ELSEVIER

Intern. J. of Research in Marketing 13 (1996) 163–180

International Journal of
Research in
Marketing

A model of the publication performance of marketing academics

A. Diamantopoulos *

European Business Management School, University of Wales Swansea, Singleton Park, Swansea, SA2 8PP, Wales, UK

Received 15 October 1994; accepted 27 November 1995

Abstract

This paper develops and tests a path model of the antecedent factors affecting the publication performance of marketing academics. Drawing from the relevant literature, two sets of factors are investigated, reflecting both individual characteristics and characteristics of the institutional environment. The model is fitted to empirical data obtained from a nationwide survey of UK-based marketing educators using LISREL methodology. The results provide strong support for the postulated model both from a substantive and statistical point of view and indicate that personal characteristics such as a doctoral degree and professional association involvement are key determinants of publication performance. The implications of the findings for the development of a research-conducive environment are considered and suggestions for future research made.

Keywords: Publication performance; Empirical study; LISREL model

1. Introduction

While it has long been recognised that "a university which makes little contribution to the expansion of knowledge by the research and publication of its staff will only too soon acquire a reputation for dreariness, and the stamp of mediocrity or even failure" (Williams et al., 1974, p. 352), the emphasis on research has increased dramatically in recent years (Bentley and Blackburn, 1990). On the one hand, academic institutions have been increasingly relying upon research performance as a criterion for appointment, promotion, tenure, and salary decisions (Niemi, 1988a). On the other hand, external bodies (such as funding agencies) have been adopting a more selective approach in their allocation of research funds and have been largely basing their decisions on research assessments of academic institutions (Johnes and Taylor, 1992). At a time of ever-tightening financial constraints, the pressures on funding bodies and university administrators to justify how they reach their decisions has become greater (Hüfner, 1991) and research performance has come to play a major role in this respect (Cave et al., 1991).

While the science, social science and education literatures are replete with contributions on *how* to measure research performance, very little attention has been paid to the relationship between research input and output (Averch, 1989); in fact, "consideration of productivity, or the ratio of output to each of the inputs used has been extremely limited" (Johnes, 1989, p. 17). Clearly, the identification of the individual and institutional characteristics that facilitate or pose barriers to research performance is very important from a policy point of view, because "once we know what a good environment for re-

* Correspondence address: Tel: (44)-1792-295669; fax: (44)-1792-295626; e-mail: ADAM.MARK@SWANSEA.AC.UK.

SSDI 0167-8116(95)00039-9

search looks like, we can set about creating that environment for more departments" (Johnes, 1989, p. 18).

Against this background, the present paper develops and tests a model of factors affecting research productivity within the marketing discipline, with particular emphasis on publication performance. First, the literature on research performance measurement is briefly reviewed, highlighting contributions in the marketing field. Next, a set of influences expected to affect an individual's publication performance are identified and interlinked by means of a path model. This is followed by a description of the empirical data used to operationalise the model and the results of the estimation procedure. The implications of the findings for the creation of a research-conducive environment are considered next, and the paper is concluded with an agenda for future research.

2. Background and literature

The measurement of research productivity has long been the subject of discourse in the literature, a key reason being the multitude of interest groups concerned with this issue. These include university administrators (e.g. Currie, 1991), funding bodies (e.g. Cave et al., 1991), academic faculty (e.g. Honeycutt et al., 1989), industry practitioners (e.g. Assmus, 1991), research students (e.g. Motes, 1989) and society at large (e.g. Pollitt, 1987). While each of these interest groups pursues different objectives and, thus, uses research assessments for different purposes, they all share a common need: information on research performance. The measurement of the latter, however, is a thorny issue, since "there is not a single measure that can be used to capture all aspects of performance" (Dembkowski et al., 1994, p. 49). The complexities involved centre around the nature of research output, the dimensions of output and the level at which measurement of research output should take place.

With regards to the *nature* of research output, in the social sciences, this is invariably taken to be the publications produced by academic staff (Hexter, 1969). However, other outputs (e.g. computer programs) are also possible and the question becomes how to 'convert' such research output into equivalent publication units; this is an 'apples and oranges' problem to which no satisfactory solution has been found as yet. A related problem concerns the use of what are really *input* measures (e.g. research grants) as indicators of performance; the latter provide "no assessment whatsoever of the quantity or of the quality of the research" (Colman et al., 1992, p. 98) and thus their use in research assessment exercises has been severely criticised (e.g. Gillett, 1991).

With regards to the *dimensions* of research output, distinctions can be drawn between quantity, quality, importance, and impact (Martin and Irvine, 1983; Moed et al., 1985; Johnes, 1988). Different performance measures (e.g. publication counts, page counts, citation counts and peer reviews) capture these dimensions to different degrees, but none is unequivocally superior in terms of comprehensiveness, objectivity or comparability (for critical reviews see Garfield, 1979; Webster, 1981; Braxton and Bayer, 1986; Gillett, 1989a; Chapman, 1989; and Dembkowski et al., 1994). It is also the case that what gets measured gets attention, particularly when rewards are tied to the measure; for example, it has been argued that if researchers are aware that they are being judged solely on the quantity of publications, "they will probably spend a considerable amount of time writing up research which they would not otherwise consider publishing and spend less time on actually solving problems" (Whitley and Frost, 1971, p. 161).

Lastly, with regards to the *level of aggregation*, measurement of research output can be carried out at different levels, i.e. individual, departmental, or institutional (Creswell, 1986). Depending upon the level that is selected, a very different picture of research productivity may be painted (Webster, 1985). For example, if research output is measured at the departmental level, larger departments are likely to be favoured simply because they are likely to have a greater pool of expertise (Gillett, 1989b; Gillett, 1989c; Jordan et al., 1989). On the other hand, if one opts for an average 'per capita' measure (e.g. publications per staff member), then a prolific 'superstar' can pull up an entire department (Crewe, 1987). Similar problems arise if university-wide research assessments are opted for.

Despite the above complexities, the issue of research performance (measured with various methods

and at different levels) has attracted a considerable number of empirical studies in a variety of disciplines. [1] These include economics (e.g. Laband, 1986), accountancy (e.g. Dyl and Lilly, 1985), finance (e.g. Kaufman, 1984), psychology (e.g. Colman et al., 1992), general business (e.g. Niemi, 1988a), sociology (e.g. Glenn and Villemez, 1970) and politics (e.g. Crewe, 1987). Interdisciplinary studies also exist (e.g. Jones et al., 1982), as do investigations limited to a particular sub-field within a discipline (e.g. Thoreson et al., 1975).

With specific reference to marketing, some 15 studies of publication productivity have been undertaken in the past twenty years (for a detailed review, see Dembkowski et al. (1994)); practically all of them have been US-based. A number of these studies have formed part of broader assessments of the research performance of business-related fields (e.g. Moore and Taylor III, 1980; Willaims, 1987), while others have focused exclusively on the marketing discipline (e.g. Wheatley and Wilson, 1987; Niemi, 1988b); yet another set of contributions has concentrated on particular marketing sub-fields, such as advertising (e.g. Barry, 1990) or marketing education (e.g. Clark and Hanna, 1986).

