



Supply management: is it a discipline?

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Abstract

Purpose – To examine management literature for guidance on what constitutes a discipline. To examine supply management publications to determine whether the field constitutes a discipline or an emerging discipline. To contribute a structured evaluation to the body of supply management theory/discipline development knowledge.

Design/methodology/approach – Literature review of what constitutes a discipline and an initial assessment of whether supply management is a discipline. Development of research questions used to design tests, using combinations of qualitative pattern matching, journal quality rankings, and social science citations index impact factor. Application of the tests, to evaluate field coherence, quality and the existence of a discipline-debate, to determine whether supply management is an emerging discipline.

Findings – An initial literature review finds supply management not to be a discipline, as the field lacks quality of theoretical development and discussion, and coherence. Tests for increasing evidence of coherence, quality and impact yield positive results, indicating that supply management is progressing in its theoretical development. The test findings combined with the existence of the start of a discipline-debate indicate that supply management should be judged to be an emerging discipline.

Originality/value – Drawing from the management literature, the paper provides a unique structured evaluation of the field of supply management, finding it not to be a discipline, but showing evidence of being an emerging discipline.

Keywords Supply chain management, Suppliers, Supplier relations

Paper type Literature review



Introduction

In this paper our aim is to determine whether or not “supply management” may be called a discipline. We do this by examining published work that contributes to the field, grouping articles by type, and testing for significant differences. We then use established tests for the presence of a discipline, to evaluate field coherence, quality and the existence of a discipline-debate. The term “supply management” is used to denote one of the two principal activities in business, the other being demand management. Thus, supply management is an encompassing term rather than the more specific, functionally orientated topics such as supply chain management (SCM), purchasing, procurement, and logistics. The research indicates that supply management is not yet a discipline; there has

been insufficient theory development to underpin the subject. From our research we conclude that there does appear to be evidence that it is an emerging discipline.

The status of supply management as an emerging discipline has significant implications. Whether or not a field may be said to be a discipline will affect research effort, academic and professional definition and identity, policy-making, and related investment (e.g. in funding for university staffing and research). Our analysis follows interrogations in other fields, e.g. gerontology (Lowenstein, 2004), clinical pharmacy (Walker, 1996), construction economics (Myers, 2003), and production and operations management (POM) (Pilkington and Liston-Heyes, 1999). Such analyses raise four common themes:

- (1) the subject areas represent new and growing fields of academic interest;
- (2) they strive to gain academic acceptance;
- (3) they span traditional academic boundaries; and
- (4) they involve scholarship that engages with, and changes, practice.

We suggest that these themes apply to the present status of supply management.

There have been a number of recent reviews of the development and content of the field of supply management (Carter and Ellram, 2003; Barman *et al.*, 2001; Aarlbjorn and Halldorsson, 2002; Harland *et al.*, 1999; Kauffman, 2002; Larsson and Halldorsson, 2002; Lancioni, 2000; New, 1997). However, none of these reviews address the issue of whether supply management might constitute a discipline. Elsewhere, concerns have been expressed about the lack of discipline and theoretical development in the field (Svensson, 2003; Chen and Paulraj, 2004). This paper fills this gap by specifically addressing whether supply management might be viewed as a discipline, therefore, contributing to what we refer to below as the “supply management discipline-debate”.

This paper is arranged as follows. We begin with a literature review which focuses on what constitutes a discipline. This leads us to develop three research questions and an evaluation framework that will enable us to conclude whether or not supply management is a discipline. Our discussion on methodology explains how we set about answering the questions and using the framework. Our raw data were the occurrences of published papers in journals relating to supply management, as differentiated from those on general management. This is followed by presentation of our findings, analysis and testing for significance. Finally, we explain our conclusions and reflections.

The literature

Our review of literature examines what constitutes a discipline, exploring how previous work of this nature has assessed other fields for this purpose. To provide us with a suitable definition, we use the fields of management and POM as exemplars. We tackle two main themes:

- (1) the nature of a “discipline”; and
- (2) how to evaluate a field to assess whether or not it is a discipline.

The nature of a “discipline”

The historical debates on the development of science and disciplinary approaches are reviewed in the *Academy of Management Review* by Fabian (2000, p. 351). Fabian has published mainly on fractals of strategic management competence and

the nature of strategy. In the AMR paper, she provides definitional clarity as well as reflection on discipline development in the field of management.

Fabian (2000) discusses how “discipline” is distinct from “paradigm”.

A discipline refers to the common focus of a set of researchers who might perform research in varied paradigms and/or theoretical perspectives

it is the set of researchers (disciples) and their shared focus. In contrast, paradigm is “acceptable beliefs and assumptions for generating theories” – acceptability is judged by members of the discipline. Researchers have long debated “paradigm” and “paradigm shifts” (Dubin, 1969; Kuhn, 1970) and “paradigm” appears to have a number of meanings in literature, including theoretical world views and methods of research (Fabian, 2000). Researchers from different paradigms within a discipline may disagree ontologically and epistemologically. This gives rise to discipline-debates on the relative merits of paradigm unity or plurality (Kuhn, 1970; Freeman and Lorange, 1985; Poole and Van de Ven, 1989).

Academics engaged in the debate of discipline boundary may seek to legitimise or dispel research in a discipline (Cummings and Frost, 1985), dubbing research that pushes the boundary either as “creative” (acceptable) or “deviant” (Csikszentmihalyi, 1990). The nature of discipline, therefore, necessarily forces debates at the margin, on what is “in” and “out” of the discipline boundary. However, our purpose here is not to shine a spotlight on contributors at the boundary but to establish whether or not there is a common focus (albeit viewed within different paradigms and theoretical perspectives). Boundary disputes occur when territory is established; we seek to establish the initial territory rights. Fabian (2000) concluded that there should be no enforced “government” of a discipline, no research policies imposed upon its members. This relatively “free market” definition of discipline, where the shape and nature of the discipline is free to emerge and evolve, is adopted here.

