Citational analysis of the accounting education literature, 1956-1990

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A CITATIONAL ANALYSIS OF THE ACCOUNTING EDUCATION LITERATURE, 1956-1990

Abstract: Citations were collected for education articles published from 1956-1990. The journals selected for the study are International Journal of Accounting Education and Research (IJAER), Issues in Accounting Education (IAE), Journal of Accountancy (JOA), Journal of Accounting Education (JOAE), and The Accounting Review (TAR). An analysis of the data has revealed: (1) the maximum average citation per paper peaked around 1981-82; (2) the 1976-1985 decade was the most productive in terms of the number of articles, average number of pages per article, and the average number of citations per paper; (3) JOA had the highest average citations per paper; (4) sixty-seven percent of the twelve most highly cited papers in accounting education were published in TAR; (5) accounting education scholars tend to cite very recent literature; (6) the immediacy index for the accounting education literature is approximately the same as that for agency theory literature; and (7) the content of education articles has changed from professional development, five year accounting programs, student testing and teaching aids to improving upon methodologies used to conduct education research and the ranking of accounting faculty and accounting concepts.

The objective of this study is to evaluate the historical development of the accounting education literature from 1956-1990. More specifically, we are concerned with employing citation analysis to determine the following: (1) the growth from 1956-1990, (2) the changes in the attributes of the papers themselves (length and number of citations) that characterize the development from short anecdotal papers to more lengthy research oriented works, (3) the influential researchers involved in the development of the accounting education literature and (4) how the structure of the literature has changed.
This study should aid accounting historians in their understanding and evaluation of the extent to which early accounting education research has contributed to current accounting education research. Accounting historians are also provided with an understanding of additional attributes of the accounting education literature, e.g., the length and number of papers, the average number of citations per paper, and those factors that cause a body of literature to move from a state of infancy to that of maturity.

The remainder of this paper reviews some related literature. Next, data collection is discussed, followed by an analysis and explanation of the results. The final section presents some concluding remarks.

**LITERATURE REVIEW**

In an historical research context, citation and co-citation analysis have been employed to identify attributes of specialized research areas in the accounting research literature. With regard to identifying attributes of specialized research areas, Gamble and O'Doherty [1985a] employed co-citation analysis to map the accounting income smoothing literature. In addition, Gamble, et al., [1987] also examined the attributes of the agency theory literature to determine: (1) the most influential articles in the accounting agency literature, (2) the structure of the accounting agency literature and the dynamics of the change of such structure across time and (3) the growth attributes of both citations and papers over a twelve year time period (1972-1984). Bricker [1988] investigated knowledge preservation in accounting research via an examination of 428 published accounting articles and their citations. The study showed that accounting scholars tend to cite very recent literature. Thus, earlier accounting knowledge may become lost to future generations of accounting scholars. Finally, Bricker [1989] investigated the structure of accounting research by: (1) inferring a structure of accounting research by employing an extension of co-citation clustering (a

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1 Co-citation analysis identifies the links between research studies across time by calculating the frequency with which a particular pair of papers has been jointly cited by a source document. By analyzing the set of papers that have common pair citings, which satisfy a minimum threshold level, lines of literature are described (by means of content analysis) and diagrammatically mapped via a citation diagram. For a complete description and application, the reader should refer to Small [1973].
derivative of co-citation analysis) and content analysis, (2) validating such structure by an independent statistical test (multiple discriminant analysis) and (3) examining the characteristics of such validated structure for evidence consistent with a fragmented and/or integrated accounting discipline. Bricker found that some accounting research areas, such as, positive accounting, market-based, and time-series, are relatively well integrated in the main structure of accounting research. On the other hand, other research areas, such as statistical auditing, tax, and studies of academic accounting are isolated from the main structure of accounting research.

Heck, et al., [1990] used citations to analyze the authors and institutions to twenty-four leading academic journals from their inception through 1988. They found that there has been a substantial increase in the incidence of co-authorship and the number of articles published in recent years, and the relationship between size of a doctoral program and publishing frequency of the faculty of a Ph.D. program is lower than expected. Furthermore, when Heck, et al., [1991] disaggregated their citation data they found that the most prolific (high frequency) contributors tend to publish in a variety of journals, and contemporary researchers are publishing in both newer and older journals. In a similar study, Heck and Bremser [1986] performed the following analysis on The Accounting Review articles published over a 60 year time period: identified the authors, their affiliation, and where they earned their doctoral degrees. Finally, Herring, et al., [1989] documented and highlighted some of the aspects of the recent changes in accounting education and suggested some directions for future research and Lehman and Street [1989] used citation and content analysis of the 187 main section articles and teaching notes which appeared in the first six volumes of the Journal of Accounting Education. They found that the Journal of Accounting Education authors have researched a broad spectrum of topics using a variety of research methodologies.

DATA COLLECTION

The major objective of our data collection efforts is to compile information on accounting education articles and their citations from 1956-1990. The 1956-1990 time period was selected because it provides a long enough time period to enable meaningful inferences to be drawn from the data. The journals selected for data collection are International Journal of Accounting
Education and Research (IJAER), Issues in Accounting Education (IAE), Journal of Accountancy (JOA), Journal of Accounting Education (JOAE), and The Accounting Review (TAR). \(^2\) These journals were selected because they represent the major academic accounting education research outlets for the 1956-1990 time period. Table 1 contains the number of articles and citations for the above journals during the 1956-1990 time period. One thousand three hundred and eighty-five articles were collected along with 1,184 citations (Appendix A contains a break-out of educational article contributions by journal for each year). TAR has the highest number of total articles and citations. The traditional accounting journals (JOA and TAR) average about one citation per paper while the newer, education oriented journals cluster together around an average of 0.65 citations per article.

<table>
<thead>
<tr>
<th>Journal and Dates of publication</th>
<th>Education Articles Published</th>
<th>Citations to Articles Published in Period</th>
<th>Average Citations Per Paper in Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOA 1956-1990</td>
<td>206</td>
<td>207</td>
<td>1.00</td>
</tr>
<tr>
<td>TAR 1956-1990</td>
<td>687</td>
<td>656</td>
<td>0.95</td>
</tr>
<tr>
<td>IJAER 1966-1990</td>
<td>57</td>
<td>39</td>
<td>0.68</td>
</tr>
<tr>
<td>JOAE 1983-1990</td>
<td>236</td>
<td>146</td>
<td>0.62</td>
</tr>
<tr>
<td>IAE 1983-1990</td>
<td>199</td>
<td>136</td>
<td>0.68</td>
</tr>
<tr>
<td>Total</td>
<td>1,385</td>
<td>1,184</td>
<td>0.86</td>
</tr>
</tbody>
</table>

DATA ANALYSIS

Figure 1 shows that the average citations per paper peaked around 1981-82 and since that point has been a decreasing function with respect to time. It is plausible that the maximum average citation rate occurred around 1981-82 because of the citing

\(^2\)The Journal of Accounting Research (JAR) was omitted from the list of journals investigated because it has not devoted a material amount of space to education articles and we are of the opinion that its inclusion would not contribute to our discussion of the development of the education literature. For example, from 1963-1972 JAR only published three education papers. Furthermore, an analysis of those papers revealed that they are not considered significant as far as the citing literature is concerned.
habits of authors publishing in the two new accounting education journals (IAE and JOAE) which were started in 1983. That is, perhaps authors publishing in those new education journals were citing works from other disciplines instead of the earlier accounting education literature because they were interested in transferring concepts, methods, etc., from those disciplines into the accounting education literature.\(^3\) Figure 1 also reveals that 1976-1985 covers an interesting period of time for average citations per paper. That is, it covers: (1) the time period leading up to the highest average citation rate per paper, (2) the period of time in which the highest average citation rate per paper occurred and, (3) the period of time in which the average citation rate per paper began to drop. The drop in citations from 1976 to 1985 is partially due to the truncation of the study period that must ignore future citations. For the most part, the JOA, TAR, and IJAER published education articles for the entire period of study. The cumulative time-to-citation for these three journals is shown in the first cumulative total column in Table 3. These data also have a small down-ward bias but provide a preliminary basis for adjusting the observed citations for the truncated portion of the time-to-citation distribution. In 1979, for example, there are eleven years remaining in the study period. The cumulative total column for JOA, TAR, and IJAER (for 11 years to citation) in Table 3 shows that 98.57% of the citations will have been completed; hence, the time-adjusted average citations per paper for 1979 in Figure 1 are equal to 2.54 (the observed number (2.50) divided by 0.9857).

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\(^3\)This point is further developed in the section entitled, “Textual Analysis of the Literature.”
Table 2 provides some insights regarding citation incidence of individual and total journals from 1976-1985. On an individual journal basis, *IJAER* has the highest percentage (70%) for articles that were never cited followed by *JOAE, JOA* and *IAE*. On an aggregate basis, however, roughly 50% of all papers selected to represent the above time period were never cited. Furthermore, in terms of one and two citations, *IAE* (42%), *TAR* (36%) and *JOAE* (35%) have the highest percentage of papers in those categories. In addition, 35% of all papers have one or two citations and only 15% have three or more. Finally, *TAR* has the largest percentage of papers cited followed by *IAE* and *JOA*.

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4This time-period was selected because it marked the end of the anecdotal period and was far enough removed from the end of the study to allow significant citation occurrence.
Table 3 displays information regarding the age of papers when cited, for the 1976-1985 time period. On an aggregate basis, 31% of all papers cited were from zero (less than one year old) to two years of age; sixty-one percent were from zero to four years of age and; over 85% from zero to seven years of age. The aggregate citation-time distribution is biased toward shorter citation times due to the influence of the two journals that did not begin publication until 1983. The distribution of time-to-citation for the composite JOA, TAR, and IJAER differs from the composite JOAE and IAE data at a significance level less than 1% in a Chi-Square test.

On an individual journal basis, IAE had the highest (48%) and TAR the lowest (23%) percentage of papers from zero to two years of age when cited; IAE had the highest (87%), while IJAER and TAR the lowest (50%) percentage of papers from zero to four years of age when cited.

Thus far, our discussion has centered around the citation attributes (collectively and individually) during the 1976-1985 time period. This section of the paper focuses on the citation attributes for the entire 1956-1990 time period. However, for discussion purposes, the period under investigation (1956-1990) is decomposed into three decades and one five year time period.5 Table 4 provides a summary of selected attributes by journal and time period. The lowest citation averages occurred during the 1956-1965 and 1986-1990 time periods, respectively. There

\[5\] Due to a 35-year period of investigation, the fourth time period only contains five years.

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**Table 2**

Citation Incidence of 306 Articles
1976-1985
(Table entries in %)

<table>
<thead>
<tr>
<th>Citations per Article</th>
<th>JOA</th>
<th>TAR</th>
<th>IJAER</th>
<th>JOAE</th>
<th>IAE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>52.27%</td>
<td>44.65%</td>
<td>70.00%</td>
<td>56.52%</td>
<td>50.00%</td>
<td>49.67%</td>
</tr>
<tr>
<td>1</td>
<td>20.45</td>
<td>22.64</td>
<td>10.00</td>
<td>24.64</td>
<td>16.67</td>
<td>21.90</td>
</tr>
<tr>
<td>2</td>
<td>13.64</td>
<td>13.84</td>
<td>0.00</td>
<td>10.14</td>
<td>25.00</td>
<td>13.40</td>
</tr>
<tr>
<td>3</td>
<td>2.27</td>
<td>6.92</td>
<td>0.00</td>
<td>5.80</td>
<td>0.00</td>
<td>5.23</td>
</tr>
<tr>
<td>4+</td>
<td>11.36</td>
<td>11.95</td>
<td>20.00</td>
<td>2.90</td>
<td>8.33</td>
<td>9.80</td>
</tr>
<tr>
<td>Total Cits</td>
<td>44</td>
<td>159</td>
<td>10</td>
<td>69</td>
<td>24</td>
<td>306</td>
</tr>
<tr>
<td>Years to Citation</td>
<td>JOA</td>
<td>JAE</td>
<td>TAR</td>
<td>IJAER</td>
<td>IAE</td>
<td>JOAE</td>
</tr>
<tr>
<td>------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>0</td>
<td>20.00</td>
<td>5.56</td>
<td>7.60</td>
<td>5.56</td>
<td>6.83</td>
<td>1.01</td>
</tr>
<tr>
<td>2</td>
<td>16.67</td>
<td>11.43</td>
<td>11.67</td>
<td>37.86</td>
<td>22.33</td>
<td>25.81</td>
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<tr>
<td>3</td>
<td>3.33</td>
<td>14.62</td>
<td>11.11</td>
<td>0.00</td>
<td>10.24</td>
<td>5.26</td>
</tr>
<tr>
<td>4</td>
<td>16.67</td>
<td>11.43</td>
<td>11.67</td>
<td>37.86</td>
<td>22.33</td>
<td>25.81</td>
</tr>
<tr>
<td>5</td>
<td>3.33</td>
<td>11.11</td>
<td>11.40</td>
<td>5.56</td>
<td>9.76</td>
<td>9.52</td>
</tr>
<tr>
<td>6</td>
<td>16.67</td>
<td>11.43</td>
<td>11.67</td>
<td>37.86</td>
<td>22.33</td>
<td>25.81</td>
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<tr>
<td>7</td>
<td>3.33</td>
<td>10.53</td>
<td>11.11</td>
<td>5.56</td>
<td>9.76</td>
<td>9.52</td>
</tr>
<tr>
<td>8</td>
<td>10.00</td>
<td>9.36</td>
<td>11.11</td>
<td>3.57</td>
<td>1.90</td>
<td>9.67</td>
</tr>
<tr>
<td>9</td>
<td>1.67</td>
<td>3.51</td>
<td>11.11</td>
<td>3.57</td>
<td>1.90</td>
<td>9.67</td>
</tr>
<tr>
<td>10</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>11</td>
<td>1.67</td>
<td>1.75</td>
<td>0.29</td>
<td>0.48</td>
<td>99.05</td>
<td>0.00</td>
</tr>
<tr>
<td>12</td>
<td>3.33</td>
<td>0.58</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>13</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>14</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**TABLE 3**

Time-to-Citation Distributions (Articles Cited during 1976-1985)

Table entries in %

Total Cites: 85

Grand Cum. Total: 100.00
are several plausible reasons why the 1956-1965 decade produced a low citation rate—the size of the research subfield and the age of the papers. The larger the research subfield, the less chance a paper has of being cited, because larger subfields have more participants which means that they also have more literature to draw upon [Cole and Cole, 1974, p.34]. Thus, the low citation rate could be an indication of the fact that the accounting education research subfield was relatively large during the period of study. The age of the papers could have aided in the achievement of the low citation rate because perhaps the concepts, research methodologies etc., employed could have been around for such a long period of time that the researchers who initiated their use were no longer cited because their work has become common knowledge; thus, a reduction and/or lack of citations occurred. It is possible that a portion of the low citation rate for the 1986-1990 time period was caused by its proximity to the end of the selected time period.

TAR had the highest average citations per paper for every time period except for the 1966-1975 decade (JOA was number one). In terms of the time periods in which the two new accounting education journals (JOAE and IAE) are included, IAE was fourth and JOAE was last in average citations per paper for the 1976-1985 decade. However, for the 1986-1990 time period, IAE was second and JOAE was third in average citations per paper. Finally, on an overall basis, JOA has the highest average citations per paper followed by TAR; JOAE has the lowest average citation rate per paper. The average number of pages per article was at its lowest point during 1956-1965 and its highest point during the 1986-1990 time period. The low average number of pages per article during the 1956-1965 time period was influenced by the length of papers published in TAR and JOA, many of which were anecdotal and very short.

Table 5 provides a summary of selected citation attributes for articles from 1956-1985. First, approximately 85% of the papers published from the 1956-1965 decade were never cited. Further, only one paper has four or more citations. The 1966-1975 decade produced a lower percentage (61%) for papers never cited and a higher number (twenty-six) of papers with four or more citations. The 1976-1985 decade produced an even lower percent (50%) for papers never cited and an even higher

6 For discussion purposes, the citation information for papers published during the 1986-1990 sub-period is omitted from Table 5.
number (thirty-nine) of papers with four or more citations. The overall decrease in the number of papers not cited and the increase in the number of papers with four or more cites suggest that the research conducted during the 1966-1985 time period was influenced by contemporary researchers and that, relatively speaking, a larger number of researchers were having an impact on the development of the accounting education literature.

Figure 2 shows the average number of pages per paper to be an increasing function of time since 1974. The increase in the average number of pages per paper is due to the fact that all of the journals evaluated, since 1956, experienced an increase in the average number of pages per article, implying a more thorough literature search and research content.
### TABLE 5

**Summary of Citations 1956-1985**

<table>
<thead>
<tr>
<th>Period</th>
<th>Percent Not Cited</th>
<th>Number of Papers with</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4+ Cites</td>
<td>6+ Cites</td>
<td></td>
</tr>
<tr>
<td>1956-1965</td>
<td>84.62</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1966-1975</td>
<td>60.82</td>
<td>18</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>1976-1985</td>
<td>49.67</td>
<td>30</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>All Years</td>
<td>65.77</td>
<td>49</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

### FIGURE 2

**Average Number of Pages/Article**

![Average Number of Pages/Article](chart.png)

Year of Publication
Figure 3 displays the number of papers and the number of pages from 1956-1990. During the 1956-1979 time period, the average number of education articles was stable at approximately 30 per year; however during 1981, 1982, it took a brief drop and then in 1983 increased to a new level at approximately 65 per year. On the other hand, from 1956-1982 the average number of pages published was stable at approximately 190 per year and increased to around 800 per year from 1983 onward. It is interesting to note that the increasing number of pages per article has offset the within period declines in the number of articles. Further, the appearance of the *IJAER* in 1966 did little to influence the statistics, i.e., longer articles were the major contributors to the 1966-1983 statistics.

The projection beyond 1990 is for a stabilized number of articles and total pages, absent the appearance of an additional educational journal or an increase in the frequency of publication of the *IJAER, JOAE*, or *IAE*.
Figure 4 provides a pictorial of pages per paper from 1956-1990. The 1956-1965 time period produced more papers with four or less pages and the lowest percentage of papers with 10 or more pages. However, the opposite is true with respect to the 1976-1990 time period.

![Figure 4: Comparative Article Length](image)

Table 6 contains the twelve most highly cited documents. Approximately 67% were published in TAR and 25% in the JOA. In terms of those twelve documents, two are concerned with curricula, four with the ranking and impact of accounting journals and/or articles and six on teaching methodology. As expected, based upon the summary of citations contained in Table 5, most (58%) of the highly cited documents are from the 1976-1985 time period.
<table>
<thead>
<tr>
<th>RANK</th>
<th>CITATIONS</th>
<th>AUTHOR(s)</th>
<th>TITLE, JOURNAL, DATE, VOL.</th>
</tr>
</thead>
</table>
TEXTUAL ANALYSIS OF THE LITERATURE

Journal of Accountancy

JOA was searched using the following four time periods—1956-1965, 1966-1975, 1976-1985, and 1986-1990. In the first period, the literature focused on recruiting students to the accounting profession and the importance of a college education for accountants. Further, much was written concerning academic versus on-the-job training, professional development, recruiting recent graduates into accounting jobs, and accounting curriculum. In the second time period, the focus was on requirements for CPA's, professionalism, MBA and Ph.D. programs, teaching methods, and curricula issues. Testing was also a hot topic, especially the AICPA's test, and the CPA examination. There were also articles on how to raise standards comparable with those in the medical and legal professions. Finally, the issue of teaching versus research was also discussed.

The 1976-1985 time period continued to focus on a number of topics discussed during the 1966-1975 time period. For example, professionalism, and curricula issues. Finally, the 1986-

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7 Over the time period investigated, every article in the education and professional section of JOA was read and evaluated. Furthermore, the Table of Contents of each issue was scanned for education articles published in the main section of the journal.

8 For a discussion of each of these issues, see Graham (1956); Davis (1962); and Larsen (1956).

9 For discussion of each of these issues, see Kane (1957a); Hutchinson (1957); Kane (1957b); and Brown (1962), Kesselman and Phipps (1962), Grinstead (1964), and Lynn (1965).


11 For a discussion of each of these issues, see North (1966), Bushmann (1975), McCormick and Montgomery (1974), and Bastable (1977); and Hendrickson (1969), Leathers (1972), and Sanders (1972).

12 See, for example, Summers (1974), and Loeb and Lubell (1972).

13 See, for example, Summers and Hermance (1969), and Kennelly and Smith (1969).

14 For a discussion of each of these issues, see Berton (1977), Skousen (1977), Nelson (1983), Mills (1985), Krogstad et al. (1981), and Newman (1981); and Miller and Davidson (1978), Lentilhon and Krzystofik (1984), Howe et al. (1984), Ellyson (1985), and Bastable (1977).
1990 time period produced three papers—two on 150 hour accounting program and one on accounting education history.\textsuperscript{15}

\textit{The Accounting Review}

\textit{TAR} was also evaluated employing the same time period(s) as that of \textit{JOA}. For the 1956-1965 time period, most of the articles written were on teaching methods, specific accounting programs, and curricula.\textsuperscript{16} Articles were also written on professional development, examination techniques, and research findings concerning reporting problems and accounting theory.\textsuperscript{17}

In the 1966-1975 time period, teaching methods were also a hot research topic, particularly with the aid of computers, along with curricula issues, and how to teach specific accounting issues.\textsuperscript{18} Other items that were discussed less frequently included

\textsuperscript{15}For a discussion of each of these issues, see Collins (1989), and Nelson (1989); and Langenderfer (1987).


\textsuperscript{17}For a discussion of each of these issues, see Cook (1960), Matusiak (1960), Nye (1958), Smith (1959), Jones (1962), and Sidebotham (1965); North (1956), and Rilly (1958); and Smith (1956), Rossell (1958), Whitney (1958), Stone (1959), Dunn (1960), Green (1961), Jennings (1960), Patrick (1961), McGowen (1962), Spiller (1962), Perry (1963), Green (1963), Rushing (1965), and Snudden (1965).

professional development, recruitment of students to accounting, examinations and grading, placement of students from high school and research quality.\textsuperscript{19}

The 1976-1985 time period continued the education research pattern established in the 1966-1975 decade with research concentrations in the area of teaching methods, accounting programs, teaching of specific accounting issues, and student achievement.\textsuperscript{20} Other less frequently discussed issues included faculty recruitment, faculty research contributions and rankings, examinations and grading, and the accounting curriculum.\textsuperscript{21}

Very few articles were found during the 1986-1990 time period because TAR only published education articles in 1986, 1987, and one issue in 1988. In terms of those articles found, they focused on such research areas as student job performance, first year college-level accounting courses, faculty productivity, student’s ability to learn with the aid of microcomputers, and teaching methodology.\textsuperscript{22}

\textit{Issues in Accounting Education}

IAE was evaluated over the 1983-1990 time period. The research published in the IAE was spearheaded by articles in the

\textsuperscript{19}For discussion of each of these issues, see Williams (1966), Townsend (1967), Goetz (1967), and Carpenter and Strawser (1971); Anderson (1966), and Dixon (1970); Brown (1966), Patten and Stinmetz (1966), Glein and Wallace (1974), Paretta and Chadwick (1975); Tambrino (1968); Needle (1973), McNeill and Collins (1975), and Belkaoui (1975); and Benjamin and Brenner (1974).


\textsuperscript{21}For a discussion of each of these issues, see Mehl and Lammers (1979), and Kida and Mannino (1980); Andrews and McKenzie (1978), Windal (1981), Howard and Nikolai (1983), and Williams (1985); Frakes and Foran (1978); Burton, \textit{et al.} (1978), and Delaney, \textit{et al.} (1979); and Arens and Ward (1984).

\textsuperscript{22}For discussion of each of these issues, see Knechel and Snowball (1987); Vruwink and Otton (1987), and Eskew and Faley (1988); Cargile and Bublitz (1986), Jacobs, \textit{et al.} (1986); Borthick and Clark (1986); and Kinney (1986).
area of computer assisted instruction, teaching specific accounting concepts and methodologies, ranking of accounting faculty and productivity, accounting curricula issues, learning and student performance, and faculty performance.\textsuperscript{23}

Journal of Accounting Education

\textit{JOAE} was evaluated over the same time period as IAE. Computer assisted instruction, teaching methods, assessment of student learning, faculty research, testing and grading, and curricula were the most researched topics.\textsuperscript{24}


International Journal of Accounting Education and Research


SUMMARY AND CONCLUSIONS

Since 1956, the accounting education literature has experienced a number of changes. It has gone from occupying a section in two major journals to having two journals devoted exclusively to educational issues. After the new journals were established, the JOA and TAR went from being major to minor publishers in this area, thus completing the birth cycle of a new field of study. Further, the reading of the educational literature over time has given the authors the impression that educational issues addressed have changed in scope and methodology. For example, during the earlier years research emphasis was placed on professional development, five year accounting programs, student testing and teaching aids. However, the more recent articles have shifted from teaching notes to empirical based


26 For discussion of each of these issues, see Ghartey (1978), Markell (1985), and Abdeen and Yavas (1985); Mintz (1980), Barlev and Friedman (1982), and Heaston (1983); Violet (1983a), (1983b), Mckinnon and Janell (1984), and Ndubizu (1984).


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studies focusing on such issues as, the improvement of methodologies used to test student achievement and testing methods, ranking of accounting faculty and faculty productivity and accounting concepts. With regard to the character of those empirical research based articles, [Herring, et al., 1989, p.50] made the following observations:

"Analysis of the empirical research articles indicates that this work has a distinctive character and that it has changed in several important respects in recent years. The empirical studies were classified by type of study (descriptive studies, surveys, forecasts, and experiments), by type of statistics used in the study (descriptive or inferential) . . . The analysis by type of study . . . indicates that surveys and experiments play an important role in this work. The analysis by type of statistics shows an increase in the use of inferential statistics."

The analysis of the data suggests that the 1976-1985 decade was the most productive in terms of the number of articles, average number of pages per article, and the average number of citations per paper. Further, that productivity was spearheaded by TAR, IJAER, and JOA, respectively. The most frequently cited articles are Sterling [1973] and Windal [1981] and papers on teaching methods have produced the highest number of influential papers in the list of the twelve most highly cited papers (this is consistent with the fact that the majority of educational papers have been written in the area of teaching methods).

The tendency for earlier published papers to be cited less frequently than current ones (87% are to articles published zero to seven years) suggests that, in terms of the time period investigated, the education literature was being influenced by contemporary education researchers (see Table 3). According to Price's [1970] immediacy index, which is the percent of total references that cite literature in the last five years, the education literature has an immediacy index of approximately 71% which means that it is relatively young in terms of those manuscripts used to generate research ideas. This position is also supported by the summary information contained in Table 4 which displays the fact that the most recent decade (1976-1985) has the highest average citations per paper and the oldest decade (1956-1965) the lowest average citations per paper. The immediacy index for the accounting education literature (71%) and the agency theory literature (76%) are approximately equal [Gamble, et al., 1985 p. 25]. The above mentioned citation practice also supports..."
Bricker's [1988] finding that accounting scholars tend to cite very recent literature.

This study also chronicles the development of modern accounting education literature. The early years of this study were marked by a number of short papers with few citations, followed by a period of consolidation in which the papers were more lengthy and cited more previous works, and finally developing into greater specialization with yet longer papers and fewer, more selected references. Using the first decade of our study period as the base, the second decade (1966-1975) produced an increase of approximately five hundred percent in average citations per paper, a 3% increase in average pages per paper, and a 2% decrease in average papers per year. On the other hand, the 1976-1985 decade (using the 1966-1975 time period as the base) produced a 47% increase in average citations per paper, a 75% increase in average pages per paper, and a 5% increase in average papers per year. This decade was greatly influenced by TAR followed by IJAER and JOA respectively. Further, TAR's influence was spearheaded by articles in the area of computer assisted instruction, ranking of accounting journals and the evaluation of student performance in an accounting course.

Given the increase in the proportion of articles based on empirical research and the decrease in the proportion of nonempirical articles, it is possible that education research could be elevated to the status of a sub-field used in the promotion and tenure decision(s) in the same manner as information systems, taxation, etc. Finally, it appears that increased emphasis on teaching excellence by the accounting profession and institutions of higher education, improvements in computer hard and software and, research methodologies imported from other disciplines such as psychology, mathematics and economics have all contributed to the change in the accounting education literature. 28

Finally, one should remember that, as with any research tool, citation analysis has limitations. One major limitation centers around an author's motivation for citing a document. That is, intellectual merit is not the only reason why an article may be

28 Our observation regarding the influence of other fields in the development of the accounting education is consistent with that of Herring, et al. (1989, p. 49) who state that “...recent accounting education research is overcoming its early reluctance to incorporate related work in other fields, particularly since 1983.”
cited. An author may wish to give the impression that the paper is related to work that has been performed by premiere scholars, thus loading the paper with many unwarranted citations. Others cite to build up a friend's or their own citation count or to flatter a superior. Another limitation in collecting cites has to do with sloppy bibliographic practices. For example, Joe J. Cramer, Jr. might be cited as J. Cramer or J.J. Cramer. Thus depending on whether the researcher knows or has an idea of the number of possible combinations for each author's name, (especially in the case of a computer search) it is possible that all of the citations for a particular author will not be included in the final citation count. There is a problem associated with negative versus positive citations. That is, was the paper cited because it contained an error or was it cited to support, apply, compare, or simply make note of a concept. To the extent possible, negative citations should be excluded from the final citation count. This can be achieved by performing a citation context analysis. Finally, citation counts are also influenced by a journal's editorial mandate to increase the number of authorities cited in papers accepted for publication so that their implied quality can increase. An increase use of citations for peer review may also cause an increase in citations. Concisely stated, in conducting citation research one should try to eliminate, to the extent possible, illegitimate citations.

29 Garfield (1979) notes that biased and inconsistent bibliographic practices are a random phenomenon and therefore cancel each other out across citing authors. It should be noted that self-citations were excluded from the final citation count(s).

30 A citation context analysis was performed when the authors read the papers to determine the subject matter contained in the papers collected.
### Appendix A

Number of Articles by Year and Journal

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