With the exception of the Kurtz and Boone (1988) study of editorial review board membership, studies of research productivity in marketing have followed the same basic methodology. This involves (a) selecting certain academic marketing journals over a given period, (b) establishing the authors' institutional affiliation at the time of authorship/publication, (c) allocating credit to the identified institutions according to the number of articles (or pages) contributed, and (d) deriving institutional rankings of marketing departments based on (c) above. Most typically, the allocation of credit has been decided with the 'fractional credit method', whereby each article is given one credit divided by the number of authors (e.g. if there are three authors, two from university X and one from university Y, then X would get two-thirds of a credit and Y one-third).

Studies of research performance along the above lines have provided useful insights into the distribution of publication activities across authors/institutions; changes in these distributions over time; the proportion of single- versus joint-author articles; the academic-practitioner authorship mix; and the link between academic rank and publication performance. Thus a useful descriptive picture of publication performance in the marketing discipline has been painted over the years together with various changes that have occurred. Complementary to this stream of contributions, are studies of perceived quality of different marketing journals and conference proceedings (e.g. Luke and Doke, 1987); citation analyses of marketing journals (e.g. Jobber and Simpson, 1988); journal acceptance rates (e.g. Twedt, 1980); faculty evaluation systems (e.g. Tong and Bures, 1989); tenure and promotion policies (e.g. Beltramini et al., 1985); research support systems (e.g. Brewer et al., 1990); staff research attitudes (e.g. Honeycutt et al., 1989); and publication ethics (e.g. Sherrell et al., 1989).

Despite the cumulative knowledge produced by such efforts, however, a number of limitations characterise the current state-of-the-art. First, the North American orientation of practically all marketing studies of research performance raises questions as to their generalizeability, particularly in a European academic setting. Chief among the problems here, is the inclusion of only US-based journals and conference proceedings in publication evaluations; important European outlets such as the *International Journal of Research in Marketing* or the *European Journal of Marketing* are consistently excluded from consideration. Another bias is introduced by the (implicit) assumption that 'books don't count' as none of the studies has incorporated book authorship among its publication measures. However, it is well-known that in Europe books and monographs are important outlets in disseminating research; in Germany, for example, "monographs enjoy a better reputation than do articles even if they are published in highly esteemed national or international journals" (Böcker, 1981, p. 169). Third, findings from US studies on such issues as, say, the link between publication performance and academic rank, are of questionable value given the different tenure conditions and rank grades in Europe. In short, the US-focus of the majority of studies of publication pro-

[1] Studies of research performance can be traced back to the work of Cattell (1910) who used scholarly peer assessments to rank leading American institutions.

ductivity severely restricts the potential applicability of their findings in a non-US context.

A second major limitation is the lack of control for confounding variables when counting articles and giving credit. An obvious variable in this context is how long one has been in academic life. For example, author X may have been 15 years in 'the system' and published, say, two articles in the *Journal of Marketing* over a given period, whereas author Y – also with two articles – may have only entered academia in the last four years; under current methods of credit allocation X and Y would be considered to be equally productive. Alternatively, if X had published four articles while Y only two, then X would be deemed to be twice as productive as Y, despite the fact that he/she has been almost four times as long in academia! To avoid inferences of this kind, Baird (1986) suggested that publication productivity be defined as the average annual number of articles published per staff member over his/her career; this adjustment not only helps treat recent staff members the same as more experienced ones but also controls for year-to-year fluctuations. Another confounding influence that has tended to be ignored is department size. Inferences about the concentration of publication activity in a few institutions are not very informative unless one also knows something about the relative concentration of marketing staff across institutions; "otherwise ranking by the total number of pages or articles, clearly gives a boost to large departments that is related in no clear way to the quality of those departments" (Bell and Seater, 1978, p. 599). Indeed, Clark (1986) observed a positive correlation between marketing department size and publication rates in six marketing journals (based on the fractional credit method); similar size effects have been found in other disciplines such as economics (Jordan et al., 1988), psychology (Gillett, 1989b; Gillett, 1989c), and politics (Crewe, 1987).

Perhaps the biggest shortcoming of past studies, however, has been the lack of attention to the factors underlying research productivity. To the author's best knowledge, with the exception of the Lusch and Laczniak (1976) study in the US, virtually all studies of research performance in the marketing discipline have been purely output-oriented, paying scant attention to the antecedents of performance. At a departmental level, raw output measures (e.g. journal publication credits) will not provide an accurate picture of research performance differences across institutions, unless allowance is made for resource differences (Gillett, 1987a; Gillett, 1987b). Similarly, at an individual level, rather than simply describing differences in publication rates between educators, the key question is: are particular individual characteristics or circumstances related to research productivity? For example, do some individuals publish more than others because they are better trained in research? Are resources available (e.g. time and money) the driving force behind research performance, or is it the attitude towards research that really counts? Is formal research training a substitute for academic experience when it comes to publication? Questions such as these have hardly been addressed in previous studies. However, it is precisely these sorts of questions to which answers are needed if knowledge useful for policy decisions is to be gained. Put simply, if we know the causes of good (or poor) performance then we can try to influence them; otherwise, we can do little but marvel at the (often striking) differences in research output across individuals and/or marketing departments. The section that follows attempts to bring together some major determinants of an individual's publication performance drawing from the interdisciplinary literature on the topic.

3. A model of publication performance

While it is recognised that an academic's overall scholarly performance is not fully reflected in his/her publication productivity (Braxton and Toombs, 1982), it is also the case that "the relative quantity of published research... by an individual or institution are widely applied as criteria for the evaluation of university faculty and institutional quality" (Clark, 1985, p. 12). Consequently, the following analysis concentrates specifically on factors affecting *publication* performance, to the exclusion of other dimensions of scholarly work. [2] Moreover, the current

[2] Pellino et al. (1984), for example, identified six distinct dimensions of scholarship, of which publication activity was only one; see also Le Grew (1984).