Evaluating the existence of a discipline

The famous vitriolic discourse between Pfeffer and Van Maanen about management as a discipline demonstrates the lack of agreement between senior academics on how to view the field of management. Pfeffer (1993) argued that theory proliferation and diversity of ideas and methodologies tend to lead to a “weed-patch, rather than a well tended garden”. He concluded that diversity is only useful if at some point it can be resolved, and that the extent of diversity of the management field was “downright dangerous”. He called for a “recommitment to a set of fundamental questions” and a “set of processes or rules to resolve theoretical disputes and debates” (Pfeffer, 1993, p. 618). Van Maanen (1995, p. 133) severely criticised Pfeffer’s view, describing it as “philosophically indefensible; extraordinarily naïve as to how science actually works; theoretically foolish”. The journal *Organization Studies* hosted a spirited debate on the attractiveness of alternative paradigms in management but was concerned that this pluralism might act as a barrier to disciplinary coherence (Wilmott, 1993; Weaver and Gioia, 1994; De Cock *et al.*, 1995).

This management discipline-debate relates to how coherent the field is in the questions on which it focuses, how it tackles those questions, and how structured and organised it is in debating and resolving disputes. As writers on management are examining the coherence of their discipline, it appears reasonable that supply

management should do likewise. However, the management debate does not provide guidance or structure on how to evaluate whether or not management is a discipline, merely tension and disagreement on the question. Fabian (2000) reflected on this discourse and provided a typology of management disciplinary approaches, based on three disciplinary criteria. This does not constitute a tool for evaluating whether or not a field represents a discipline, but a typology of existing disciplinary approaches. While this does not fit our purpose exactly, it does provide insight into the criteria that might constitute a discipline; it provides guidance on discipline evaluation. Fabian's criteria are summarised here as:

- disciplinary coherence or integration of a field;
- breadth and depth of knowledge; and
- quality standards.

We consider these criteria potentially appropriate for developing research questions that will enable us to conclude whether or not supply management is a discipline. Before using them, however, we should test them for consistency with our purpose.

Disciplinary coherence. It is proposed as a spectrum by Fabian (2000, p. 353) with polar extremes of solidarity (completely unified discipline with a single paradigm) and segregation (no dominant paradigm at all) and the in-between condition of integration (some coherence). In this context, Fabian can be said to share a basis with the Pfeffer-van Maanen debate which was partly to do with how coherent management should be. In Pfeffer's disapproval of a weed patch and implicit approval of a well tended garden, he appears to be supporting the view that the management discipline should be closer to Fabian's solidarity. van Maanen's support for the relative merits of plurality of paradigms within a discipline reveals some sympathy with Fabian's integration.

While some other researchers attempt to legitimise laissez faire approaches as representing a discipline (Feyerabend, 1975), there are practical limits to segregation. For example, academic groupings such as faculties, events such as conferences, and journals, tend to support some degree of consensus and integration. Perhaps reflecting this, a debate exists on whether unity of view or multiplicity of paradigms is required for management to be seen as a "normal science" (Pinder and Moore, 1979). In strategic management, plurality is applauded (Thomas and Pruett, 1993). There is also an intense debate about the identity of sociology, where Ben-Rafael and Sternberg (2003) suggest that the "basic inner tensions of the discipline engender acute divisiveness". They express concern that "these developments jeopardize the status and unity of Sociology as a scientific and academic discipline". However, they do see a positive side to the divergence "as a proof of vitality formulating new problems, opening new horizons and creating new environments".

Pilkington and Liston-Heyes (1999) sought to establish whether or not POM was what they term "a legitimate academic field". They used citation/co-citation analysis on *International Journal of Operations & Production Management (IJOPM)* articles to test for coherence. These debates highlight a lack of formal rules and common processes by which a management discipline might be evaluated. However, they do indicate that coherence might suggest evidence of a discipline, while recognising that debates and disagreements at the margin may be healthy. Following this, we adopt the notion of a "common focus" as opposed to polar extremes of "no focus" and "unity" as

a reasonable indicator of a discipline. Following the path of management and POM researchers who have examined coherence as an indicator of the existence of a discipline, we develop our first research question:

RQ 1. Is there coherence in the supply management literature that indicates it is a discipline?

Breadth and depth of knowledge. It is Fabian's (2000) second criterion. To use it, we must explore the meaning of both characteristics in this context. Tsoukas (1994) provides a useful differentiation between deepening and broadening existing knowledge, while March (1996), considering breadth, favours borrowing from other paradigms and theories to shape new research areas. Amundsen (1998) proposed that operations management borrowed theories because it has an inter-disciplinary nature and is a relatively new, small field. This, it might be argued, would broaden the topic without necessarily deepening it, as "borrowing" implies a shallow adoption. To counter this, Klein *et al.* (1994) considering depth by examining different, interacting units of analysis for management research, conclude that deeper exploration of each can lead to its own theoretical stream. Stock (1997) proposed three benefits of applying "borrowed" theories to a discipline: learning from others' experiences, quicker advancement of knowledge and enhanced linkages with other disciplines. This echoes March (1996) discipline broadening through borrowing paradigms. It is not clear, however, whether such development would bind the streams into a discipline, or divide it into a variety of miscellaneous categories.

There appears to be no additional support in the literature to indicate that greater or less breadth or depth is an indicator of whether a field might be viewed a discipline or not. This criterion helps Fabian in her purpose to categorise different disciplinary approaches but does not add to the coherence criterion. We have not, therefore, employed this criterion to develop a research question.

Quality. This is the third criterion in Fabian's (2000) framework, which relates to whether there were universal or multiple quality standards for validating work. The quality debate in management research has a number of interwoven strands: the quality of research methodologies employed and of publications in which research appears, and the impact of research on practice and on theory development.

In a survey by Barman *et al.* (2001) North American academics rated methodological rigour more highly as a quality indicator than relevance to the field of POM. The methodology of case study research has been criticised by some (Dyer and Wilkins, 1991; Webster and Starbuck, 1988; Lehrer *et al.*, 1990) while others argue the importance of subjectivity rather than scientific objectivity and call for new research methods to provide this (Astley, 1985; Gioia and Pitre, 1990; Zald, 1993; Beyer, 1992; Weick, 1999). "Close-up" study of social aspects, it is argued, benefits from reflexive, in-depth interviewing (Jones, 1985a, b; Rubin and Rubin, 1995) and ethnographic approaches (participant-observation) (Hammersley, 1992; Hammersley and Atkinson, 1995).

