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# A "CITATION CLASSICS" ANALYSIS OF ARTICLES IN CONTEMPORARY SMALL ENTERPRISE RESEARCH

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## EXECUTIVE SUMMARY

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*This research study has two distinct steps: (1) a quantitative analysis to identify the citation classics in contemporary small enterprise research (CSEER) and (2) a more qualitative discussion of the contributions of these classical articles. The motivation of the study is to reveal the evolution of thought in the relatively new field of entrepreneurship research.*

*CSEER is defined as all main articles published during 1986–1992 in the Journal of Small Business Management, International Small Business Journal, Entrepreneurship: Theory and Practice, Journal of Business Venturing, Small Business Economics, and the Asia Pacific International Management Forum. The resultant analysis encompasses 725 articles and approximately 16,720 of their citations.*

*The quantitative analysis revealed that the source journals have been responsible for the publication of 35% of the most cited articles during the 18-year period of analysis, with each subperiod increasing the percentage of citations from these source journals. The qualitative analysis of the citation classics articles indicated that more than 50% of CSEER articles are well grounded in observational and contemplative theory building with a view to developing convergent theories that provide an overall understanding of the entrepreneurial process. This is similar to the pattern of citations in other emerging fields.*

*This citation classics analysis reveals a number of points. First, the main topic areas of inquiry in the citations classics were: personal characteristics of entrepreneurs, financing and venture capital, and*

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*entrepreneurial climate and its relation to society, and strategy and growth. Of these, the personal characteristics of entrepreneurs was a consistent topic over the entire CSER period. However, the general diversity of topic areas provides some empirical support for the "garbage can model" synthesized from earlier studies of emerging fields in which diversity in topic areas has been characterized as a loose collection of ideas rather than a coherent structure with a shared intellectual paradigm. A similar characterization can be made of the entrepreneurial research during the CSER period.*

*Second, the most evident methodology was observational and contemplative theory building, although empirically based survey techniques were gaining favor in the latter two periods. Third, the dominant objective of most research was to improve the understanding of small enterprise theory. This dominance of the theory building literature has also been observed in other citation studies of emerging fields. Fourth, it appears that many of the most cited articles have drawn upon the literature of related and nonrelated disciplines. Many of these articles have been exploratory in nature and have attempted to rationalize concepts and variables used in small enterprise research. Finally, CSER citation classics have been impacted only by Journal of Business Venturing, Journal of Small Business Management, and Entrepreneurship: Theory and Practice among the source journals. © 1997 Elsevier Science Inc.*

## INTRODUCTION

In all academic disciplines, researchers typically form groups or subsets that focus on common questions in common ways (Burt 1977; Price 1965). Within these groups, concepts attributable to one researcher may be used by another for testing, extending, or refining. Through this process, one researcher's work builds on that of another—acknowledging, via a citation, the historical link. Thus, when one scholar cites the prior work of another, citations provide a means of documenting this history (Culnan et al. 1990). Citation studies come under the broad field of "Bibliometrics;" i.e., the quantitative study of literatures as they are reflected in bibliographies (see White and McCain 1989, and the literature quoted therein). Therefore, refereed academic journals have played an increasingly important role in the dissemination of scientific information, particularly in the last decade. This is true in small enterprise research as in any other discipline. Further, the category of the journal in which articles are published can affect an individual's promotion, tenure, and salary as well as their brand name and ability to change employment (Liebowitz and Palmer 1984). Bibliometric distributions can also be used to rank authors and academic departments (Chun et al. 1992; Shane 1996). For these and other reasons listed below, several efforts have been made to judge the various qualities and merits of individual journals by the use of citations appended to journal articles. This is accomplished by measuring the number of acknowledgments between and/or within disciplines.

A set of published articles and their bibliographic citations, commonly known as a citation analysis, have been used for a number of purposes in various disciplines of the social sciences. For example, citation analysis has been used in the accounting discipline to evaluate accounting faculties and doctoral programs (Robinson and Adler 1981; Brown and Gardner 1985; Gamble and O'Doherty 1985), to compare citation-based evaluations with those obtained by peer judgment of accounting journals (Howard and Nikolai 1983; Nobes 1985; Beattie and Ryan 1989), to assess the reputation and impact of research within the accounting discipline (McRae 1974; Dyckman and Zeff 1984; Brown and Gardner 1985; Beattie and Ryan 1991), to assess the impact of individual accounting journals (Brown et al. 1987), and to determine views on perceived quality of accounting journals among accounting faculties (Brown and Huefner 1994).

In other fields, citation analysis has been used to compare citation counts to editorial rankings (Quandt 1976; White and White 1977), to identify the level of academic research

reflected in small enterprise issues identified by government reports (Brockhaus 1988), to rank authors and institutions in entrepreneurship research (Shane 1996), to assess the impact of interdisciplinary research (Hamelman and Mazze 1973), and to assess the influence of consumer market research (Leong 1989; Cote et al. 1991). Citation studies have also been done in the fields of management information systems (Culnan 1986, 1987; Culnan and Swanson 1986; Gogan 1992), auditing (Smith and Krogstad 1984), organizational behavior (Culnan et al. 1990), marketing (Heischmidt and Gorden 1993; Romano and Ratnatunga 1995), and strategic management (Franke et al. 1990). The strengths and limitations of citation analysis have also been recognized by a number of studies within the social sciences (e.g., Garfield 1979; Brown and Gardner 1985; Leong 1989; Cote et al. 1991).

## RESEARCH APPROACH AND MOTIVATION

Citation analysis is based on the assumption that if an author cites a journal article, he or she has found it useful, and therefore the more frequently an article is cited, the greater is its role in the scholarly communication process (Nisonger 1994). The general presumption that "citation analysis" is an objective measure has been validated by numerous studies (see Clark 1957; Cole and Cole 1967; Garfield 1973; Virgo 1977), although there are critics who argue that citations are biased in favor of certain authors, namely those "popular" authors who enjoy a "halo effect" (May 1977), authors who write review articles (Woodward and Hensman 1976), and those whose articles are methodological or are in established fields with many researchers (Margolis 1967).

Although it has been documented above that citation analysis is a widely used method, and has been done for other fields in the social sciences, these facts alone do not justify its use in the field of small enterprise research. Therefore, listed below are the two key motivations that prompted the authors to carry out this study.

The first key motivation was to reveal the evolution of thought in the field of small entrepreneurship research and to provide a sense of its future direction. Understanding the intellectual roots of a field identifies the basic intellectual commitments that serve as the foundations of a field as it matures (Culnan et al. 1990). The authors believe this is of vital importance as entrepreneurship research is a relatively new field of academic study.

The second key motivation of this study is to map the small enterprise literature intelligibly, and at different levels of scale. Bibliometrics is to publications as demography is to people; the bibliographies that supply its basic data are comparable to a census (White and McCain 1989). Publication and citation practices provide an empirical basis for understanding and transmitting the norms in a field (Culnan et al. 1990) as it is in a population of individuals. The authors believe that by mapping the small enterprise research as it matures and continually advances theories, the emergence of competing paradigms can be empirically observed.

The above motivations need to be contrasted to those of two similar articles that have appeared in the entrepreneurship literature in recent times; i.e., MacMillan (1993) and Shane (1996). The former study had the objective of ranking the level of appropriateness of journals as an outlet for publication by recognized scholars in the entrepreneurship field, whereas the latter ranked authors and institutions by using four different measures. In contrast, this research study uses individual journal articles (the classics) within an anthropological research framework to reveal the evolution of thought and map the accumulation of knowledge and skills in the field.

Other motivations and benefits not reported in this study will form the basis of future

research. The data base could be extended to enable mapping at the “full-text” level where knowledge claims are made and to provide the ability (if warranted) to model the dynamic aspects of the small enterprise literature mathematically. A cluster analysis of the articles could be undertaken to show patterns of citations focusing on particular journals. At this “full-text” level, the various problem areas of citation analysis, such as noncitation, biased citation, self-citation, and positive versus negative citation could be studied (see MacRoberts and MacRoberts 1989 and the literature quoted therein). The authors believe that all of the above motivations would make the study useful for scholars in considering particular journals as communication channels for their research findings; for editors in focusing on particular research paradigms; and for researchers and practitioners in terms of accessing data bases for information retrieval.

This study uses citation analysis to assess the impact of refereed journal articles in contemporary small enterprise research (CSER) during the 1986–1992 period. The remainder of this article will proceed as follows: The next section will define the CSER and discuss the research methodology and data collection techniques. This will be followed by a discussion of the results, a summary of the findings, and conclusions.

## DEFINITION, METHODOLOGY, AND DATA COLLECTION

### CSER Definition

CSER was defined as all journal articles cited by one or more major journal articles published during the period 1986 to 1992 in the core journals of the discipline: *Journal of Small Business Management (JSBM)*, *International Small Business Journal (ISBJ)*, *Entrepreneurship: Theory and Practice (ETP)*, *Journal of Business Venturing (JBV)*, *Journal of Small Business Economics (JSBE)*, and *Asia Pacific International Management Forum (API)*.

The definition of a fixed period follows the Brown and Gardner (1985) study, which identified contemporary accounting research within the period 1976 to 1982; the Churchill and Lewis (1986) study, which identified entrepreneurship research within the period 1981 to 1984; and Brockhaus (1988) who identified entrepreneurial research in 1986. Similarly, for the purpose of this study, CSER has been defined as the period 1986 to 1992. Furthermore, all source journals (except *JSBE*, which commenced in 1989) were in existence before 1986.

The concept of a core within the literature of a discipline has been widely used (Crane 1972; Oromaner 1977; Neeley 1981). Generally, core journals are those considered the most important or those that most clearly reflect the essence of a discipline. A number of studies have identified the perceived ranking and quality of core business journals in the use of citation analysis studies (Howard and Nikolai 1983; Brown and Gardner 1985; Nobes 1985; Beattie and Ryan 1989; Leong 1989; Extejt and Smith 1990; MacMillan 1993; Shane 1996).

For the purpose of this study, journals were included if the main publication objective was to publish research relating to small enterprise matters. In determining the directions and methods of entrepreneurship research, Churchill and Lewis (1986) used *JSBM*. Brockhaus (1988) in the analysis of entrepreneurial research examined *JSBM*, *ETP*, and *JBV*. MacMillan (1993) used *JBV*, *ETP*, *JSBE*, *Entrepreneurship and Regional Development (ERD)*, *JSBM*, and *ISBJ* among other general management journals for recognized entrepreneurship scholars to rate as an outlet for publication.

The authors added *API* for the sake of “data completeness,” although it has not been named in any listing of journal rankings as being a major forum for entrepreneurship research. The completeness of the data base was not, however, possible with either *JSBE* or

*ERD*, as both commenced publication in 1989, ie three years after the defined 1986 CSER starting date. The authors decided to include *JSBE* as it was ranked in the MacMillan (1993) study as being appropriate as an outlet for publication. Conversely, *ERD* was excluded because not only did it lack completeness due to its relatively recent age, but it was also ranked in the MacMillan (1993) study as being not appropriate as an outlet for publication. Shane (1996) also deleted all journals MacMillan (1993) identified in the not appropriate category in his study of the distribution of entrepreneurship articles.

## Research Methodology

Mapping of small enterprise literature and the tracking of the evolution of thought is a two-step process—one objective and the other subjective. The objective phase required the collection and analysis of "citation counts" to identify those articles that have had the largest number of citations. A recent objective count in the entrepreneurship area was conducted by Shane (1996).

The subjective phase required the qualitative classification by the authors of the topic, methodology, and objectives of each of the most cited articles over three equivalent time periods to understand the intellectual roots and directions of the literature. The danger in this second step is that the qualitative classifications may distract from the more objective quantitative analyses undertaken in the first step.

Despite the dangers of distracting readers with subjective value judgments and the potential for less-than scholarly argument due to perceived mis-classifications of articles, the authors viewed this mapping process as extremely necessary to empirically observe the emergence of significant research topics, methodologies, and approaches. This aspect of citation analysis is referred to as citation classics analysis (see Chubin et al. 1984) who state that citation classics by definition are those articles that have had an extraordinarily large number of citations relative to others published in the same broad field.<sup>1</sup> They state that:

If one believes that citations are purposeful—a public acknowledgment of intellectual debt—then one should be drawn to examining the content of citations and not rely solely on absolute (or relative) number of citations (Chubin et al. 1984, p. 364).

Stewart et al. (1995) also state that coding and statistical analysis of publications can be used as a basis for knowledge culmination. They state that coding and indexing should distinguish classical from radial categories to improve conceptual clarity about entrepreneurship.

## Data Collection

The objective of the data collection phase was to compile and sort the citations of small enterprise journal articles from 1986–1992. Before the above objective could be achieved, a citation data base had to be constructed. All data were collected manually, classified, and

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<sup>1</sup>Most articles are never cited. The authors believe therefore that obtaining more than four citations would place an article in the "significant contributions" category. The "citations classics" index is, however, a relative index with the lowest number of citations obtained to get classic status being 11.

<sup>2</sup>The data base was not extracted from the Social Sciences Citation Index (SSCI) given that: (1) data were organized by author and not article; (2) some journals used in the study were not listed in the index; and (3) the inconsistent use of names made it difficult to identify authors and articles. Similar problems were anticipated by Brown and Gardner (1985) and Brown et al. (1987). The data base was entered using screen forms in DBase version III+. The data base files were transferred to Microsoft Excel 4.0. All validation, spell checking, consolidation, and other analyses were performed using Excel's functions.

verified. The data base consisted of the details of the citing journal article; authors of the citing articles; affiliations of authors; and the articles, monographs, conference papers, books, and working papers cited by the citing article.<sup>2</sup>

It must be recognized that entrepreneurship articles appear in journals other than those defined in the CSER. However, Shane (1996) who counted entrepreneurship articles in a wider range of journals (19 in total) found that 75% of the 472 articles counted appeared in one of the three CSER journals he included in his study (i.e., *JBV*, *JSBE*, and *ETP*). The authors were therefore satisfied with the coverage of the citing articles.

This study was concerned only with the main articles given that they would generate more citations than comments, discussants, education research, etc.<sup>3</sup> All citing journals (with the exception of *JSBE*, which was first published in 1989) covered the contemporary small enterprise research period as defined in this study.<sup>4</sup> Specifically, by examining the contemporary small enterprise period, the present research will demonstrate how the most cited articles have impacted CSER.

Although the citing articles had to be published in *JSBM*, *ISBJ*, *ETP*, *JBV*, *JSBE*, or *API* between 1986 and 1992; the cited journal articles and other sources (monographs, working papers, conference papers, and books) could have been published anywhere or anytime within a time period. This required a cut-off point. Any approach to selecting cut-off points is, however, inherently arbitrary. Brown and Gardner (1985) selected the period 1963 to 1982 given that the majority of main articles from source journals was published after 1962. For the purposes of this study, a similar approach was adopted given that most main articles from source journals were published after 1975 and that all source journals commenced post-1975.<sup>5</sup> Furthermore, this timeframe is representative of 86% of total citations made in the 1975–1992 period by the source journals. Therefore, because most of the cited articles and other sources were published after 1975, the analysis was confined to articles and other sources published during the 18 years 1975–1992.

## Data Distribution

A total of 725 citing articles were published in the six journals during a 7-year period. A total of 16,720 citations was examined. Thus, the average number of citations provided per article was 23.1.

The issue of self-citations must be raised at this point. There are two levels of self-citations: authors citing their own work and journal articles citing other articles published in the same journal. There could be, of course, a combination of the two. Author self-citation has been frequently mentioned as a potential problem largely because it appears to be excessive in some fields, with approximately 10% to 30% of all citations falling into this category (Garfield 1979; Tagliacozzo 1977; Folly et al. 1981). In looking at journal impact, although it has been established that a journal will cite itself more often than other citing journals (Quandt 1976; Brown and Gardner 1985), if authors are publishing across the range of available journals in the field, the problem is less acute. However, if a journal focuses predomi-

<sup>3</sup> A similar approach in the examination of full-length main articles was adopted by Brown and Gardner (1985). For the purpose of this study, all notes, comments, and book reviews were excluded from the analysis.

<sup>4</sup> It should be noted that the following journals have incurred a name change: *International Small Business Journal* prior to 1983 was the *European Small Business Journal*; *Entrepreneurship: Theory and Practice* prior to 1988 was the *American Journal of Small Business*, and the *Asia Pacific International Management Forum* ceased circulation in 1992.

<sup>5</sup> *JSBM* commenced 1970; *ISBJ* commenced 1982; *ETP* commenced 1976; *JBV* commenced 1985; *JSBE* commenced 1989; and *API* commenced 1975.

nantly on a particular issue and makes it the obvious choice of authors researching that issue; then the self-citation problem is more pronounced. For example, the citation count indicated that the 1987 publications of *JBV* were subsequently cited 134 times. Most of the articles concerned financing and venture capital, and *JBV* was the only journal publishing articles on these topics during this period.

A number of research studies have measured and classified citations from journal impact by including and excluding journal self-citations (Brown and Gardner 1985; Brown et al. 1987). Although journals may form part of a foundation discipline, they may have diverse research objectives that would entail publication of different research studies. It has been argued that the exclusion of journal self-citation provides a more objective measure of journal impact (Brown and Gardner 1985). However, this argument will not be pursued by this study for the following reasons: Citation of a study is motivated by the topic area, individual research objectives of the journal, the size of the field, and the degree or integration of the literature, and not the name of the journal (Garfield 1979). Therefore, if one takes a number of small enterprises journals that have common research objectives, exclusions of journal self-citations would not enhance the objectivity of the results. Instead, to achieve objectivity, one should exclude self-citation to the topic area. Despite these arguments, for the purposes of this study, journal self-citations have not been excluded as the exclusion by self-citation to a topic area would entail a subjective and unmanageable task.

Further, the combined effects of self-citation of all the source journals (950 self-citations) had only a minimal impact on the total citations as these were on average only 5% of the total citations. In the study, it was established that, in order of highest citations achieved, the 10 most impacting journals on the six citing journals during the CSER period were: *Journal of Small Business Management*, *Entrepreneurship: Theory and Practice*, *Journal of Business Venturing*, *Harvard Business Review*, *Academy of Management Journal*, *Academy of Management Review*, *Strategic Management Journal*, *Administration Science Quarterly*, *International Small Business Journal*, and *Journal of Marketing*. These findings demonstrate that small enterprise scholars use knowledge and previous literature from related and nonrelated disciplines. This reveals initial insight into the evolution of thought in this relatively new field of academic research, which was a key motivation of this research study.

## CONTRIBUTIONS OF CITATION CLASSICS IN CSER

In this section, the most influential articles on CSER are identified, classified, and discussed. A number of studies using citation analysis have classified research in differing ways (Dyckman and Zeff 1984; Brown and Gardner 1985; Brown et al. 1987). Given the diversity of research objectives demonstrated by the journals providing the most influential articles, a classification system was required that appropriately identified research approaches and catered for the diverse research objectives of small enterprise journals. Churchill and Lewis (1986) have developed a classification system suitable for small enterprise research, which was also employed by Brockhaus (1988). The Churchill and Lewis (1986) classification system includes classifying research objectives (three classifications), methodologies (seven classifications), and topic (13 classifications).

This classification system was adopted with a modification of the research objectives to match the theme of the current study. The classification of the centrality of research issues as identified by Churchill and Lewis (1986) was not exercised. Similar to all classification studies, some amount of subjectivity is present in the classification process, as most articles

have some aspects of all categories of classification. A classification was given if the authors believed it was predominantly in a particular category.

With regard to the classification of articles, it should be noted that although bibliometricians are not required to have read the writings they categorize and count, they are usually academics who are well versed in the literatures they analyze (White and McCain 1989). This is so of the authors with regard to the entrepreneurship literature. However, as with all individual understandings of literature, the interpretations are subjective and therefore open to claims of misclassification by individual readers. However, as all the classified articles are commonly available, readers may wish to undertake their own classifications and form their own interpretations accordingly.

The key motivation in carrying out this qualitative process is to reveal the evolution of thought in the relatively new field of entrepreneurship research and to provide a sense of future direction. Citation classics analysis maps the development of the theory paradigm of a research area, especially the recognition of an area's early dependence on interdisciplinary research. Similar dependencies have been observed in other fields, especially the management area's dependence upon underlying sciences (Sharplin and Mabry 1985; Salancik 1986). Because entrepreneurial studies is a relatively new field, it was expected that theory building articles would dominate the citations scores (Pfeffer et al. 1977; Culnan et al. 1990; Gogan 1992).

Stewart (1991) states that anthropological research that demonstrates the widespread importance of the accumulation of knowledge and skills might be helpful in the development of theory on entrepreneurship. One method of anthropological research is grounded theory that formalizes the process of qualitative research and provides a language to describe it.

The citation classics were therefore identified by choosing the 10 most influential articles within three time-based subperiods. The selection of the number of articles to include within a subperiod is inherently arbitrary. In order for a study to be reported as a major article exerting influence on CSER, it had to qualify in the top 10 in each respective time period. A similar approach was adopted by Brown and Gardner (1985). The subperiods were selected to represent approximately equal periods of time. The first subperiod (1975–1980) was 6 years, the second subperiod (1981–1985) was 5 years, and the final subperiod (1986–1992) was 7 years.

Table 1 identifies the 10 most influential articles appearing between 1975–1980 classified by topic area, research methodology, and research objectives. Tables 2 and 3, respectively, show the same data for the 10 most often cited articles published between 1981–1985 and 1986–1992, respectively.

Table 1 illustrates that although the objective of most of the studies identified as citation classics was that of improving the understanding of small enterprise theory, the topic areas were extremely diverse. This diversity in topic area provides some empirical support for the “garbage can model” (Martin 1982). In earlier studies of emerging fields such as management information systems (MIS) and organizational behavior (Culnan 1986, 1987; Culnan et al. 1990; Gogan 1992), topic areas have been characterized as a “loose collection of ideas” rather than a coherent structure with a shared intellectual paradigm. A similar characterization can be made of the entrepreneurial research during the CSER period.

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<sup>6</sup> As a percentage of the sum of citations for the top 10 most influential articles for the subperiod 1975–1980, the following citation results were achieved by individual journals: (*JMS*, 18%); (*AMJ*, 16%); (*JSBM*, 14%); (*HBR*, 12%); (*AJS*, 10%); (*JFE*, 10%); (*BH*, 9%); (*AER*, 9%).



TABLE 1 Articles Exerting the Greatest Impact on CSER 1975-1980

Article	Cites	Topic	Methodology	Objectives of Study
Brockhaus (1980, <i>AMJ</i> )	21	Personal characteristics of entrepreneurs	Observational and contemplative theory building	Improve the understanding of small enterprise theory
De Carlo and Lyons (1979, <i>JSBM</i> )	19	Personal characteristics of entrepreneurs	Survey	Improve the understanding of small enterprise theory
Biggadike (1979, <i>HBR</i> )	16	Management characteristics of entrepreneurial firms	Survey—public data	Enhance the practice of small enterprise
Shapiro (1975, <i>PT</i> )	14	Entrepreneurial climate, relation to society	Reportage	Enhance the practice of small enterprise
Kets De Vries (1977, <i>JMS</i> )	14	Entrepreneurial climate, relation to society	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Hannan and Freeman (1977, <i>AJS</i> )	14	Entrepreneurial climate, relation to society	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Jensen and Meckling (1976, <i>JFE</i> )	14	Entrepreneurial climate, relation to society	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Cooper and Bruno (1977, <i>BH</i> )	13	Start-ups	Survey	Improve the understanding of small enterprise theory
Timmons (1978, <i>ETP</i> )	12	Personal characteristics of entrepreneurs	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Stanworth and Curran (1976, <i>JMS</i> )	11	Strategy and growth	Observational and contemplative theory building	Improve the understanding of small enterprise theory

Abbreviations: *AMJ* = Academy of Management Journal; *JSBM* = Journal of Small Business Management; *HBR* = Harvard Business Review; *PT* = Psychology Today; *JMS* = Journal of Management Studies; *AJS* = American Journal of Sociology; *JFE* = Journal of Financial Economics; *BH* = Business Horizons; *ETP* = Entrepreneurship Theory and Practice; *AMR* = Academy of Management Review; *JBV* = Journal of Business Venturing; *MS* = Management Science; *SJM* = Strategic Management Journal; *JM* = Journal of Management; *AER* = American Economic Review; *JPE* = Journal of Political Economy.

The dominance of the theory building literature has also been observed in other citation studies of emerging fields (Lodahl and Gorden 1972; Pfeffer et al. 1977; Culnan et al. 1990).

Table 1 also demonstrates that eight of the 10 most influential articles for the 1975–1980 period appeared outside the six citing journals network.<sup>6</sup> Of the source journals, *JSBM* (De Carlo and Lyons 1979) and *ETP* (Timmons 1978) were responsible for publishing two (20%) of the 10 most cited articles during the 1975–1980 period. An explanation for this outcome could be that small enterprise researchers were limited for publication outlets by the lack of established small enterprise journals during that period or that the academic credibility of the other journals was better established than that of the small enterprise journals in that period.

Table 2 illustrates the 1981–1985 publications, and it is evident that the distribution of the topic areas was as diverse as that in the earlier research period, and that the influence of source journals was unchanged.<sup>7</sup> The study objectives of the most influential articles continued to be dominated by those that considered improving the understanding of small enterprise theory, once again demonstrating the immaturity of the entrepreneurial studies theory base relative to other fields. Also, Table 2 indicates that, of the source journals, *JBV* (MacMillan et al. 1985; Sexton and Bowman 1985) and *JSBM* (Robinson et al. 1984; Pellegrino and Reece 1984) were responsible for publishing four (36%) of the most influential articles during that period.

In Table 3, it is evident that the topic distribution continued to be diverse in the 10 most influential articles published during 1986–1992.<sup>8</sup> The continuation of theory building during this period, and the shift in focus from the applied practice oriented objectives to the methodology-based objectives is a change worth mapping in future periods, as the field becomes more scholarly. In this time period, the source journal articles had a major impact on CSER albeit mainly in the financing and venture capital area. Specifically, *JBV* was responsible for four of the 10 most cited articles with three in the above area, and *ETP* for the most cited paper of the period, in the topic area of entrepreneurial education (Gartner 1988). The topic area of entrepreneurial education cuts across many other topic areas. For example, the Gartner (1988) articles has been viewed as an attack on the personal characteristics of entrepreneurs literature, and Low and MacMillan (1988) is an overview of entrepreneurship research cutting across many research topics such as entrepreneurial climate, personal characteristics, and strategy and growth.

The preceding discussion of Tables 1 to 3 establishes that small enterprise researchers have increased their tendency to cite relatively recent literature in small enterprise journals, indicating the rising academic credibility of the field and its core journals. From the results reported, it is also evident that core management journals have made a significant contribution to articles exerting the greatest impact on CSER. In particular the *Academy of Management Review* and *Academy of Management Journal* have had six manuscripts. This is contrary to the finding of Culnan (1986) who found that the above core journals were not given significant citations in the MIS literature. During the 18-year period, source journals have been responsible for the publication of 35% (11 articles) of the 31 most cited articles within the CSER, of which *JBV* was responsible for six articles, *JSBM* three articles, and *ETP* two

<sup>7</sup> As a percentage of the total sum of citations for the top 10 most influential articles for the subperiod 1981–1985, the following citation results were achieved by individual journals: (*AMI*, 9%); (*JBV*, 18%); (*AMR*, 35%); (*MS*, 9%); (*HBR*, 13%); (*SMJ*, 8%); (*JSBM*, 8%).

<sup>8</sup> As a percentage of total sum of citations for the top 10 most influential articles for the subperiod 1986–1992, the following citation results were achieved by individual journals: (*JBV*, 35%); (*JM*, 23%); (*AER*, 11%); (*ETP*, 15%); (*AMR*, 8%); (*JPE*, 8%).