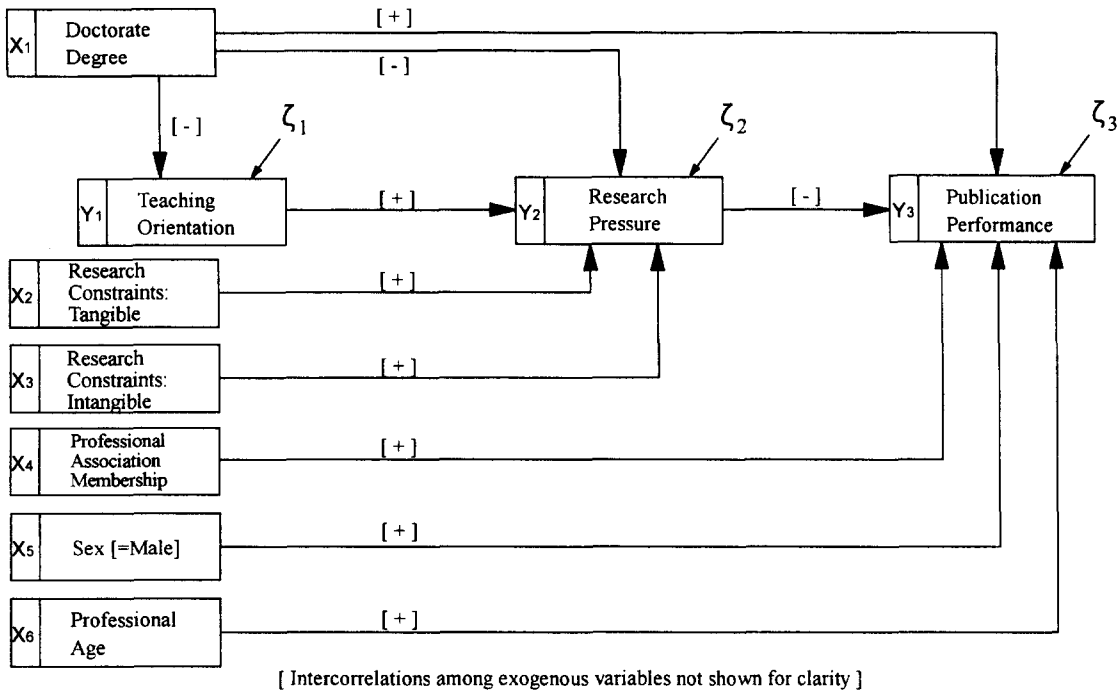

Fig. 1. Path model of publication performance in marketing.

concern lies with *career* publication productivity, the latter reflecting the total or cumulative publication output of an individual over his/her academic career to date. [3]

Fig. 1 presents a path model of career publication performance in the marketing discipline. [4] Consistent with previous conceptualisations in the educational literature (Bean, 1982), the antecedents of publication performance are deemed to be encompassed within two main sets of factors: individual and institutional. The former set describes the characteristics of the individual academic in terms of his background, experience and orientation, while the latter set captures features of the organisational environment which make it conducive (or otherwise) to research. [5] Each set will be considered in turn.

Focusing initially on individual characteristics, the first is *Doctorate Degree* (X_1) and reflects the formal research training that an individual has received. There are at least five aspects of undergoing a doctoral training process that can be expected to positively affect publication productivity. First, the very fact that one decides to do a PhD and devote a minimum of three years of one's life to this activity,

[3] Career publication productivity is to be distinguished from *current* publication productivity, the latter indicating publication performance over a pre-specified (typically three- to five-year) period (Braxton and Toombs, 1982; Braxton, 1983). Note that none of the studies of publication performance in marketing has investigated career publication productivity. Note also that concentration on career publication productivity as a dependent variable will tend to reduce the transitory component of publication activity, that is "errors in measuring the permanent levels of publishing activity" (Jordan et al., 1989, p. 347); such errors tend to be larger within a narrow time span, as is the case when current publication productivity is focused upon.

[4] The usual assumptions for a recursive model apply, i.e. $E(\zeta_i) = 0$, $i = 1,2,3$; $\mathrm{Cov}(X_j, \zeta_i) = 0$, $j = 1,\ldots,6$; $\mathrm{Cov}(\zeta_1, \zeta_2) = \mathrm{Cov}(\zeta_2, \zeta_3) = \mathrm{Cov}(\zeta_1, \zeta_3) = 0$. Assuming standardisation of variables, the relevant structural equations are:

$$Y_1 = \gamma_{11} X_1 + \zeta_1, \quad \text{(F.1)}$$

$$Y_2 = \beta_{21} Y_1 + \gamma_{21} X_1 + \gamma_{22} X_2 + \gamma_{23} X_3 + \zeta_2, \quad \text{(F.2)}$$

$$Y_3 = \beta_{32} Y_2 + \gamma_{31} X_1 + \gamma_{34} X_4 + \gamma_{35} X_5 + \gamma_{36} X_6 + \zeta_3. \quad \text{(F.3)}$$

[5] The link between individual characteristics and research productivity has been mainly studied by psychologists, whereas organisational characteristics have been predominantly investigated in sociological studies; see Neumann and Finaly-Neumann (1990) and references given therein.

is in itself an indication of interest in research; as Lusch and Laczniak (1976, p. 107) observe, "if the faculty member is engaged in an academic career with only a Masters and is not working towards a Doctorate, he or she is likely to have less of an orientation towards academic journal research. In contrast, the person with a PhD has generally more research capability and interest". Second, the process of going through the various stages of a PhD is, more often than not, accompanied by publications (usually jointly with one's supervisor) describing parts of the work planned and/or completed: in fact, publication activity *before* receiving the PhD has been found to be positively correlated with subsequent publication productivity (Clemente, 1973). Third, upon completion of the doctorate, it is likely that some additional publications will result from the dissertation; in this context, it has been found that doctoral candidates publish more after than before PhD graduation (Over et al., 1990) and that the supervisor, through collaboration with the PhD candidate, affects the latter's both pre- and post-doctoral publication rates (Long and McGinnis, 1985). Fourth, in the longer run, the cumulative knowledge acquired during the doctoral training process on such aspects as research design, data collection and analysis, will make it easier for the individual concerned to absorb new knowledge in these areas (Braxton and Toombs, 1982); this, in turn, will enhance the likelihood that the new research generated will be of sufficiently high quality to make it acceptable for publication. Lastly, the contacts made with other research students and academics during the period of PhD study will help build one's professional 'network' which, at a later stage, may prove very useful as a source of advice and joint research opportunities (Cameron and Blackburn, 1981).

The second individual characteristic is *Teaching Orientation* (Y_1) and reflects the *relative* salience of teaching vis-à-vis research as personally viewed by the individual (Bentley and Blackburn, 1990). [6] Previous evidence indicates that most academics favour 'unbalanced designs' in the way they evaluate their work activities and allocate their time; specifically "research and scholarship *or* teaching clusters take priority... Professors who use these blueprints would like to emphasize one of these two clusters with less attention to the other kinds of work" (Mager and Myers (1984, p. 7), emphasis in the original). Without necessarily dismissing the importance of research, an academic with a strong teaching orientation may hold the view that "through the application of knowledge in the classroom as well as service both within and outside the academy, scholarship and the mission of the institution could be served just as well if not more productively" (Butler and Phipps, 1991, p. 41). It is postulated that possession of a *Doctorate Degree* (X_1) will be negatively related to teaching orientation, in that PhD holders, who have internalised the research role, are likely to value research more highly (Braxton, 1983). Note that *Teaching Orientation* (Y_1) is not expected to have a *direct* effect on *Publication / Performance* (Y_3); rather its influence is hypothesised to be mediated through the *Research Pressure* (Y_2) variable (to be discussed shortly).