Oviatt and Miller (1989) are concerned about the link between the need to demonstrate relevance to practice and the continuation of financial support for research. Whitley (1984) reminds us that demands for research to be transferred into education lead to a plurality of dissemination routes, standards and assessments. Opponents of relevance in the field of management (Brief and Dukerich, 1991) argue

that, from a scientific perspective, it is neither plausible nor desirable. However, the established homes of management research (such as the North American and British Academies of Management) have generally welcomed engagement with practitioners as a positive feature.

In evaluating the status of POM, Pilkington and Liston-Heyes' (1999) citation/co-citation analysis revealed that only three of the 46 most cited papers in *JOPM* articles were in POM journals. They observed that POM researchers send their best material to general management journals. This highlights interest in journal quality as an indicator of quality of research and knowledge. Assessment of research quality is a thorny issue but has been tackled in the UK by the Higher Education Funding Council's periodic, National Research Assessment Exercise (RAE in 1992, 1996, 2001 and 2008). While journal quality is one indicator of research quality, impact and evidence of esteem are considered by some authors (Harvey and Morris, 2005; Harzing, 2003), as is the potential future trajectory of research (Bessant *et al.*, 2003). The 2001 RAE acknowledged diversity across the field of management in the quality of discipline development, characterising some areas, such as strategic management, as "adolescent" disciplines, relative to the longer established and mature fields of management science and economics (Bessant *et al.*, 2003). The RAE Management Panel was "overwhelmed" by the number of new journals in some fields, containing published articles demonstrating a lack of knowledge of more established work in accepted high ranking management journals (Bessant *et al.*, 2003). While interwoven, these strands of discussion on quality do provide guidance relating to Fabian's quality criterion and give rise to the following research question:

RQ 2. Is the quality of research in supply management sufficient to identify it as a discipline?

In addition to conducting tests on coherence and quality, there has also been an argument put forward relating to field legitimisation. Several authors have suggested that an academic field reaches an important stage of development when it can be said to have a discipline-debate (Lowenstein, 2004; Walker, 1996; Myers, 2003; Pilkington and Liston-Heyes, 1999, p. 15). Such reflection considers whether, if researchers in a field have not yet questioned the status and legitimacy of their field or attempted to bound or characterise it, it can be said to be a "discipline". Mahoney (1993) called for a continuing debate on the discipline of strategic management. Fabian (2000) concluded that "impassioned debate – where we as readers consider arguments and take sides – better depicts the proper role for members of the discipline". Citing models such as bounded instability (Stacey, 1995) and antimony recognition (Barley and Kunda, 1992), Fabian concludes that healthy tension is valuable.

It may be concluded that supply management might only be viewed as a discipline once there is evidence of a reflective academic debate about whether it is a discipline. This is a paradox; the initial debate must logically conclude that it is not yet a discipline while the debate itself may be a sign of discipline development. We suggest that the research question that follows is, however, valid and useful, since management and operations management academics have recognised that the existence of a discipline-debate in itself is an indicator of a discipline. Our third research question is developed accordingly:

RQ 3. Is there a discipline-debate in supply management that indicates it is a discipline?

The research questions were combined in a framework for evaluation of an academic discipline, shown in Figure 1. This characterises the development of a discipline as a phased model. Early development phases involve the improvement of coherence, quality and impact of published work in the field (Bessant *et al.*'s, 2003 *adolescent discipline*) while later phases show the start and development of a discipline-debate in the field, giving rise to the final phase of a respected, credible, academic discipline. The first two phases are foundations and building blocks. Any erosion of cohesion, quality or impact could cause the discipline-debates and the respectability of the discipline to be eroded.

Methodology

Findings of an initial literature review are incorporated in this section as their main purpose was to assist in methodology development. The ProQuest ABI/INFORM® online system was used (covering over 1,800 management and business publications from 1970). A search from 1980 to 2005 for publications with “supply” “management” and “discipline” in the title was made; none was found. The search was broadened to include title, abstract, and keywords. About 29 articles were found, spread across a range of quite different journals. This set provides five initial findings. First, in terms of total volume, this does not represent a large number of academics engaging in a discipline-debate in published outputs. Second, 14 articles were discounted as irrelevant as they dealt with, for example, water supply, or did not deal with discipline, theory, paradigm or conceptual development of the academic field of supply management. Third, in the body of the text, a variety of terms was used, including “SCM” “supply relationships” and “supply networks” indicating that “supply management” as a term

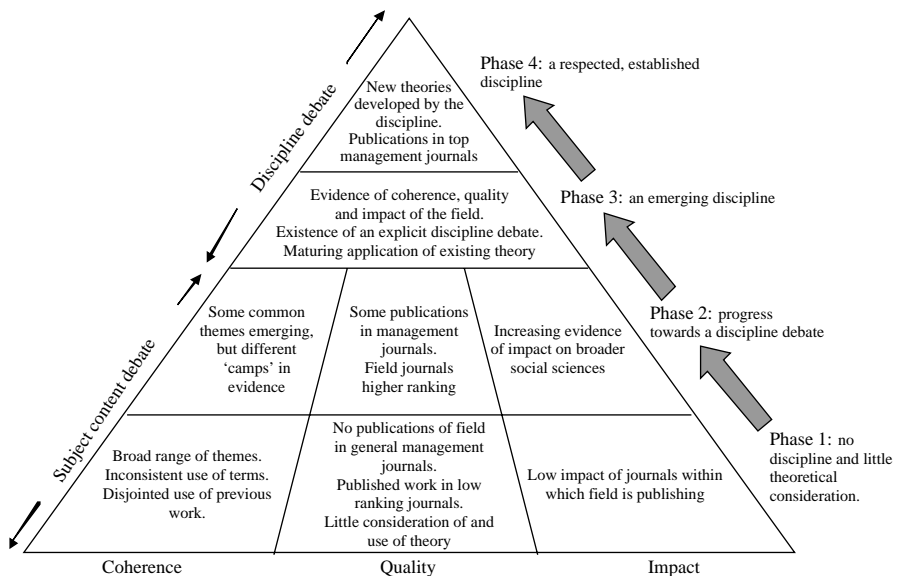


Figure 1. Academic framework for evaluation of a discipline

might not represent the full body of work in the field. This highlights the limitations of this set. Fourth, the range of journals was broad and included some management, logistics, POM and marketing journals. Fifth, only one article specifically addressed discipline development (Aarlbjorn and Halldorsson, 2002) but focused on *Logistics & Supply Chain Management*.

These initial findings did not represent a large sample, as only 15 of the original 29 articles warranted examination in more detail. Whilst possibly not representative of the wider SCM literature base, the initial search helped guide and refine the subsequent literature search process. The initial literature search for “supply” “management” and “discipline” coinciding in title, abstract, or keywords was broadened to include terms other than “supply management”. Specifically, “SCM” “supply network” and “supply relationship” were added as search terms. “Theory” was added to each term to catch those articles that were not using the term “discipline” but were still dealing with theoretical development. This yielded 494 hits (which contained some overlap when more than one term appeared in the abstract or keywords), of which 105 were deemed potentially relevant. The abstracts of these were read; 41 were viewed as being about the development of the discipline of supply management, in that they dealt with theory, conceptual development, research paradigms or discipline discussion. The articles are not necessarily representative of the wider SCM literature base but, as this paper is focused on debating SCM as a discipline, it seemed appropriate to search for those containing “theory” and “discipline”. This second, broader search brought up all of the 15 papers that had been found in the initial search and examined in detail, along with 26 more. This set of 41 formed our core data set for subsequent tests to examine the three research questions[1]. Our four tests are described below. Test 1 is used to address *RQ 1*; tests 2 and 3 address *RQ 2*; test 4 addresses *RQ 3*. Two tests (2 and 3) were used to examine quality because the literature review indicated that academic journal publication quality and impact are key quality dimensions.

Testing for coherence

The test for coherence aimed to identify broad themes and clusters in the articles, to establish whether there was unity and a common focus in the publications. A count was made of those articles in the core set of 41 that contained the key search terms in the title, keywords or abstract. The purpose of this was to seek patterns relating to the use of particular terms, providing some evidence of integration on terminology. Then, all 41 articles were examined and the dominant search term groups compared qualitatively using pattern matching. Pattern matching involved looking for clusters or patterns across the data by noting where articles contained the search terms “supply management” “SCM” “supply relationships” “supply networks” and “discipline” or “theory”. This was done to establish if there were distinguishable themes or paradigms and how closely they were related.

Testing for academic journal quality

Because the core set of articles was relatively small we decided not to use individual article quality as the key indicator but rather to examine the trends over time relating to the journals within which those articles were published. This is supported by the Pilkington and Liston-Heyes (1999) findings and the putative guidance to evaluation panels currently being provided for the forthcoming UK RAE 2008.

A number of journal ranking lists have been compiled in the last decade. The lists represent a compilation of journal ranking exercises conducted by various management institutions. For this study, the two lists used were the *Journal Quality List (JQL)* (Harzing, 2003) and the *Classification of Academic Journals in the Field of Business and Management Studies* (Harvey and Morris, 2005), which give a variety of peer esteem rankings for journals conducted over the past ten years. JQL provides rankings from 1995 to 2001, and Harvey and Morris (2005) from 2001 to 2004. The two together provide a reasonable spread of scores from 1995 to 2004. Other lists were not chosen as they were restricted in the journals and institutions they include (Geary *et al.*, 2003). Some lists are represented within other lists. For example, a Cambridge list (Hodgson, 1994) was discounted because it overlaps with JQL, including two of the same ranking exercises conducted by Lancaster University and Dutch universities in 1994. Some ranking exercises in the JQL list were discounted as there was too little data on our sample of journals within which the 41 papers appeared (e.g. the Dutch ranking exercise in 1999 did not feature any of the sample journals). Other ranking exercises were discounted from the JQL list, such as one conducted in the USA in 1998 which rated from 0.00 to 1.00 and so did not give comparable data to the UK RAE 1-5 rating system. For those lists with letter rankings (e.g. A-E), number values were given (see italics in Table I).

The Pilkington and Liston-Heyes (1999) assumption that POM authors submit their best work to general management journals might imply that POM journals are less well rated. Average ratings for the journals within which the 41 core supply management discipline articles appeared were divided into two sets: supply management/POM journals, and general and other management journals. The two sets were compared to identify if the supply management/POM journals were significantly lower rated than the management journals. A *t*-test was conducted to identify significant differences between categories of search terms. The total set was examined to find the average journal rating to assess if the core supply management discipline-debate was appearing only in lower ranking journals.

Testing for impact

Social science impact scores provide evidence of changing impact of particular journals over time by examining citations. The citation impact factor is defined by the social science citations index (SSCI) as a ratio between citations and citable items published. It is based on the number of citations in a given calendar year of articles published in the two preceding years in that journal, divided by the number of articles published in the journal in the same two-year period. The SSCI impact factor is a reasonable and relatively objective assessment of journal impact. Use of the SSCI impact factor scores over time provides an evaluation of trends in journal impact. Impact is distinct from, but associated with, publication quality. It might be assumed that the more times an article was cited, the more it was respected (a possible indicator of quality). However, self citation, unwarranted respect, and lack of total visibility of all work by all academics limit the validity of connecting impact and quality directly; it is therefore, prudent to separate the two tests. The impact of the journals in the core set of 41 articles was examined from 1995 to 2003 to see if these journals were having greater impact on the social science field.

Listing	Source	Scale	
NOT95	Harzing (2003)	1-5	List based on a survey of opinions of 397 UK academics from 27 institutions (all institutions rated 5 or 4 in the 1992 RAE and a random selection of 3-rated institutions). Academics were asked to rate a predefined list of journals "using a 1-5 scale, where 1 represents the lowest and 5, the highest quality assessment bearing in mind the forthcoming research assessment exercise". Journals with less than 10 responses were not included in the list
BFD97	Harzing (2003)	1-5 ^a	This appendix was produced in an attempt to improve on gradings of journals in the <i>Vereniging Samenwerkende Nederlandse Universiteiten</i> listing. The listing was circulated to all members of staff, who were asked to suggest modifications; A – top publications in heavily refereed journals to E – publications in other journals
AST99	Harzing (2003)	1-5	List based on a large survey of opinions of academics of the Midlands universities (5 – top international journals (top ten for the discipline), 1 – lower level national journals)
WIE01	Harzing (2003)	1-5 ^b	List developed by the Vienna University of Economics and Business Administration, rated from A + (top international) to D (national)
RAE 2001	Harvey and Morris (2005)	1-5.5	The imputed RAE 2001 score for the journal is given on a 1 to 5.5 scale. It is calculated by attributing articles from 5* departments with a score of 5.5, while 5 rated departments score 5, 4 rated departments score 4, 3A rated departments score 3.5, 3B rated departments score 3, 2 rated departments score 2 and 1 rated departments score 1. The score is the mean of individual scores
WAR03, AST03, IMP04, CRAN04 and BBS04	Harvey and Morris (2005)	1-4	Peer esteem rankings (Warwick, Aston, Imperial, Cranfield, Bristol Business School). The rankings have been extracted from lists in general circulation within the UK academic community. The "scores" have been standardised on a 1-4 scale, where 1 is low and 4 is high. A 4 grade signals "top international" a 3 grade signals "international" a 2 grade signals "top national" and a 1 grade 'national'. Any journal with a 4, 3, 2, or 1 grade follows a peer review process for papers submitted. As a general rule, the higher the grade, the stricter the process and the tougher the standards applied

Notes: ^aFor this listing, a score of 5 was given for A, and 1 for E; ^bfor this listing, a score of 5 was given for A+, and 1 for D

Table I.
Journal ranking lists
explanation table

Testing for the presence of a supply management discipline-debate

One further test was applied, to establish whether a deliberate discipline-debate was being conducted. Even if there were indications of increasing coherence, quality and impact, a lack of a discipline-debate might indicate a degree of randomness to

the published work and a lack of maturity of the field. Specifically, we examined the content of the 41 articles to assess the maturity of the discipline-debate, using the criteria of coherence, quality and impact derived from Fabian (2000), and to compare with the breadth of review of other discipline-debates.

Findings and discussion

This is divided into three sections in order to address the research questions relating to coherence, quality and the existence of a supply management discipline-debate, as indicators of a discipline.

Coherence of the supply management discipline-debate

This section discusses findings relating to *RQ 1*: is there coherence in the field of supply management indicating it is a discipline? Figure 2 shows the number of articles by search term in title, keywords or abstract. Of the total 41 articles addressing supply management discipline issues, 23 contained the phrase “SCM theory” 20 used “supply management discipline” 17 used “supply management theory” and “SCM discipline” was used by 16. Fewer articles addressing discipline issues focused on “supply relationship” and “supply network” theory and discipline, as terms. Using pattern-matching, articles with search terms “supply management discipline” are also those that tend to contain the search term “SCM discipline”. Articles identified using the search term “supply management theory” also tend to be those that contain the search term “SCM theory”. The clustering of themes in the articles suggest a common focus or unity of debate in the field.

Combining the results for “SCM discipline” and “SCM theory” shows the extent of debate of SCM discipline related issues. Reviewing 35 years of the *American Journal of Supply Chain Management*, the observations of Carter and Ellram (2003) typify much other work (Kauffman, 2002; Skjoett-Larsen, 2000; Larsson and Halldorsson, 2002). They found definitions, terminologies and subject boundaries had mutated over the period. The terms, “supply management” “SCM” “purchasing and supply” “logistics” and simply “supply” were used to refer to largely similar domains, problems and processes. Authors appear to agree that increased organisational redefinition and associated outsourcing have focused research attention on inter-organisational chains

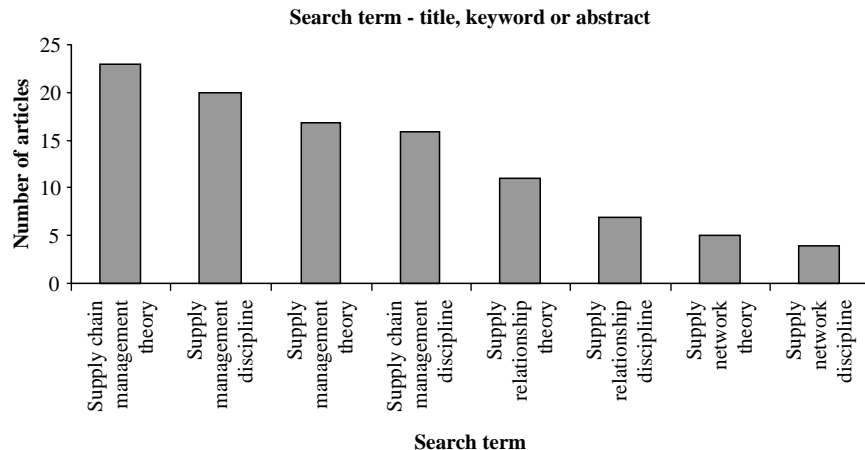


Figure 2.
Supply management field search terms and hits

and networks (Möller and Halinen, 1999). This increases the need for integration of activities across organisation boundaries (Håkansson and Persson, 2004). SCM has evidently become a commonly used term to label these developments and discussions.

Many authors highlight the wide number of fields contributing to the debate, including purchasing and supply, POM, logistics, innovation, marketing, strategic management and economics (Chen and Paulraj, 2004; Svensson, 2003). Min and Mentzer (2000) call these “different conceptualisations”. While it is accepted that there is still some definitional confusion (Lejeune and Yakova, 2005), there was evidence of unity and common focus in the articles, and so this test found evidence of coherence within the field of supply management, thus supporting *RQ 1*.

Quality of the supply management discipline research

In this section, we address *RQ 2*: is the quality of research in supply management sufficient to identify it as a discipline? A positive answer to this question would mean that supply management research stood on its own merit (for example, in terms of citations) rather than relying upon management literature for its reputation. Figure 3 shows the average rankings of the journals within which the 41 supply management discipline articles were published (excluding those that do not appear in the journal rankings tables). Supply and POM journals are considered as one category and shown separately from general and other management journals to allow comparison. All supply/POM journals listed were classified in at least one of the lists under the broader journal categories of POM (Harzing, 2003), operations and technology (OPS & TECH) or operations research (OPS RES) (Harvey and Morris, 2005). Supply journals were a subset of the broader supply/POM category. The general and other management journals were classified as marketing, sector, general management and strategy (GEN & STRAT) (Harzing, 2003), and in the other listing marketing (MKT) and general management (GEN MAN) (Harvey and Morris, 2005). Both sets follow a similar pattern, with general and other management being slightly lower with an overall average of 2.60 compared to supply/POM at 3.41. On the basis of the 41 papers, and

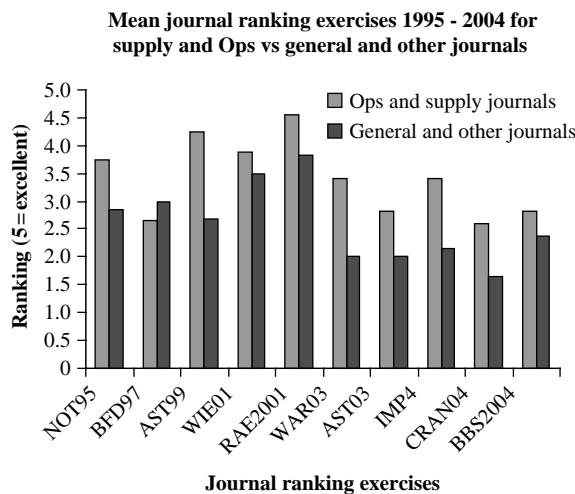


Figure 3. Average journal rankings for supply and operations journals, compared to general management and other journals, 1995-2004

using our categorisation of supply/POM and general and other management journals, an independent samples *t*-test was conducted to assess whether the means were significantly different. The means for general management and supply/POM journals were found not to be significantly different at the $p < 0.05$ level ($F = 0.604$; $df = 18$).

It was necessary to accommodate variance in the ranking exercises. Some used an alphabetical scale from A to E (e.g. BFD97) which were given numerical values of ($A = 5$ to $E = 1$). Of the numerical rankings, some employed ranking from 1 to 5.5 (c.f. RAE2001: 1-5*) and others used 1-4 rankings, aligning with the Harvey and Morris classification (e.g. IMP04, CRAN04 – see Table I for an explanation of abbreviations). Since, the intention of comparing means was to see how supply/POM journals compared to general management journals, converting the various scales onto a single 1-4 or 1-5 scale was not attempted. It seemed sufficient to show that in the NOT95 ranking, for example, supply/POM journals ranked slightly higher than general management journals, on that particular scale. As many of the more recent ranking exercises (2003-2004) were on a 1-4 scale, they show generally lower means.

Figure 4 shows the comparison of the average journal rankings across the different rankings lists (i.e. the average of NOT95 to BBS2004 scores) for supply/POM journals

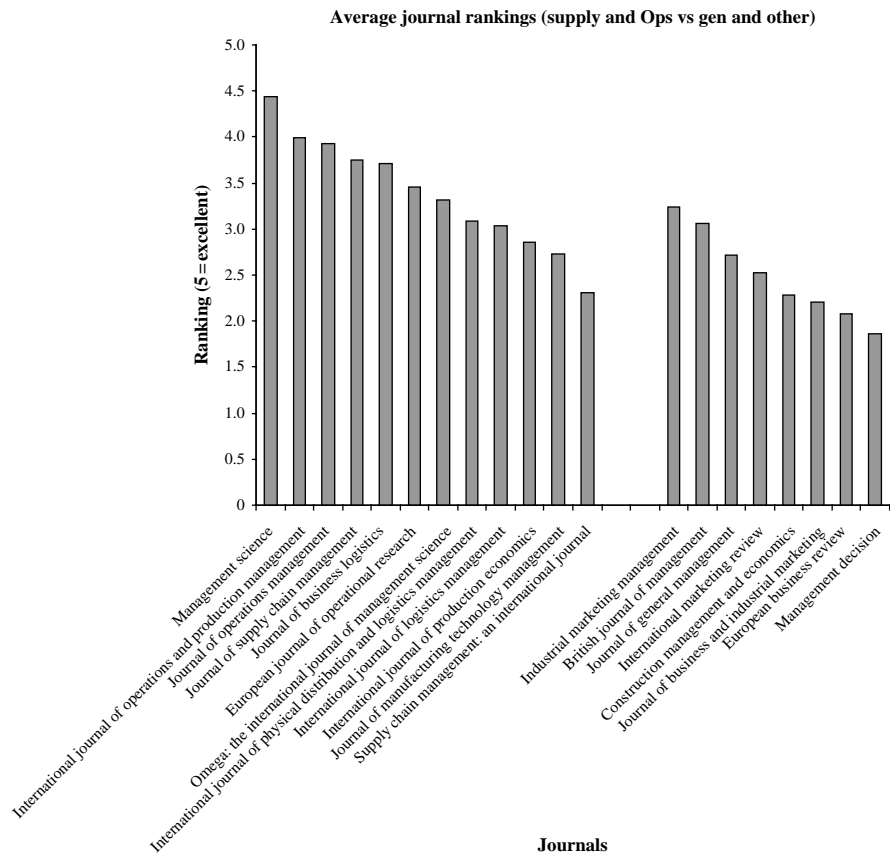


Figure 4.
Average journal rankings for supply and operations journals, compared to general management and other journals

compared to general management journals. As the journal ranking exercises used different scales, the mean of all the ranking exercises on which the journal appeared is calculated for each journal, to give an approximate overall indication of its ranking. In doing this, it is assumed that all the journal means were likely to be subject to the same bias. They are shown in descending order (i.e. the highest for supply/POM journals is *Management Science* and the lowest is *Supply Chain Management: an International Journal*; the highest for general and other management journals is *Industrial Marketing Management* and lowest is *Management Decision*). It is important to note that these journals were drawn from the core data set of 41 articles and may not be representative of the whole SCM literature field, since our search was limited to those articles discussing theory or discipline.

There is a similarity in pattern and insignificant difference between means in these two sets. This shows that the supply management discipline discussions have been published in supply/POM journals of roughly similar standing to the management journals (they follow a similar pattern, with general and other management being slightly lower with an overall average of 2.60 compared to supply/POM at 3.41). The data do show that the top POM journals (*Management Science*, *International Journal of Production and Operations Management* and *Journal of Operations Management*) are publishing work contributing to the discipline-debate as well as the top supply management/SCM journals (*Journal of Supply Chain Management* and *Journal of Business Logistics*). However, what is evident is that the very top management journals, such as *Academy of Management Journal* and *Academy of Management Review*, have not yet published any supply management discipline-debate articles.

These comparisons of journal rankings signify a number of issues. First, the top supply/POM journals are engaging in the supply management discipline-debate but the very top management journals are not. However, the fact that the management journals publishing the discipline-debate are of roughly equal stature to the supply/POM journals shows that the discipline-debate is healthy in the management field. It would be interesting to see how many supply/POM articles more broadly are ever published in *Academy of Management Journal* and *Academy of Management Review*. There is some evidence to support RQ 2 but this must be combined here with evidence of impact.

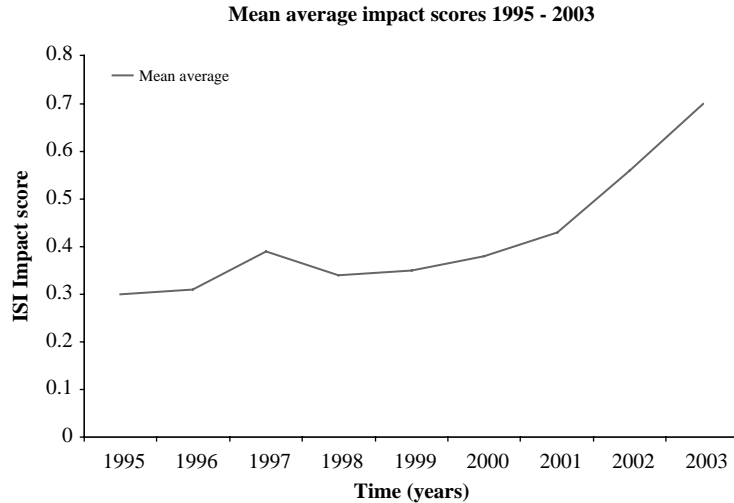
Figure 5 provides the mean average impact scores for the journals represented in the set of 41 articles discussing supply management discipline issues.

Figure 5 reveals that these journals are having an increasing impact on the social sciences in terms of other authors' willingness to cite them. While this does not show that individual articles were themselves being increasingly cited, it does indicate that there is growing recognition for the journals within which this debate is being held. Evidence of academic journal quality and impact thus indicates the existence of an emerging discipline.

Evidence of a supply management discipline-debate

In this section, findings are discussed relating to RQ 3. The 41 articles were read and examined in depth to assess the extent and nature of the supply management discipline-debate. Some writers provided analyses of historical development (Carter and Ellram, 2003; Chopra *et al.*, 2004), whereas others contributed to discussions of the "state of supply management" by being highly critical of the lack of discipline-debate

Figure 5.
Impact scores for journals
publishing on supply
management discipline
issues



(Aarlbjorn and Halldorsson, 2002; Svensson, 2003; Chen and Paulraj, 2004). Other writers have attempted to describe supply management, with the field being described variously as a “new discipline” (Skjoeett-Larsen, 1999), a “multi-dimensional discipline” (Lancioni, 2000), a “new orthodox” (Chen and Paulraj, 2004), an “holistic concept” (Håkansson and Persson, 2004) or merely a “popular topic” (Chan and Qi, 2003). These different conceptualisations of supply management indicate some disparity in the debate. Critics from outside the field might query whether contributors to this debate know what a discipline is, if such a disparity exists.

However, the combination of the presence of the 41 articles, the publication of this *IJOPM* special issue and the content and quality of much of the debate, suggest that the answer to *RQ 3* might be that supply management is an emerging discipline.

The answers to our three research questions indicate that while supply management has coherence, the evident quality of research and legitimation through a discipline-debate do not support its qualification as a discipline. However, it was apparent that it might be termed an emerging discipline. Rather than define this term pedantically, we suggest that it may be used to denote significant development towards the conditions tested by our research questions, as indicated in our framework. To inform this discussion, we considered other literature that might support reflections on the debate without explicitly claiming to be about theory or discipline.

The field as a whole appears to have been broadening, though not in a consistent fashion. Some researchers limit their conceptual frame to manufacturing settings (Rudberg and Olhager, 2003; Frohlich and Westbrook, 2001), others include consideration of supply side issues of the service economy (Axelsson and Wynstra, 2002; Ellram *et al.*, 2004). The supply management research frame now includes a focus on services in public services; for example, the proportion of articles on public sector supply at the International Purchasing and Supply Education and Research Association annual conferences has grown from three articles in 1997 to eight in 2003, 15 in 2004 and 17 in 2005. However, while the research settings may be broadening, there is still evidence of a common focus on supply management and SCM in those settings.

It appears that borrowing theories from other disciplines is also broadening the field, as discussed by Klein *et al.* (1994). Since, 1990, such borrowings have included role theory (Harland and Knight, 2001), game theory (Shubik, 2002), transaction cost economics (Grover and Malhotra, 2003; Hobbs, 1996), and theories concerned with the social aspects of supply management (e.g. social capital: Erridge and Greer, 2002; socialization). Such articles did not feature in this evaluation because, while they include theoretical consideration, they do not address the discipline and theory debate of the field as a whole.

Supply management and SCM appear to be the dominant terms in the field. To some the two appear to be synonymous (Tan, 2001; Narasimhan and Das, 1999; Dong *et al.*, 2001). Others suggest that SCM is broader, incorporating other members of the supply chain, including customers (Ho *et al.*, 2002). Examining the two sets of articles relating to supply management and SCM provided by this analysis, there are some observable differences although the limited data do not justify further pattern matching to test this at this stage. Some supply management papers tend to conceptualise the field as relationships, chains and networks, particularly focusing on what Håkansson *et al.* (1982) termed “actor bonds” and “resource ties”. The SCM articles tend to focus on Håkansson *et al.*'s, “activity links” dealing with the materials and information flows primarily, i.e. a more “logistics” orientation, albeit some considering theory (Mentzer *et al.*, 2004). However, new literature searches, pattern matching and statistical analysis would be required to test for any significance in these initial observations.

Klein *et al.* (1994) exploration of research depth clarified the existence of different units of research analysis at different systems levels. More recent supply management research has been conducted in: dyadic relationships (de Lurdes Veludo *et al.*, 2004; Humphries and Wilding, 2003; Zolkiewski and Turnbull, 2002; Hoyt and Huq, 2000; McDonald, 1999); in chains (Otto and Kotzab, 2003; Rudberg and Olhager, 2003); in networks (Håkansson and Persson, 2004; Rudberg and Olhager, 2003; Zolkiewski and Turnbull, 2002; Möller and Halinen, 1999); and across nations (Akkermans *et al.*, 1999). Harland (1996), categorised SCM as management of internal supply chains, relationships, chains and networks, and Harland *et al.* (1999), offered the concept of “supply strategy” as a more holistic, multi-system level concept of supply, embracing operational, managerial, strategic and policy-oriented issues in public and private, manufacturing and service sectors.

Despite the evidence provided here of increasing quality of journals in which the supply management discipline-debate is occurring, and of increasing relevance through richer use of qualitative and quantitative research, there is still a problem relating to quality in the field. As a discipline comprises theories, the quality of the discipline should be judged in part through examination of the sufficiency of theory development. There are many articles signalling the field as being underdeveloped in its theory base (Svensson, 2003; Skjoeett-Larsen, 1999). Fears have been expressed that the field may not develop sufficiently academically and be dismissed as a managerial fad unless a reliable conceptual base is developed (New, 1996; Chen and Paulraj, 2004).

The proposals of Svensson (2003) and Stock (1997), to deal with the limited theory base, involve incorporating other existing cross-disciplinary concepts and frameworks rather than reinventing the wheel. There is some initial evidence of this happening; for example, many researchers have used transaction cost economics, strategy-structure theory and a resource based view of the firm to examine buyer-supplier relationships

(Hoyt and Huq, 2000). However, there is still insufficient research that has developed and built theory in supply management (Croom *et al.*, 2000), reflecting similar criticisms of POM (Melnik and Handfield, 1998; Meredith, 1998; Chen and Paulraj, 2004). Our evidence suggests some improvement in coherence, quality and impact.

Conclusions

Our three research questions may be answered in the following manner.

It is apparent that there is coherence in the field of supply management, as evidenced by a review of the literature related to theory and discipline development. The quality of the literature in supply/POM journals is not significantly identified within the general management field and thus does not support the qualification for a separate discipline. There is not sufficient evidence of a discipline-debate to support the identification of supply management as a discipline in its own right.

Combining the findings of our structured approach to answering the research questions with a broader consideration of related literature, it is evident that supply management may be moving from Phase 2 to 3 on our academic discipline evaluation framework (Figure 1). However, it has a long way to go before being recognised and respected as a credible, established discipline.

Supply management thus mirrors many of the discipline-related issues faced earlier in management and, more recently, in POM. For example, attempts to impose a single paradigm for supply management research at this phase would be unlikely to gain support at a time when a broadening of paradigms is evident in research practice. In concluding this paper, it is worth reflecting on this situation.

The field of supply management is evolving, developing positively, and addressing discipline and theory issues. At present, there are few genuinely individual paths of theory and concept development. Compared to disciplines in the sciences or classics it appears that there is no common quest or “grand challenge”. Supply management and SCM researchers are converging on the need for integration across organisation and functional boundaries, though there is still little evidence of measured benefits of such integration. SCM and supply management have emerged as dominant terms for this integration but contributors to each stream have provided insufficient theory to underpin this development, and perhaps paid too little attention to disciplinary and theoretical debates.

The tests applied here, and the application of a new academic discipline evaluation framework, provide evidence of increasing coherence, quality and impact, whilst maintaining a seemingly healthy breadth and boundary pushing orientation. There is strong evidence of relevance to practice but this in itself may conflict with theoretical rigour. The entrance, continued presence and influence of consultants in the field (starting with Kraljic’s (1983) influential work) can prevent a discipline forming as leverage of a few income generating ideas may take precedence over theoretical depth and methodological rigour. There is some agreement that the research agenda should not be driven by practitioner interest alone. For example, Chen and Paulraj (2004) warn that “research about supply chain management as a conceptual artefact of the modern world is also essential”. The proliferation of knowledge that is based upon practitioner surveys tends to imply theoretical constructs from empirically observed phenomena and statistical relationships rather than conceptualisation and measurement of constructs (Venkatraman, 1989). Chen and Paulraj (2004) attribute this to

“astronomical efforts... required to undertake the development and validation of constructs and measures of supply chain management”.

We conclude, therefore, that supply management is not yet a discipline; there has been insufficient discipline and theory development to underpin the subject. There does appear to be evidence that it is an emerging discipline; there is coherence in the supply management discipline-debate, the quality of supply management discipline research is improving and there is a discipline-debate occurring. However, these indicators of an emerging discipline are at a very early stage. There is evidence of some cohesion, yet there are still different terms, paradigms and concepts being used in the field, and different contributions being made by logistics, purchasing and supply, POM, and marketing researchers. The quality of journals publishing articles on the discipline-debate is improving, as is their impact, but the top management journals internationally are not yet engaged. There is evidence of a discipline-debate occurring in the field but it is not sufficiently developed or deliberately articulated. This may imply a lack of strong academic leaders in the field who, like Pfeffer and van Maanen, could tackle the discipline issue head-on over a number of years and at a sufficient level. Or it may be just too soon in the development of the field for such authors to think it worthwhile.

Note

1. The sample of 41 papers derived from the structured literature search and used for the main analysis are: Aarlbjorn and Halldorsson (2002), Akkermans *et al.* (1999), Al-Mudimigh *et al.* (2004), Bowersox (1998), Bullington (2003), Carter and Ellram (2003), Chan *et al.* (2003), Chan and Qi (2003), Chandra and Kumar (2000), Chen and Paulraj (2004), Chopra *et al.* (2004), de Lurdes Veludo *et al.* (2004), Downey *et al.* (2003), Ellram *et al.* (2004), Grimm (2004), Grover and Malhotra (2003), Gubi *et al.* (2003), Håkansson and Persson (2004), Hamilton (2003), Hobbs (1996), Hoyt and Huq (2000), Humphries and Wilding (2003), Kauffman (2002), Ketchen and Giunipero (2004), Lancioni (2000), London and Kenley (2001), McDonald (1999), Möller and Halinen (1999), Mouritsen *et al.* (2003), Otto and Kotzab (2003), Ramos (2004), Ramsey (2004), Rudberg and Olhager (2003), Schneeweiss (2003), Skjoeett-Larsen (2000), Stadtler (2005), Stonebraker and Liao (2004), Svensson (2002a, b, 2003) and Zolkiewski and Turnbull (2002).

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