TABLE 2 Articles Exerting the Greatest Impact on CSER 1981-1985

Article	Cites	Topic	Methodology	Objectives of Study
Carland, et al. (1984, <i>AMR</i> )	38	Entrepreneurial climate relation to society	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Churchill and Lewis (1983, <i>HBR</i> )	30	Strategy and growth	Observational and contemplative theory building	Enhance the practice of small enterprise
MacMillan et al. (1984, <i>JBV</i> )	26	Financing and venture capital	Survey	Enhance the practice of small enterprise
Gartner (1984, <i>AMR</i> )	25	Entrepreneurial climate, relation to society	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Robinson (1982, <i>AMJ</i> )	22	Strategy and growth	Survey—public data	Improve the understanding of small enterprise theory
Robinson and Pearce (1984, <i>AMR</i> )	21	Strategy and growth	Observational and contemplative theory building	Advance the methodology in the small enterprise
Tyebee and Bruno (1984, <i>MS</i> )	17	Financing and venture capital	Survey	Improve the understanding of small enterprise theory
Sexton and Bowman (1984, <i>JBV</i> )	16	Personal characteristics of entrepreneurs	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Dess and Robinson (1984, <i>SMJ</i> )	16	Financing and venture capital	Survey—public data	Improve the understanding of small enterprise theory
Robinson et al. (1984, <i>JSBM</i> )	14	Strategy and growth	Survey	Improve the understanding of small enterprise theory
Pellegrino and Recco (1984, <i>JSBM</i> )	14	Personal characteristics of entrepreneurs	Field study	Enhance the practice of small enterprise

Abbreviations as in Table 1.

TABLE 3 Articles Exerting the Greatest Impact on CSER 1986-1992

Article	Cites	Topic	Methodology	Objectives of Study
Gartner (1988, <i>ETP</i> )	25	Entrepreneurial education	Observational and contemplative theory building	Advance the methodology in the small enterprise
Wortman (1987, <i>JM</i> )	19	Management characteristics of entrepreneurial firms	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Low and MacMillan (1988, <i>JM</i> )	18	Entrepreneurial education	Observational and contemplative theory building	Advance the methodology in the small enterprise
Acz and Audretsch (1988, <i>AER</i> )	18	Management characteristics of entrepreneurial firms	Survey—public data	Improve the understanding of small enterprise theory
Sandberg and Hofer (1987, <i>JBV</i> )	17	Financing and venture capital	Survey	Improve the understanding of small enterprise theory
Sandberg and Hofer (1987, <i>JBV</i> )	15	Financing and venture capital	Survey	Improve the understanding of small enterprise theory
MacMillan and Day (1987, <i>JBV</i> )	13	Financing and venture capital	Survey—public data	Improve the understanding of small enterprise theory
Bowen and Hisrich (1986, <i>AMR</i> )	13	Personal characteristics of entrepreneurs	Observational and contemplative theory building	Improve the understanding of small enterprise theory
Begley and Boyd (1987, <i>JBV</i> )	13	Personal characteristics of entrepreneurs	Survey	Improve the understanding of small enterprise theory
Evans (1987, <i>JPE</i> )	13	Strategy and growth	Survey—public data	Improve the understanding of small enterprise theory

Abbreviations as in Table 1.

articles. In particular, the percentages of the most cited articles by source journals increased from period to period. This analysis suggests that the body of literature held to be integral to the entrepreneurship field will come increasingly from the CSER source journals. A similar directional observation was made by Culnan (1986) with regard to the MIS field.

## CONCLUSIONS

A summary of the findings is presented in the executive summary. It should be noted that although citation analysis has been used in the social sciences for a number of purposes, such an analysis has been applied to small enterprise research only by Brockhaus (1988) and Shane (1996). In this study, citation analysis was used to identify those small enterprise research articles that have had the most influence on the source journals within the CSER. For the purpose of this study, CSER was defined as all citations by major articles published in six main small enterprise research journals between 1986 and 1992. This study was conducted through an examination of a sample of 725 journal articles and approximately 16,720 citations.

Although all of the small enterprise literature was not studied, the six journals included are considered to be representative of mainstream small enterprise research. This study should be regarded as neither offering definitive results with respect to the issues under study, nor as the only potential application of citation analysis to small enterprise research. The abundance of citation data is a challenge to those who seek the construction of bibliometric indicators of science. In future studies, citation analysis could be used to identify shifts in research directions and articles that are likely to alter topic and methodological trends. The data base could be extended to enable mapping at the "full-text" level where knowledge claims are made, and where the various problem areas of citation analysis such as non-citation, biased citation, and positive versus negative citation could be further studied.

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