The third individual characteristic expected to affect publication productivity is *Professional Association Membership* (X_4). A key objective of professional associations and learned societies (e.g. *European Marketing Academy*, *Marketing Education Group*, *Academy of Marketing Science*) is the stimulation and facilitation of research in the marketing discipline. This is reflected in such activities as the organisation of conferences/workshops, the sponsoring of prizes and the publication of scholarly journals; the provision of regular newsletters and/or electronic mail bulletins also helps members to keep abreast with research initiatives, new publications, grant sources, etc. For example, regarding conferences, it has been stated that "the benefits derived by conference participants are not only transient... but also longer term, where invitations to lecture and/or to collaborate on research result from connections established at these conferences" (Wong, 1991, p. 21). Blackburn et al. (1978) found a high correlation between communication links and research productivity and communication among mem-

[6] Note that teaching orientation is *not* the same as teaching performance, the latter reflecting the actual *quality* of teaching of an individual (e.g. as reflected in student ratings). The link between teaching quality and publication performance is outside the scope of the present paper; readers interested in this issue are referred to Centra (1983), Braxton (1983) and Friedrich and Michalak (1983) and references given therein.

bers of learned societies clearly reflects the 'networking' of marketing academics. Moreover, it has been argued that "having a large number rather than a few intimately known colleagues on a professional basis generates more ideas and leads to more collaborative work and a higher productivity rate" (Cameron and Blackburn, 1981, p. 370). Thus, a direct positive link is hypothesised between belonging to different professional associations and publication performance.

The remaining two individual characteristics in the model are demographic variables. With regard to *Sex* (X_5), the bulk of past evidence suggests that men tend to publish more than women and this appears to be the case across a number of disciplines (e.g. Cole, 1979; Helmreich et al., 1980; Over, 1982; Over et al., 1990). Possible reasons for this difference are too numerous and complex to discuss here but include, among others, family responsibilities (e.g. McDowell, 1982), discrimination in opportunities and/or rewards (e.g. Zuckerman and Cole, 1975), absence of female role models (e.g. Goldstein, 1979), and different attitudes, values and interests (e.g. Astin, 1969). In the marketing discipline, evidence is rather scant. Amason (1987) reported differences between US-based male and female educators in terms of numbers of scholarly publications (but did not statistically test them), while a similar comparison on UK data, failed to detect a significant difference (Schlegelmilch and Diamantopoulos, 1993). Thus, current expectations are formulated in accordance with the balance of evidence, i.e. it is postulated that males will display a higher publication record than females.

As far as *Professional Age* (X_6) is concerned, this reflects the length of time that one has been employed in academia, i.e. is an indicator of academic experience (Levin and Stephan, 1989). Given that the current concern lies with *career* publication performance, it is evident that the latter will be partly a function of the length of one's academic life. On the one hand, the passage of time per se is related to publication performance, simply because there is only so much that one can publish within a certain period (i.e. ceteris paribus, cumulative publication output after, say, two years will be higher than after one year). On the other hand, the publication rate of a 'newcomer' is likely to be lower than that of a 'veteran' (over the same period), due to the general lack of experience of the former (i.e. over time, publishing becomes easier). The fact that new academics may benefit from 'mentors' in their first few years of employment (Noe, 1988) and that help received is centred around "perfecting publication skills such as choosing publishable questions, designing acceptable studies, and writing articles tailored to specific journals" (Ward et al., 1991, p. 38), is consistent with this line of argument. Moreover, there is evidence to suggest that it is easier for established academics to get published than unknown ones (Merton, 1968) and it goes without saying that how well one is known depends largely upon how long one has been around. Thus, a positive link is expected between *Professional Age* (X_6) and *Publication Performance* (Y_3). [7]

Shifting attention to institutional characteristics, the first set of variables to consider reflects *Tangible / Intangible Resource Constraints* (X_2, X_3). Constraints on tangible resources relate to such areas as research funds, research assistants, library facilities and computer support; intangible aspects include time available for research and technical advice (Lusch and Laczniak, 1976; Baird, 1986; McGee and Ford, 1987; Gillett, 1991; Pao, 1991). Time and funding constraints, in particular, are "the factors most commonly identified as being important impediments to research productivity" (Calligaro et al., 1991, p. 44) and faculty development programs aimed at increasing productivity are largely geared towards providing support in these areas (e.g. Glascoff, 1989; Brewer et al., 1990). However, it is debatable whether a *direct* link exists between resource availability and publication performance; for example, there is empirical evidence indicating virtually no relation between research grant income and publication/citation counts (Bentham, 1987; Gillett, 1987a). Bearing this in mind, resource constraints are hypothesised to impact on publication performance indirectly, namely through the intervening variable *Research Pressure*

[7] Note that there is a related stream of research concentrating on *biological* age and *current* publication productivity, the assumption being that as scholars age their publication rate tends to decline. Some of the reasons for this are discussed in Soldofsky (1984), while Levin and Stephan (1989) examine this ageing effect across different disciplines.

(Y_2) which is discussed below.

Research Pressure (Y_2) is seen here as a source of work *stress*, the latter reflecting "an individual's reactions to the characteristics of the work environment that appear threatening to the individual. It results from job demands, constraints and other job-related events or situations that may interfere with an individual's role fulfilment" (Neumann and Finaly-Neumann, 1990, p. 567). Organisational emphasis on research may be perceived as a cause of unwanted pressure, particularly by teaching-oriented members of staff (hence the expected positive link between *Teaching Orientation* (Y_1) and *Research Pressure* (Y_3)). By the same token, the "publish or perish syndrome existing in many institutions [which] is an integral portion of the cultural constitution of the marketing department" (Williams and Vreeland, 1988, p. 40), may not be seen as stressful or undesirable by staff placing research high in their list of priorities (hence the negative link with *Doctoral Degree* (X_1)). Moreover, an unfavourable perception of emphasis on research is likely to be exacerbated by lack of resources, hence, the hypothesised positive linkages between *Tangible / Intangible Resource Constraints* (X_2, X_3) and *Research Pressure* (Y_2). The latter, in turn, is expected to have a negative impact upon *Publication Performance* (Y_3), since "stress is expected to reduce job performance directly" (Neumann and Finaly-Neumann, 1990, p. 567).

In summary, the path model of publication performance developed in this section consists of six exogenous (X_1–X_6) and three endogenous variables (Y_1–Y_3). Including the intercorrelations among the exogenous variables (not shown in Fig. 1), a total of 34 parameters require estimation; given that the covariance matrix of the nine variables on the model has $\frac{1}{2}(6 + 3)(6 + 3 + 1) = 45$ elements, the proposed model is overidentified with $(45 - 34) = 11$ degrees of freedom. Details on variable operationalisation and parameter estimation follow.

4. Model operationalisation

4.1. Data

The data used to estimate the proposed model were drawn from a nationwide survey of marketing academics employed at 'traditional' UK universities (i.e. those enjoying university status prior to 1992, when the 'new' universities (ex-polytechnics) came into being, as part of UK higher education reform). A three-stage procedure to data collection was adopted, involving (a) consultation of the *Commonwealth Universities Yearbook* to obtain a complete list of UK universities and their departments, (b) telephone contact of relevant departments to obtain a list of individuals holding teaching/research posts in marketing, and (c) a mailing of a six-page questionnaire to all individuals identified in the previous stage. In total, 234 questionnaires were sent to marketing staff at 42 universities. An effective response rate of 46.4% was attained, representing 111 usable replies from individuals employed in 35 different institutions; this compares favourably with previous questionnaire-based studies of marketing academics such as Honeycutt et al. (1989), Weaver (1989) and Carsky et al. (1990a). In terms of sample composition, only seven universities which were initially contacted were not included in the final sample; these however had only a total of 12 marketing staff between them. Thus all major marketing departments in the UK are represented in the responses obtained. Table 1 provides some background on the respondents' characteristics.

Since there is no central database available on the population of UK marketing academics, it is not possible to formally assess the extent to which the sample accurately reflects the population in terms of the characteristics portrayed in Table 1. However, the satisfactory response rate coupled with the initial targeting of *all* population elements and the representation of most academic departments in the data, would seem to suggest that the final sample is quite

Table 1
Sample characteristics

Sex (% male)		81.8
Marital Status (% married)		73.8
Nationality (% British)		91.7
Average age (years)		40.8
Academic rank	(% professors)	18.0
	(% senior lecturers)	14.4
	(% lecturers)	57.7
	(% research staff)	9.9
Nature of post (% fixed-term)		26.2

acceptable; this is further supported by the fact that virtually all variables of interest displayed sufficient variability and provided no grounds for concern in terms of range restriction or category representation. [8]

4.2. Variables

The questionnaire employed in the present study was based on Williams et al. (1974) investigation of the academic labour market and, in addition to sociodemographic information, it elicited detail on the respondent's academic career, industrial work experience, teaching/research activities and attitudes towards university life. Only variables pertinent to the operationalisation of the model depicted in Fig. 1 are considered in what follows.

4.2.1. Publication performance

Following Braxton and Toombs (1982, p. 274), publication performance was initially defined "as the unweighted total of all self-reported scholarly books, theoretical or research monographs, and articles in refereed academic journals", published over an individual's academic career. However, given the importance of conference proceedings as a publication outlet within the marketing discipline (Wayland et al., 1992), papers actually *published* in conference proceedings were also added to the total and so were *refereed* contributions to edited volumes (i.e. books of readings). As the distribution of the resulting publication total was positively skewed in a substantial manner, a logarithmic transformation was undertaken to reduce the effect of outlier cases; [9] in addition, to overcome the indeterminacy of taking the log of zero (which arises if someone has no refereed publications at all), a constant of 1.0 was added to the publication total before transformation. Thus the final measure of *Publication Performance* (Y_3) was defined as

$$Y_3 = \ln\left(\sum_{i=1}^{4} P_i + 1\right)$$

where P_1 = total number of books written, P_2 = total number of refereed journal articles, P_3 = total number of conference papers in proceedings, P_4 = total number of refereed contributions to edited volumes.

Non-refereed publications such as articles in trade journals, consultancy reports, teaching units, and newspaper pieces were excluded from the above measure as were edited works. The focus on refereed publications reflects both their high importance as indicators of academic research productivity (e.g. Clement et al., 1985; Beltramini et al., 1985) and the fact that, despite the imperfections of the refereeing system, "the errors it generates when rejection rates are high and most submissions are of a high standard are more likely to be false negatives than false positives, so very few, if any, truly weak papers are likely to survive the peer review process" (Colman et al., 1992, p. 102). Indeed, following an exhaustive empirical study of different research performance measures capturing quantity, quality, impact and eminence, Jauch and Glueck (1978, p. 68) concluded that "the best relationship with overall performance in research is the number of publications". This is consistent with the finding of Cooley and Heck (1981, p. 30) that "the more prolific authors tend to produce the works rated as most significant"; the positive link between publication counts and reputational standings found by Davis and Astin (1987); and the observation by McGee and Ford (1987, p. 8) that "publication counts correlate highly with other measures of research performance (e.g. citations, peer rankings)".

Although some consideration was given to assigning differential *weights* to each publication component of Y_3, the idea was ultimately rejected for two reasons. First, most existing weighting schemes lack "an objective or empirical basis for their choice of weights" (Bayer and Folger, 1966, p. 382). Second, the majority of available schemes have been developed in disciplines other than marketing and do not "take differences among academic subjects into account" (Braxton and Bayer, 1986, p. 30). The only publication weighting scheme in marketing known to the author is that of Beltramini et al. (1985) which is *very* specific to the US academic scene. From a practical point of view, the most contentious issue is to what extent the Y_3 measure underplays the role of books (since they are treated the same as articles,

[8] For example, all academic ranks are represented and the 70:30 ratio of junior to senior staff is consistent with common experience.

[9] While the mean number of publications came to 18 with a standard deviation of 23, the variable in question ranged from zero publications to a maximum of 126; thus a transformation "down the ladder" (Tukey, 1977) was warranted.

chapters, and proceedings). However, excluding books from the calculation of the total publication measure makes little difference (the correlation between the two versions comes to 0.978); moreover, a principal components analysis applied to the four items comprising Y_3 produced a single dimension, thus providing no evidence of a 'trade-off' between book publication and concentration of publishing activity on other outlets.

4.2.2. Antecedent factors

Dummy variable coding was used to indicate the respondent's *Sex* (1 = male, 0 = female) and possession of a *Doctorate Degree* (1 = yes, 0 = no). *Professional Association Membership* was operationalised as the number of different professional associations and learned societies of which the respondent was a member/fellow (minimum zero, maximum six). [10] *Professional Age* was indicated by the length of time (in months) that the respondent had been employed in full-time higher education; as the distribution of this variable was markedly skewed, it was replaced by its natural logarithm in subsequent analyses. *Teaching Orientation* was measured by a three-item summated Likert scale. *Tangible Resource Constraints* were captured by a two-item summated Likert scale reflecting lack of funds and equipment. *Intangible Resource Constraints* were measured by a three-item scale of the same type and reflected lack of time and technical advice. A principal component analysis performed on all five items produced a two-factor solution of resource constraints reflecting the tangible–intangible distinction. Lastly, *Research Pressure* was operationalised by means of a five-item summated Likert scale, eliciting reactions to the role of and emphasis placed on research. The individual items comprising the composite scales described above were largely identified from the literature (e.g. Braxton, 1983; McGee and Ford, 1987; Honeycutt et al., 1989; Neumann and Finaly-Neumann, 1990) and are shown in the Appendix.

The internal consistencies of the four composite scales as measured by the alpha coefficient of Cronbach (1951), came to 0.62, 0.50, 0.57 and 0.76 for *Teaching Orientation*, *Tangible Resource Constraints*, *Intangible Resource Constraints*, and *Research Pressure* respectively. While the reliability coefficients for the first three scales are admittedly somewhat low, it should be remembered that each of the scales only contains a maximum of three items and it is well known that a coefficient alpha is partly dependent upon the length of the scale (e.g. DeVellis, 1991; Traub, 1994). In this context, application of the Spearman–Brown prophecy formula (see Spector, 1992) shows that the mere addition of two–three items of similar quality would bring the reliability of the scales concerned to highly respectable levels (i.e. greater than 0.70); seen under this light, the reliabilities are not too bad, *given the length of the scales*. This, of course does *not* mean that no effort should be expended towards improving the reliabilities of the scales in future studies; indeed, as will be discussed later, measure improvement is seen as an important direction for further research to overcome the measurement limitations of the present investigation.

5. Model estimation

The parameters of the model in Fig. 1 were estimated with the aid of the LISREL 8 program using the *Weighted Least Squares* (WLS) algorithm (Jöreskog and Sörbom, 1993a). Since both continuous and discrete variables were included in the model, the PRELIS 2 preprocessor (Jöreskog and Sörbom, 1993b) was initially applied to the raw data to compute the matrix of polychoric and polyserial correlations (and associated asymptotic covariance matrix) for subsequent input to the analysis. This follows advice given in the literature suggesting that "when the observed variables in LISREL are all ordinal or are of mixed type scales... the use of ordinary product moment correlations based on raw

[10] An interesting point made by a reviewer concerns the potential usefulness of drawing a distinction between membership of academic versus practitioner-oriented bodies. In the present study, the only practitioner-oriented associations with an appreciable membership among the respondents were the Chartered Institute of Marketing and the Market Research Society; however, virtually all respondents who were members of these bodies were also members of 'pure' academic associations (e.g. EMAC and the Marketing Education Group). Given this overlap, distinguishing between academic and practitioner associations was not practicable.

Table 2
Overall fit statistics [a]

Fit measure	Proposed model	Saturated model	Independence model
ECVI	0.87	0.94	17.40
AIC	83.90	90.00	1670.68C
AIC	207.48	253.56	170.39

$X^2 = 15.90$, DF = 11, $p = 0.14$; RMSEA = 0.068, $p = 0.30$; RMR = 0.047
GFI = 0.99, AGFI = 0.97, NFI = 0.99, NNFI = 0.99, CFI = 1.00, IFI = 1.00, RFI = 0.97

[a] GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; NFI = Normed Fit Index; NNFI = Non-Normed Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; RFI = Relative Fit Index.

scores is not recommended. Instead it is suggested that estimates of polychoric and polyserial correlations be computed and that the matrix of such correlations be analysed by the WLS method'' (Jöreskog and Sörbom, 1989, p. 193). In the present instance, *Doctorate Degree* (X_1) and *Sex* (X_5) were declared as discrete variables, and the rest as continuous.

In fitting the model to the data, no convergence problems or offending estimates (e.g. negative variances) were encountered and neither were any warning messages. The various fit statistics in Table 2 show a good fit to the model on a variety of criteria. [11] The chi-square statistic is non-significant, the RMSEA is less than the 0.08 threshold recommended by Browne and Cudeck (1993) and non-significant, and all three information fit measures (i.e. ECVI, AIC and CAIC) show lower values for the proposed model compared with the saturated and independence models. [12] Moreover, the RMR is less than 0.05 and all other fit indices (e.g. GFI, AGFI, NFI, etc.) show values close to 1.

[11] Multiple fit criteria were employed as there is not a single fit index that has been found to provide an unambiguous and conclusive assessment of model fit; detailed discussions of alternative fit measures can be found in Bagozzi and Yi (1988), Bollen (1989), Mulaik et al. (1989) and Bollen and Long (1993).

[12] If there are k variables in the model, the independence model assumes that they are all uncorrelated; thus there are k parameters and $k(k-1)/2$ degrees of freedom. The saturated model, on the other hand, assumes that each variable is related to all others; it thus has $k(k+1)/2$ parameters and zero degrees of freedom.

Having established an acceptable overall fit for the model, attention is now drawn to a more detailed assessment. Inspection of the parameter estimates in Table 3, indicates that their signs are consistent with expectations and all but one coefficient (β_{32}) are significant. Thus, the theoretical structure developed earlier regarding the substantive relationships among the model's variables is, on the whole, supported. In this context, the coefficients of determination (R^2) for the endogenous variables are quite impressive (0.37, 0.62 and 0.75 for Y_1, Y_2 and Y_3 respectively); thus, 75% of the variation in *Publication Performance* (Y_3) is accounted for by the model. Lastly, none of the standardised residuals exceeds 2.58 in absolute value and the residual plot falls along a line steeper than 45°.

Although the model fit to the data is satisfactory, there appears to be some room for improvement. First, the non-significant parameter value for β_{32}, begs the question whether to eliminate the link between *Research Pressure* (Y_2) and *Publication Performance* (Y_3). While this appears sensible from a *statistical* point of view, it has been argued that ''eliminating a parameter on the basis of its t-value may also be dangerous especially in a small sample... If the substantive theory suggests that a particular parameter should be included in the model, it is probably better to retain it even though it is not significant'' (Jöreskog and Sörbom, 1989, p. 225). In the present case, there are grounds for retaining β_{32} both because of its theoretical importance (reflecting the direct impact of Y_2 as well as mediating the influence of the Y_1 and X_1–X_3 variables), and also because of the relatively small size of the sample; thus on *substantive* considerations, β_{32} is retained. A second possibility for improving the model is shown by the modification index (MI) for γ_{26} (MI = 11.2). This suggests that a substantial improvement in fit will result by introducing a link between *Professional Age* (X_6) and *Research Pressure* (Y_2). As with eliminating parameters, theoretical considerations should predominate, in that ''one should only add a parameter if its estimated value can be interpreted and justified from a substantive point of view'' (Jöreskog and Sörbom, 1989, p. 225). Here, the estimated coefficient resulting from relaxing γ_{26} is 0.20, indicating a positive relationship between the length of time one has been in academia and the

Table 3
LISREL parameter estimates (WLS)

Link	Parameter	Expected sign	Standardised estimate [a]
Doctorate Degree–Teaching Orientation	γ_{11}	−	−0.61
Doctorate Degree–Research Pressure	γ_{21}	−	−0.37
Tangible Research Constraints–Research Pressure	γ_{22}	+	0.23
Intangible Research Constraints–Research Pressure	γ_{23}	+	0.16
Doctorate Degree–Publication Performance	γ_{31}	+	0.51
Professional Association Membership–Research Performance	γ_{34}	+	0.36
Sex–Research Performance	γ_{35}	+	0.25
Professional Age–Research Performance	γ_{36}	+	0.42
Teaching Orientation–Research Pressure	β_{21}	+	0.40
Research Pressure–Publication Performance	β_{32}	−	−0.05

[a] All estimates except β_{32} significant at $p < 0.05$ or better

intensity of (stressful) research pressure. This can be theoretically defended by observing that the changes in the UK higher education scene in the past ten years (see UGC, 1984) are likely to have been perceived to be more threatening by staff who were used to the 'old' system, where tenure was sacred, formal staff appraisals hardly used and *Research Selectivity Exercises* unheard of. In particular, the increased emphasis on research in recent years (CVCP, 1991) is something that will have affected older members of staff much more than more recent appointments (the latter having no experience of the 'old ways' anyway!). It seems, therefore, justified to add a path between X_6 and Y_2 and re-estimate the model.

The modified model produced a non-significant χ^2 of 4.74 with 10 degrees of freedom. Using the chi-square difference test (D^2) (with 1 degree of freedom) to evaluate the improvement in fit compared with the original formulation, a D^2 value of 11.17 is obtained which is highly significant; moreover, all fit statistics show an improvement over the original model. Table 4 shows the direct and indirect effects on *Publication Performance* (Y_3) based upon the modified model; clearly, the indirect effects need to be treated cautiously given that β_{32} is non-significant (see earlier). By far the most important influence is whether the respondent has a PhD or not; doctorate degree holders clearly out-publish marketing academics without PhDs and this is consistent with the theoretical arguments advanced earlier regarding the link between doctoral training and research productivity. The second most important factor is how long one has been employed as a marketing academic; given that the current measure of publication performance captures *career* research productivity (see methodology section) this is not surprising. Membership of professional associations also plays an important role, making a positive contribution to one's publication record; thus, 'network-

Table 4
Effect decomposition

Variable	Effect on publication performance (Y_3)		
	Direct	Indirect	Total
X_1 = Doctorate Degree	0.46	0.04	0.51
X_2 = Resource Constraints: Tangible	–	−0.03	−0.03
X_3 = Resource Constraints: Intangible	–	−0.01	−0.01
X_4 = Professional Association Membership	0.38	–	0.38
X_5 = Sex	0.25	–	0.25
X_6 = Professional Age	0.41	−0.02	0.39
Y_1 = Teaching Orientation	–	−0.03	−0.03
Y_2 = Research Pressure	−0.08	–	−0.08

ing' appears to result in benefits on the publication front. Lastly, it seems that men tend to publish more than women, a finding consistent with much prior research. As far as the remaining variables are concerned, they appear to have little impact on publication productivity. One reason for this is that the non-significant link between *Research Pressure* (Y_2) and *Publication Performance* (Y_3) has ramifications for *other* variables in the model that were expected to indirectly impact on Y_3 via Y_2. These are the two *Resource Constraints* variables (X_2 and X_3) and the *Teaching Orientation* variable (Y_1). However, all cannot be blamed on the non-significant β_{32}. Specifically, if *Research Pressure* (Y_2) is excluded from the model and, instead, *direct* links to Y_3 are drawn from X_1, X_2 and Y_1, none of the resulting estimates comes even close to reaching significance. What this implies is that no direct relationship appears to exist between resource limitations and publication productivity and the same goes for the influence of teaching orientation; this is consistent with points made earlier concerning the nature of the impact of these variables on publication performance.

6. Discussion and conclusion

In a recent article, Ward et al. (1991, p. 39) asked "what characteristics of universities, colleges and departments are associated with research productivity and teaching effectiveness?... Are particular personal characteristics or circumstances related to research productivity and teaching effectiveness?" The present paper attempted to contribute towards answering these questions by focusing upon publication performance and some individual and institutional characteristics likely to impact upon it. Based upon an extensive literature review, a path model of career publication performance was developed and fitted to empirical data relating to UK marketing academics. The estimation procedure provided strong support for the majority of the hypothesised relationships and the model was able to explain about three-quarters of the variance in publication performance. Following detailed assessment of initial fit, a substantively-justifiable modification was implemented to further improve the model's fit.

Individual characteristics emerged as the more important determinants of publication performance. The strong influence of doctoral training suggests that, in recruiting new members of staff, marketing departments would do well on insisting on a PhD, if research performance is a key priority. Given that "performance as a scholar or researcher does not significantly detract from performance as a teacher" (Centra, 1983, p. 388), then marketing departments "that hire faculty according to research potential will get a greater overall return for their money" (Linsky and Strauss, 1975, p. 100).

Marketing departments would also benefit from encouraging professional association involvement by their staff. Although some scepticism is sometimes expressed as to the value of conferences, workshops and the like (visions of 'academic tourism' inevitably spring to mind!), there appear to be clear long-term benefits from such activities; thus one cannot but agree with Wong (1991, p. 21) that "when the benefits accruing from involvement in collaborative research are put on the balance, it is easy to appreciate why such initiatives should be encouraged much more". [13]

While the results also indicate that males tend to be more prolific in publication activities, some caution needs to be exercised so as not to overstate this finding. In the present sample there are only 20 women academics (19.2% of all respondents), which is hardly a sufficient sample size from which to draw firm conclusions. Moreover, any current gender differences may soon cease to exist, because the presence of women in the marketing literature is increasing rapidly (Carsky et al., 1990a). In fact, there is evidence to suggest that the career paths of men and women marketing educators are becoming more and

[13] It should be noted that one referee questioned the directionality of this link, arguing that "the more a person publishes, the more that person will wish to join an association like EMAC". While there is certainly merit in this argument, most literature in this area (e.g. Blackburn et al., 1978; Cameron and Blackburn, 1981; Wong, 1991) views communication links and networking as antecedents rather than consequences of publication performance; it was on this basis that professional membership association was selected as a predictor of performance and not vice-versa. Having said that, in reality, most probably a two-way causal link exists but the cross-sectional nature of the present study prevents the investigation of possible longitudinal relationships.

more similar and women educators do not seem to experience "the conflicts of frustrations that are endemic to woman in other academic disciplines and professions" (Carsky et al., 1990b, pp. 247–248). [14]

Academic experience (as reflected in professional age) also positively affected publication performance, suggesting if a department wants to improve its research record fairly quickly, then it should try and attract established academics (rather than only encourage existing members of staff to publish more); as Currie (1991, p. 12) points out "appointing faculty with strong research records can quickly open up new areas of research".

Regarding the variables found to have no impact on publication performance, part of the explanation may lie with their operationalisation. Although the items used to represent teaching orientation, resource constraints and research pressure were drawn from the relevant literature, the internal consistencies of the resultant scales (other than research pressure) were rather disappointing. More carefully-developed scales developed from a larger pool of items drawn both from the literature and from qualitative interviews would, no doubt, result in better representations of the construct involved. Having said that, it would only be fair to mention that the expected relationships *between* these (imperfect) composite scales were actually supported by the model and so were the relationships between *other* variables in the model and the scales concerned (thus providing useful evidence of construct validity). It is largely the non-significant link between research pressure and publication productivity that somewhat lets the structure down, despite its correct sign; bearing in mind the limited sample size perhaps the most prudent conclusion is to leave this linkage open to future investigation.

In addition to attempts aimed at improving the measures used and verifying the impact of research pressure on performance, several other avenues are open for future research. One such direction would involve the identification of *additional* influences on publication performance; for example, the 'prestige' of the institution from which the doctorate degree was awarded and the ambition of the individual to 'make it' in academia may also turn out to be important correlates of publication productivity. Another avenue for future study would be to investigate the links between career aspirations, research performance and job satisfaction as well as those between job mobility, promotion and research performance. Moreover, the role of 'atmosphere' or 'ethos' within an institution/department in influencing the *current* publication productivity of its members is worthy of investigation and so is the role of different kinds of incentives/rewards. Finally, the development of a weighting scheme of different types of marketing publications appropriate to the European scene would be an important step towards the construction of a comprehensive measure of publication performance for comparative purposes.

[14] One reviewer, drawing from his/her U.S. experience forcefully suggested that "the results on sex are consistent with the existence of job discrimination against males". However, based on the author's personal experience with marketing academics in the UK, such a 'positive discrimination' explanation is not really tenable in the present case.

Acknowledgements

The author would like to thank the IJRM editor and three anonymous reviewers for helpful comments on a previous version of this article. The help of Mr. Simon Neate-Stidson on data collection is also acknowledged.

Appendix A. Items of composite scales

A.1. Teaching Orientation (Y_1)

- The main focus of a marketing academic at a university should be in teaching
- Writing textbooks is more important than producing contributions to refereed journals
- There is too little emphasis in teaching

A.2. Tangible Resource Constraints (X_2)

- Equipment (e.g. computers) is limited
- Lack of money available for research

A.3. Intangible Resource Constraints (X_3)

- Too much time spent on administrative work
- Easy to get technical assistance [reverse-scored item]
- Difficult to do research due to lack of time

A.4. Research Pressure (Y_2)

- Too much pressure to produce research
- Unfair promotion procedures
- There is an overemphasis on research as a determinant of promotion prospects
- The pressure to do research often results in second rate teaching
- The best researchers are usually the best teachers [reverse-scored item]

[All items scored on five-point Likert scales, where 5 = 'strongly agree' and 1 = 'strongly disagree']

References

Amason, R.D., 1987. Males still dominate: An update on the status of women in marketing education. Marketing Educator 1 (Spring), 3.

Assmus, G., 1991. U.S. business schools being challenged. WHU 2, 49–53.

Astin, H.S., 1969. The woman doctorate in America. New York: Russell Sage Foundation.

Averch, H.A., 1989. Policy research for the university research system. The Review of Higher Education 12 (4), 329–338.

Bagozzi, R.P. and Y. Yi, 1988. On the evaluation of structural equation models. Journal of the Academy of Marketing Science 16, 74–94.

Baird, L.L., 1986. What characterises a productive research department? Research in Higher Education 25 (3), 211–225.

Barry, T.E., 1990. Publication productivity in three leading U.S. advertising journals: Inaugural issues through 1988. Journal of Advertising 19 (1), 52–60.

Bayer, A.E. and J. Folger, 1966. Some correlates of a citation measure of productivity in science. Sociology of Education (Summer), 381–390.

Bean, J.P., 1982. A causal model of faculty research productivity. Paper presented at the Annual Meeting of the American Educational Research Association, New York.

Bell, J.G. and J.J. Seater, 1978. Publishing performance: Departmental and individual. Economic Enquiry 16 (October), 599–615.

Beltramini, R.F., J.L. Schlacter and C. Kelley, 1985. Marketing faculty promotion and tenure policies and practices. Journal of Marketing Education 7 (Summer), 74–80.

Bentham, G., 1987. An evaluation of the UGC's ratings of the research of British university geography departments. Area 19, 147–154.

Bentley, R. and R. Blackburn, 1990. Changes in academic research performance over time: A study of institutional accumulative advantage. Research in Higher Education 31 (4), 327–353.

Blackburn, R.T., C.E. Behymer and D.E. Hall, 1978. Research note: Correlates of faculty publications. Sociology of Education 51 (April), 132–141.

Böcker, F., 1981. Marketing science in germany. Journal of Marketing 45 (Winter), 169–171.

Bollen, K.A., 1989. Structural equations with latent variables. New York: Wiley.

Bollen, K.A. and J.S. Long, 1993. Testing structural equations models. London, Newbury Park: Sage.

Braxton, J.M., 1983. Teaching as performance of scholarly-based course activities: A perspective on the relationship between teaching and research. The Review of Higher Education 7 (1), 21–33.

Braxton, J.M. and A.E. Bayer, 1986. Assessing faculty scholarly performance. New Directions for Institutional Research 13 (2), 25–35.

Braxton, J.M. and W. Toombs, 1982. Faculty uses of doctoral training: Considerations of a technique for the differentiation of scholarly effort from research activity. Research in Higher Education 16 (3), 265–282.

Brewer, P.D., V.L. Brewer and C. Hilton, 1990. Promoting research productivity in colleges of business. Journal of Education For Business 66 (1), 52–56.

Browne, M.W. and R. Cudeck, 1993. Alternative ways of measuring model fit. In: K.A. Bollen and J.S. Long (eds.), Testing structural equations models. Newbury Park, London: Sage.

Butler, K.N. and R. Phipps, 1991. Kantian productivity: Reversing the decline in faculty teaching workloads. CUPA Journal 42 (4), 41–43.

Calligaro, I.L.S., R.A. Hutchinson, D. Hermann, D.T. Rucker and R.L. Batenhorst, 1991. Pharmacy research in academic institutions. American Journal of Pharmaceutical Education 55 (Spring), 40–45.

Cameron, S.W. and R.T. Blackburn, 1981. Sponsorship and academic career success. Journal of Higher Education 52, 369–377.

Carsky, M.L., E.J. Kennedy, M.E. Waller-Zuckerman, 1990a. Women marketing educators: Interests, productivity and satisfactions. Journal of Marketing Education 12 (1), 1–10.

Carsky, M.L., M.E. Waller-Zuckerman and E.J. Kennedy, 1990b. Perspectives on women in marketing education: A comparison of the career paths of male and female marketing educators. In: B.J. Dunlop (ed.), Developments in marketing science 13, 244–248. Coral Gables: Academy of Marketing Science.

Cattell, J.M., 1910. A further statistical study of American men of science. Science 32, 672–688.

Cave, M., S. Hanney and M. Kogan, 1991. The use of performance indicators in higher education, 2nd edition. London: Jessica Kingsley Publishers.

Centra, J.A., 1983. Research productivity and teaching effectiveness. Research in Higher Education 18 (2), 379–389.

Chapman, A.J., 1989. Assessing research: Citation-count shortcomings. The Psychologist: Bulletin of the British Psychological Society 8, 336–344.

Clark, G.L., 1985. Productivity ratings of institutions based on publication in 8 marketing journals: 1983–1984. Journal of Marketing Education 7 (Fall), 12–23.

Clark, G.L., 1986. Leading marketing departments in the United States: Who is publishing where, and how much are they publishing? American Marketing Association Educators Proceedings, Chicago IL, 149–153.

Clark, G.L. and N. Hanna, 1986. An analysis of the source of articles in the Journal of Marketing Education since its foundation in 1979. Journal of Marketing Education 8 (Summer), 71–74.

Clement, R.W., G.E. Stevens and D.C. Brenenstuhl, 1985. Promotion criteria for business faculty: Does institution size matter? Journal of Business Education (May), 321–325.

Clemente, F., 1973. Early career determinants of research productivity. American Journal of Sociology 79 (2), 409–419.

Cole, J.R., 1979. