. These data have not been investigated in *AMJ*. Any such analysis is a contribution to the history of the journal and a contribution to an assessment of its ranking as a journal in the field. In this paper we aim to analyse the entire history of citation data of *AMJ*. We will provide a network analysis of this data using a data visualisation tool called Gephi™. This tool is in widespread use in other disciplines (see **LITERATURE REVIEW** below).

This paper follows our use of citation network analysis in another field—the discipline of Higher Education (Calma & Davies, 2015a; 2015b). We now wish to extend this to the study of Management. We previously analysed the entire publication history of two leading journals in higher education—*Studies in Higher Education* and *Higher Education*—and discovered virtual unanimity on ‘most cited’ authors, and yet significant differences in the citation patterns between US and UK/European/ Australasian journals. To our knowledge, there is no existing research on citation analysis on *AMJ*, or the use of data visualisation tools. There is also no extant citation analysis of the entire history of the journal to date.

In this paper we examine the entire publication history of *AMJ*, from 1958 through to the end of 2014. This period represents 57 years of the journal. Our analysis reveals the ‘who’s who’ in management research as well as the most discussed topics and other key important statistics and milestones.

LITERATURE REVIEW

Citation analysis is not new. A quick search in the WoS database using queries “citation analysis” and “business” or “management” resulted in more than 1 million articles, with nearly 100,000 of those specifically under the field codes “business” and “management” of which nearly 60,000 are academic articles. There are around 150 studies on citation analysis in relation to Management and business studies. A summary of these is provided below.

Chatha, Butt and Tariq (2015) conducted a study by examining the research methodology developments in the manufacturing sector. In their study they performed a similar citation analysis focusing on the most cited articles in the manufacturing industry using total number of citations and citations per year. They also found the most cited publication, Youndt and colleagues’ 1996 article, which has over 1,200 citations. They also

examined the most seminal works. It can be said that their study focussed on a single industry across various relevant journals. Lu and Liu (2014) looked at citation analysis in the area of corporate social responsibility for publications between 1970 and 2011. They used WoS, later paralleled with Google Scholar, for their data but used main path analysis for their diagrams. They analysed the annual number of corporate social responsibility papers published, the total number of papers written by each author and the total number of papers published in 20 journals. They were interested in the journals that published the most articles about corporate social responsibility. They also ranked authors according to the number of papers they published, their g-index and h-index scores and the inclusive years that they were active.

There have also been attempts to conduct a citation analysis of a particular management journal(s). Schulz and Nicolai (2015), for example, recently examined the *Harvard Business Review* (HRB) using a bibliometric analysis of 231 articles. They were focussed on the degree of intellectual influence of HRB articles by calculating citation frequency using statistics. They found significant difference between the number and impact of citing and cited references but concluded that publications in the journal have had a significant impact on management research discourse. Albeit small in scope, their aim is quite similar to ours; namely, to examine the direction and type of intellectual influence of publications cited. Similarly, Ferreira, Santos, De Almeida and Reis examined a sample of 334 articles from 16 leading business and management journals between 1980 and 2010. They were interested in the intellectual connections among authors and works by looking at citations data, co-citations and research themes. They found that the two most cited works were about post-acquisition issues and observed changes in the theoretical directions of topics over the years. They performed co-citation analysis of the 30 most cited articles and found, through a citation network, the various groups of authors and their research topics that played

a central role in the network. Lastly, the authors have analysed the centrality of particular themes such as ‘corporate partnership’ and ‘performance’ in the study of mergers and acquisitions. This is quite similar to our work, where we focused on the central themes pursued in *AMJ* using keywords. However, in their case, they have only used a sample of 334 articles. A citation analysis was also carried out by Antonakis, Bastardo, Liu, and Schriesheim (2014) using 776 articles from *The Leadership Quarterly* between 1990 and 2012. Using regression, they found that quantitative, theory, review, and method articles received significantly more citations than qualitative articles. Other scholars have tracked the impact of a particular author, Wilfred Bion, on a particular topic of interest (e.g., socio-psychological research on group dynamics) (Schrujfer & Curseu, 2014), or a group of non-leading journals and their impact on a particular discipline (e.g., marketing) (Haddad, Singh, Sciglimpaglia, & Chan, 2014). However, we have yet to find an analysis of the scale of our research; namely, the entire history of citations since the inception of a particular journal since its inception.

Gephi™ is an open-source dedicated network analysis software used in data visualisation. Although new, there is already a growing number of applications of Gephi™ across a number of disciplines. It has been used in creating journal maps using Web of Science data similar to what is currently proposed in our study (see Leydesdorff & Rafols, 2012). There are also more than twenty articles found that used Gephi™ in sciences such as biology (Barberán, Bates, Casamayor, & Fierer, 2012; Hudson & Conant, 2011; Kaimal, Bardes, Tabar, Jegga, & Aronow, 2010;) and genetics (Rossano, Chouhan, & Macleod, 2013; Viguerie et al., 2012). Moreover, it has been used in management, such as Montes, Seoane and Laxe’s (2012) work on transport and Gilbert, Ahrweiler and Pyka’s (2014) article on inter-firm collaboration strategy. However, we were unable to find evidence of its use in *AMJ* specifically. Our study is therefore unique.

METHODS

The following sections describe the methods of data collection and analysis, limitations and assumptions of the present study.

Data Collection and Preparation

There were 2,304 articles harvested from *AMJ* containing a total of 114,550 references used in the study. A data extraction procedure was used using Web of Science™ (WoS). A search was conducted using WoS on 2 March 2015 to look for *AMJ* journal publications from our arbitrary commencement point of 1900 through to the end of 2014. The result was 3,190 publications that included articles, editorials, reviews, meetings, and errata. From this we harvested 2,304 academic articles for later analysis. These academic articles were extracted and imported into Excel with the following information: author, title, keywords, abstract, number of references, cited references and publication year. This file was used for the analysis of top keywords, published authors, cited authors/organisations and cited articles. A spreadsheet file was also used to prepare all the necessary comma-separated values (CSV) files required for importation into Gephi™.

WoS was also used for some of the analyses. We used the data analytics tool in WoS to present the most published authors, the top countries of publication, top-ranked universities, top publication years and the most cited articles. We present these results in the Results section. WoS had data analysis limitations that inhibited our plans. For example, using WoS there is a difference in analysing the citation counts among authors. WoS counts citations whether an author is the first-named author or not. In our case, we were interested in segregating those authors that published as solo-authors and authors that published with others. Thus, a separate analysis using Excel was made.

To prepare the files for Gephi™, two files for each of the ‘author’ and ‘keyword’ Gephi™ files must be made: these files are, respectively ‘nodes’ and ‘edges’ files. The following describes how these four files (‘author nodes’, ‘author edge’, ‘keyword node’ and ‘keyword edge’) were prepared.

Data Analysis Using Gephi™

A ‘node’ is a term used in Gephi™ to identify the record ID and label of a particular item in set of data. In the present study, the nodes are the citing author(s)/article(s) and the cited author(s)/reference(s). Thus, the ‘author nodes’ file uses IDs 1-2304 (representing the 2,304 published articles from 1958-2014) and continues with IDs 2305-114550 (representing the 114,550 cited references). Thus, there were 116,854 nodes loaded onto Gephi™. In other words, node IDs were assigned for each of the source authors and cited references. For example, node “1, Carton, AM; Murphy, C; Clark, JR” represents the most recent record in our data, published in late 2014, representing node ID=1 and Label= Carton, AM; Murphy, C; Clark, JR (the article by these authors). All 105,788 ID and Label combinations were prepared in Excel and exported to Gephi™. The assignment of IDs is critical as these IDs will become the “source” and “target” IDs when preparing the “Edges” file.

In preparing the ‘keyword nodes’ Gephi™ files, there were 1,245 articles with a total of 10,602 associated keywords. Similar to the ‘author nodes’ file, every article and their associated keywords must be given an ID. This was necessary to perform the analysis. There were 11,847 unique IDs representing the 1,245 articles with keywords (IDs 1-1245) and the keywords themselves (IDs 1246-11847). Again, this is an important step in Gephi™ as every node is connected to another node using edges, the articles being the “source” and the keywords being the “target” IDs.

An edge shows the relationship between two or more nodes. For example, in the ‘keyword nodes’ file, if article ID 1 has three keywords with IDs 1246, 1247 and 1248, the

connections are represented by three edges: an edge or connecting line between node 1 (source) and node 1246 (target), node 1 to 1247 and node 1 to 1248. This same procedure was applied in the ‘author nodes’ Gephi™ file. This procedure can be summarised in a simple diagram:

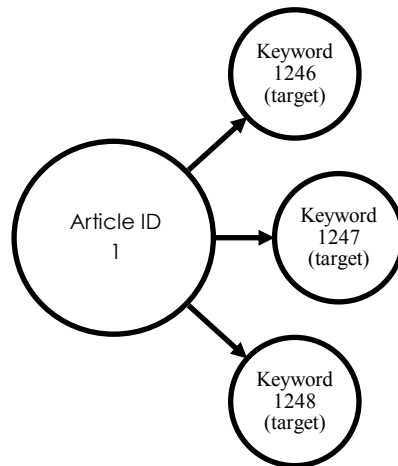


Figure 1. Representation of source and target keywords

Similarly, for the ‘author edges’ file, an edge shows the relationship between a source author and a cited reference. For example, the article “Carton et al.” (ID = 1) has 118 cited references. To construct an edge table for this ID, there will be 118 edges in total. Connections can be “directed” (if A cites to B, B might not cite A) or “undirected” (if A cites B, B cites A). In our data, a directed relationship is used. This tedious process was repeated across all 2,305 articles.

Because the original author node Gephi™ file contained a total of 105,788 nodes there were issues with running the Gephi™ application owing to the size of the data file. It either crashed or took a considerably long time to run some analytics. As a result, another set of Gephi™ files were prepared focusing only on the top 10 cited authors and top 10 cited articles following analyses made in Excel®. This made the work of running the data analysis in Gephi™ more manageable.

In summary, there were 114,550 cited references from the 2,304 articles. This equates to an article citing an average of 58 references. There were 1,245 articles with a total of 10,602 associated keywords. Of those with keywords, the average number of keywords was 8.6.

Methods of Analysis

Among the various analyses we considered, we were primarily interested in both *who cited who* (i.e., most cited author) and *who cited what* (i.e., most cited article). Thus, we included both the WoS analytics results and our own analysis using Excel. Later, we visualised the most cited articles and the most cited authors using Gephi™.

In using WoS, a number of filters were used to extract data that revealed the most published authors, top-ranked countries, top-ranked organisations, top publication years, and most cited articles. This was easily done using WoS and no further analysis was made (see Results: Web of Science analytics results). As previously mentioned, including this analysis in the Results section allowed us to compare WoS analytics to our own.

Our analysis involved using both Excel and Gephi™ with the former providing the data source for the latter. For the most cited author or article, Excel was used for some of the analyses that only required a simple sum while Gephi™ was used for visualisation and manipulation to determine the size of the “node” for each author (the thicker the links, the higher the number of publications by that author). For the remaining issues we used Gephi™’s visualisation capabilities (see **RESULTS AND DISCUSSION** below).

Of the 114,550 references, there were 1,868 that were inaccurate. Either they contained numbers, letters or other characters. For example, 1,060 were numbers or number-letter combinations (e.g., 2-U). Fifty-six were in the format “Anonymous, Year”. 752 were in the format “Year, Author” (e.g., ‘1960, Business Week’). These 752 items were subsequently reverted to the ‘Author, Year’ format. All 1,868 references were assigned their IDs and were

not excluded in the analysis. This ensured that we included all usable data, assigning them to an ID, but making sure each were assigned a sensible descriptor.

Limitations

As mentioned earlier, the only limitation we experienced was the inability of Gephi™ to handle large data. It either took too long to run the data or the application has crashed. This was resolved by reducing the data to the analysis of only the top authors and top articles.

Assumptions

In cleaning the data there were few assumptions made. For example, there were 5 various references to “Ivancevich”. All of these were counted towards Ivancevich after careful examination of each individual record. For example, there were two articles referring to the same “Ivancevich”. These were: “Ivancevi.JM, 1974” and Ivancevi.JM; Donnelly, JH”. A similar procedure was applied to other top authors/articles.

RESULTS AND DISCUSSION

We present in the following sections findings from Web of Science™ analytics, our own analysis using Excel® and diagrams generated from Gephi™.

Web of Science™ Analytics Results

Web of Science™ analysis presents the most published authors whether they appeared as a single author, or as first, second etc. author in the article. This data is summarised in Table 1 below.

Table 1. *Most published authors, as solo or co-author*

Rank	Author	Number of published articles	% of 2304
1	Hambrick DC	17	0.74
2	Slocum JW	15	0.65
3	Hitt MA	14	0.61
	Mitchell TR	14	0.61
4	Ivancevich JM	12	0.52

	Smith KG	12	0.52
5	Tsui AS	11	0.48
6	Cannella AA	10	0.43
	Cummings LL	10	0.43
7	Dunham RB	9	0.39
	Hoskisson RE	9	0.39
	Ilgen DR	9	0.39
	Lee TW	9	0.39
	Oreilly CA	9	0.39
	Pollock TG	9	0.39
	Westphal JD	9	0.39
8	Golembiewski RT	8	0.35
	Huber GP	8	0.35
	Liden RC	8	0.35
	Oldham GR	8	0.35
	Pfeffer J	8	0.35
	Shaw JD	8	0.35
	Sheridan JE	8	0.35
	Trevino LK	8	0.35
	Tushman ML	8	0.35

Table 1 presents a range between 8 and 17 published articles among the top 20 authors. Hambrick is the author with the highest number of publications (17) while many in the top 20 share their spot with other authors. Table 2 below lists USA, Canada and England contributing 93.19% of all *AMJ*'s publications in the past 57 years. The contribution of other countries outside of the top three does not go unrecognised but *AMJ* is clearly dominated by US-based contributors. The significantly high proportion of publications from the top three are a striking contrast to our previous analyses of the two UK/Europe-based higher education journals where the top three countries represent no more than the 52% percent of published articles (Calma & Davies, 2015ab). It appears that *AMJ* is a US-centric journal.

Table 2. *Top 25 countries*

Rank	Countries/territories	Count	% of 2304
1	USA	1892	82.12
2	Canada	180	7.81
3	England	75	3.26
4	Peoples Republic of China	62	2.69

5	Netherlands	55	2.39
6	Australia	42	1.82
7	France	38	1.65
8	Singapore	32	1.39
9	Israel	29	1.26
10	South Korea	20	0.87
11	Germany	18	0.78
12	Switzerland	17	0.74
13	Scotland	10	0.43
14	Japan	9	0.39
15	Spain	9	0.39
16	Belgium	8	0.35
17	Finland	6	0.26
18	Italy	6	0.26
19	Norway	6	0.26
20	Taiwan	6	0.26
21	India	5	0.22
22	Brazil	4	0.17
23	Denmark	4	0.17
24	Hong Kong	4	0.17
25	Sweden	3	0.13

Note: 163 records do not contain country data

Table 3 depicts the top publishing universities in *AMJ*. The top two come from the Northeastern and Mid-Atlantic regions of the US. More than 10% of publications are from the top three while the contribution of the top 10 universities account for more than 30% of *AMJ*'s publications.

Table 3. *Top organisations*

Rank	Organisations	Record Count	% of 2304
1	Pennsylvania State University	90	3.91
2	University of Maryland	74	3.21
3	Texas A&M University	72	3.13
4	University of Washington	72	3.13
5	University of Illinois	70	3.04
6	University of Wisconsin	70	3.04
7	Indiana University	67	2.91
8	University of Michigan	64	2.78
9	Michigan State University	61	2.65
10	University of Minnesota	59	2.56
11	Arizona State University	55	2.39
12	University of Texas	54	2.34
13	Columbia University	50	2.17
14	University of Pennsylvania	48	2.08
15	University of North Carolina	46	2.00
16	Cornell University	45	1.95

17	Harvard University	42	1.82
18	New York University	41	1.78
19	Stanford University	39	1.69
20	Ohio State University	38	1.65
21	University of Georgia	38	1.65
22	University of South Carolina	35	1.52
23	University of Southern California	35	1.52
24	Rutgers State University	34	1.48
25	University of Kentucky	33	1.43

Note: 163 records do not contain organisation data

Another finding of interest would be *AMJ*'s most productive years. The past two years saw the most publications in the entire history of the journal, with a combined output of 146 articles. The top 10 most productive years were mostly from the 2000s while 1975 occupied the ninth spot. Together, the past ten years represent 28% of *AMJ*'s total output.

Table 4. *Top publication years*

Rank	Publication Years	Record Count	% of 2304
1	2013	74	3.21
2	2014	72	3.13
3	2002	69	3.00
4	2000	67	2.91
5	2001	67	2.91
6	2010	63	2.73
7	1996	61	2.65
8	2012	60	2.60
9	1975	57	2.47
10	2005	56	2.43
11	2007	56	2.43
12	2006	55	2.39
13	2004	54	2.34
14	2011	53	2.30
15	1982	52	2.26
16	1997	51	2.21
17	1995	50	2.17
18	2003	49	2.13
19	1973	48	2.08
20	1979	47	2.04
21	1981	47	2.04
22	2008	44	1.91
23	1984	43	1.87
24	1983	42	1.82
25	1999	42	1.82

Perhaps, it is more interesting to find out the most cited article in *AMJ*. WoS indicates that an article by Huselid two decades ago was the subject of much interest among researchers in *AMJ*. It earned 1,819 citations until the end of 2014, nearly 400 citations above its next ‘most-cited’ rival. The top six articles each reached over 1,000 citations with a combined impact of more than 8,000 citations. All articles in the top 10 were published in the 1990s, the latest being 1998, except for one (1989).

Table 5. *Most cited articles across Web of Science™ database*

Rank	Article	Number of citations
1	Huselid, MA (1995). The impact of human-resource management-practices on turnover, productivity and corporate financial performance.	1,819
2	Gulati, R. (1995). Does familiarity bred trust – the implications of repeated ties for contractual choice in alliances.	1,428
3	Damanpour, F. (1991). Organizational innovation – a metaanalysis of effects of determinants and moderators	1,419
4	McAllister, D.J. (1995). Affect-based and cognition-based trust as foundations for interpersonal cooperation in organizations.	1,350
5	Tsai, W.P. & Ghoshal, S. (1998). Cocial capital and value creation: The role of intrafirm networks.	1,210
6	Eisenhardt, K.M. (1989). Making fast strategic decisions in high-velocity environments.	1,010
7	Amabile, T.M., Conti, R., & Coon, H. et al. (1996). Assessing the work environment for creativity.	913
8	Delery, D.E. & Doty, D.H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency and configurational performance predictions.	891
9	Oreilly, C.A., Chatman, J. & Caldwell, D.F. (1991). People and organizational culture – a profile comparison approach to assessing person-orrganization fit.	884
10	Russo, M.V. & Fouts, P.A. (1997). A resource-based perspective on corporate environmental performance and profitability.	836

Excel® Results

Aware of the possibility that WoS might treat *AMJ*’s publication results data differently in their analytics report—such as counting a publication towards a co-author—we

made our own analysis using Excel®. Primarily, we were interested in the most published authors who published alone or as a first-named author. Unlike WoS's calculation of the most cited article (Table 5), we were interested in the most cited articles and authors only within *AMJ*. This would show the popularity of researchers and references *within* the journal itself.

Table 6 shows the most published authors, solo or first-named. Ivancevich topped the list with 13 articles published in the 1970s/80s. This was followed by Golembiewski who published 10 articles in the 1960s/70s. Coming in at third was Hambrick who also published mostly in the 1980s.

Table 6. *Most published authors, solo or first-named*

Rank	Author	Number of published articles as solo	As first- named author	Total	% of 2,304
1	Ivancevich, JM	6	7	13	0.564
2	Golembiewski, RT	5	5	10	0.434
3	Hambrick, DC	4	5	9	0.391
4	Davis, K	5	0	5	0.217
	Miner, JB	5	0	5	0.217
	Reimann, BC	5	0	5	0.217
	Boeker, W	3	2	5	0.217
	Delbecq, AL	3	2	5	0.217
5	Gordon, PJ	4	0	4	0.174
	Scott, WG	4	0	4	0.174
	Urwick, LF	4	0	4	0.174
	Duncan, WJ	3	1	4	0.174
	Ford, JD	3	1	4	0.174
	Gersick, CJG	3	1	4	0.174
	Griffin, RW	3	1	4	0.174
6	Brown, WB	3	0	3	0.130
	Ericson, RF	3	0	3	0.130
	Glueck, WF	3	0	3	0.130
	Harrigan, KR	3	0	3	0.130
	Koontz, H	3	0	3	0.130
	Lebreton, PP	3	0	3	0.130

Table 7 shows the top 10 most cited author(s). Out of the 114,550 references, there are a number of authors whose works have been cited by all 2,304 authors. Table 7 below

shows that Pfeffer tops the list. The top ten most cited authors contributed 2,333 citations or more than 2% of *AMJ*'s total citations.

Table 7. *Top 10 most cited authors*

No.	Article	No. of citations	% of 114,550
1	Pfeffer J.	421	0.37
2	Porter, M. E.	297	0.26
3	Thompson J. D. 1967	260	0.23
4	Hambrick, D. C.	255	0.22
5	Eisenhardt, K. M.	239	0.21
6	Dimaggio, P. J.	205	0.18
7	Barney, J.	196	0.17
8	March, J. G.	184	0.16
9	Aiken, L. S.	164	0.14
10	Baron, R. M.	112	0.10

As mentioned earlier, we were particularly interested in the most cited article or reference in *AMJ*. Table 8 lists the top 10. Pfeffer and Salancik's 1978 article was most influential, having been cited 188 times by authors who published in *AMJ*. More than 1% of publications in *AMJ* were contributions from the top 10. We also found the 1984 article of Hambrick and Mason to be the only article in the top 10 that was published in *Academy of Management Review* and highly cited within *AMJ*.

Table 8. *Most cited article or reference*

Rank	Article or Reference	Number of citations	% of 114,550
1	Pfeffer, J. & Salancik, G. (1978). The external control of organizations: a resource dependence perspective.	188	.16
2	Thompson, J. D. (1967). Organizations in action.	174	.15
3	March, J. G., & Simon, H. A. (1958). Organizations.	167	.15
4	Aiken, L. S., & West, S. G. (1991). Multiple regression: testing and interpreting interactions.	157	.14
5	DiMaggio, P. J. & Powell, W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational fields, <i>American Sociological Review</i> , 48, 147-60	128	.11
6	Baron, R.M. & Kenny, D.A. (1986). The moderator mediator variable distinction in social psychological-research- conceptual, strategic, and statistical considerations. <i>Journal of</i>	110	.10

	<i>Personality and Social Psychology</i> , 51(6), 1173-1182.		
7	Porter, M. E. (1980). Competitive strategy: techniques for analyzing industries and competitors.	104	.09
8	Jensen, M. C. (1976). Theory of the firm: managerial behavior. agency costs and ownership structure. <i>Journal of Financial Economics</i> , 3(4), 305-360.	101	.09
9	Hambrick, D.C., & Mason, P.A. (1984). Upper echelons: the organization as a reflection of its top managers. <i>Academy of Management Review</i> , 9(2), 193-206.	99	.09
10	Barney, J. (1991). Firm resources and sustained competitive advantage. <i>Journal of Management</i> , 17, 99-120.	98	.09

Table 9 below shows the most discussed topics in AMJ using keywords.

‘Performance’, ‘Organization’ and ‘Work’ were identified more than 1,500 times, or nearly 15% of all keywords listed in the entire *AMJ* publications. Note that keywords were not used in the early years and we only found 1,245 articles with keywords, comprising 54% of all papers.

Table 9. *Top keywords*

Rank	Keyword that contain the following word	Number of occurrence	% of 10,602
1	Performance	648	6.11
2	Organization	568	5.36
3	Work	370	3.49
4	Management	320	3.02
5	Model	283	2.67
6	Behavior	244	2.30
7	Industry	154	1.45
8	Perspective	150	1.41
9	Innovation	146	1.38
10	Strategy	127	1.20

Note that the above keywords either appear as a single word or a phrase. For example, the keyword ‘performance’ was found 378 times as a single word and was found in 50 other keywords that include the word, such as Firm Performance (73 times), Job Performance (31), Financial Performance (29) and others. Clearly, ‘performance’, in its various manifestations, has been a key concept throughout the history of the journal.

Gephi™ Diagrams

It will be recalled that the citing author(s) and cited references are the ‘nodes’ and ‘edges’. These show which author cited another. Each of the 2,304 nodes was connected to the 114,550 cited references. The original Gephi™ diagram for *Academy of Management Journal* was too large for Gephi™ to process. Instead, specific Gephi™ files were created to visualise the most cited articles and most popularly cited authors.

Most cited articles. In Table 8 we present the top 10 ‘most cited’ articles. To visualise the extent of connections of these 10 articles, a Gephi™ diagram was generated. Figures 2 and 3 below illustrate the top 10 articles in Gephi™, comprising 330 nodes and 319 edges. Figure 2 shows the top 10 cited articles using the Force Atlas 2 layout. The darker the dot the more connections the article has (i.e. more authors have cited the article). This figure shows that Coleman’s 1966 article ‘Equality of educational opportunity’ with the darkest dot at the right side of the diagram has the most number of edges or citations. Each of the small black circles represents the articles/authors that cited any of the top 10 authors.

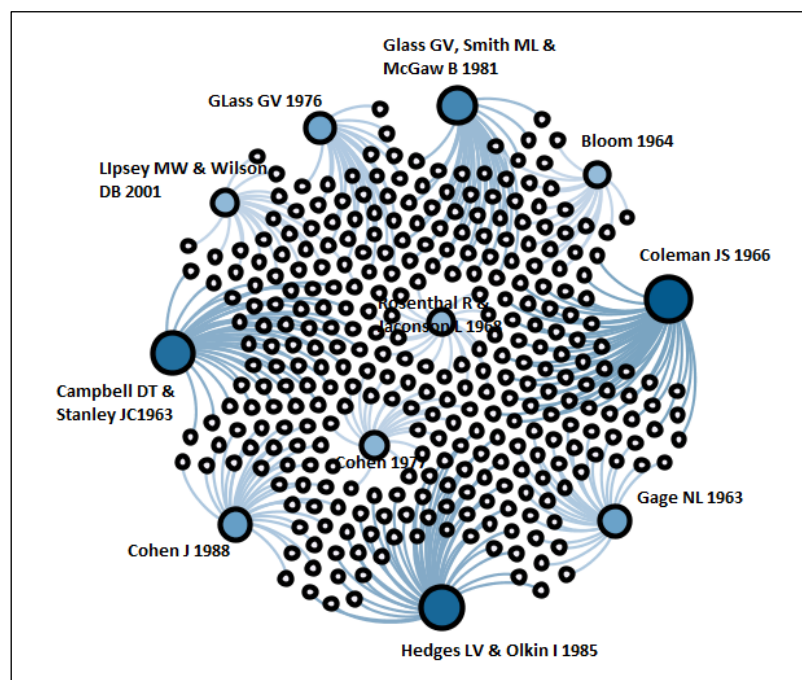


Fig. 2. Most cited article or reference, Force Atlas 2 layout

The ‘degree’ of a node indicates the number of edges adjacent to the node. Coleman’s article shows 47 edges, Hedges et al. 43, and so on (see also Table 8: ‘number of citations’ column). Since the edges range from 1 to 47, the degree range is also 1 to 47 which shows a significant number of articles having just one connection (i.e. citation) with any of the top 10 authors. This leaves an average degree of 1.933. The ‘eigenvector centrality’, which is a measure of node importance in a network based on its connections, reveal the centrality of the top 10 cited articles in the network of 330 nodes. Figure 3 (a and b) below is another visualisation of the top 10 most cited articles and their connections to those that cited them between when it was first published through to 2014 using Circular layout view.



Fig. 3a. Most cited articles, Circular Layout, no labels

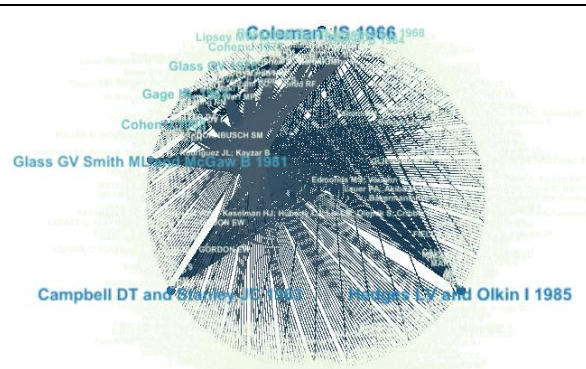


Fig. 3b. Most cited articles, Circular Layout, with labels

Most cited authors. Table 7 earlier showed the top 10 most cited authors or organisations. Using the data associated with Table 7, a Gephi™ file was created containing 2,176 nodes and 2,165 edges. Figures 4 to 7 below show the Gephi™ diagrams associated with the top 10 most cited authors with varying degree of connections. Similar to the previous diagrams, the dots refer to the top 10 authors or organisations. The darker thicker the lines, the more popularly cited that author or organisation is. The National Educational Association clearly has the densest “spray” of citations demonstrating widespread influence in the history of the journal.



Fig. 4. Most cited authors or organisations, Circular Layout

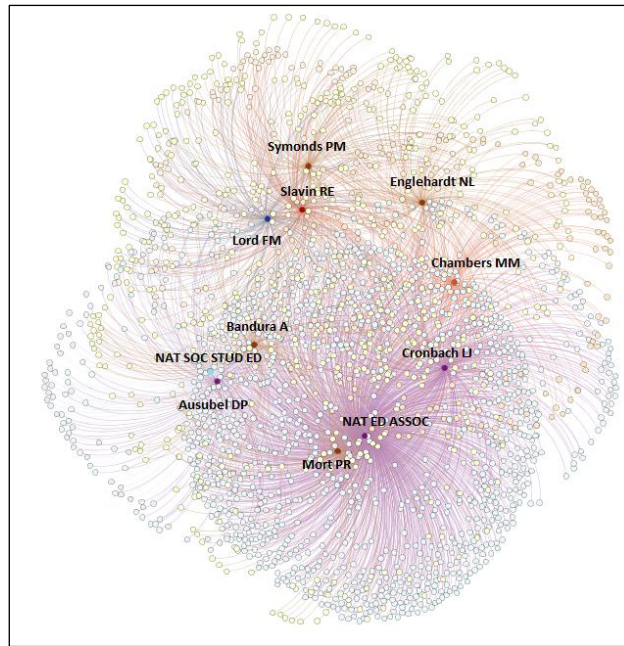


Fig. 5. Most cited authors or organisations, Yifan Hu Layout

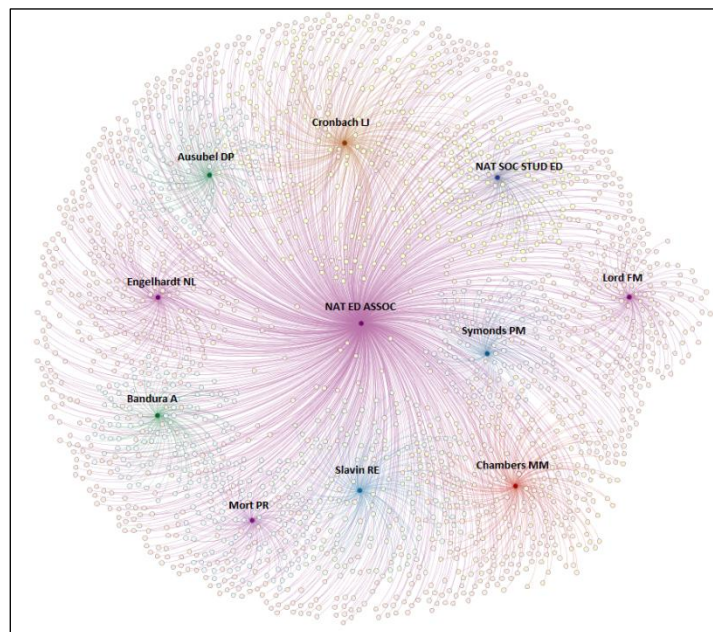


Fig. 6. Most cited authors or organisations, Noverlap Layout

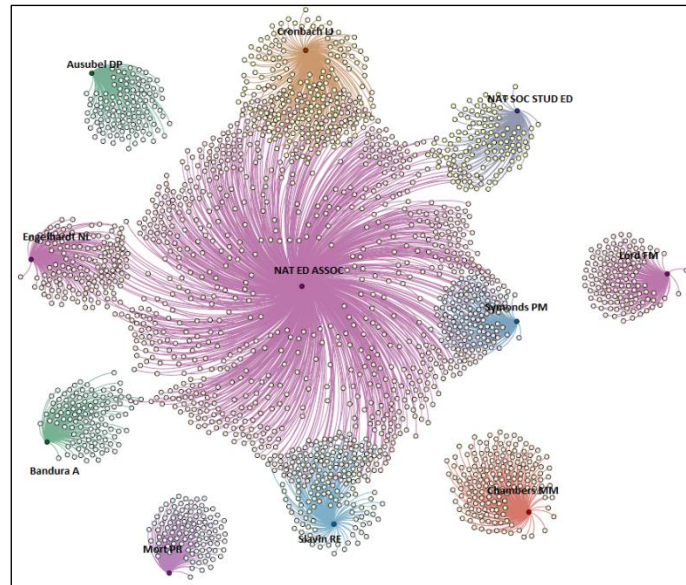


Fig. 7. Most cited authors or organisations, Fruchterman Reingold Layout

Figures 6 and 7 above are perhaps most revealing. They effectively show the ‘geography’ of the journal as of 2014, since the journal’s inception.

CONCLUSION

In this paper we have analysed the entire publication history of *AMJ* from 1958 to 2014 and found the most published authors, most cited articles, most cited authors, top-ranked institutions, and the top-ranked countries responsible for the articles. We have also found the most discussed topics using keywords. From the data, Coleman’s 1966 article has clearly had the most profound impact until recently. The National Educational Association has been ‘most cited’. The USA and Canada remain the main sources of published work in *AMJ* and the key topics discussed throughout the journal’s history have been those related to ‘performance’, ‘organisation’ and ‘work’. It remains for us to conduct a similar study of other key business and management journals to establish similarities and differences with *AMJ*. Will they reveal similar themes in terms of keywords? Will the top-ranked institutions be identical? Will the ‘most cited’ author(s) be consistent or vary wildly? In our previous study of the discipline of Higher Education, we found widely divergent citation patterns among US journals and their anglo-European counterparts. US journals exclusively cited US authors.

This was not the case for UK, European or Australasian journals. Will we find similar discrepancies in the field of Management? In a subsequent study in Management we hope to provide a conceptual map of the journals preferred by researchers, the citation patterns among these journals, and the range of topics most discussed. This will provide important information for various stakeholders interested in the ‘citation geography’ of leading business and management journals.

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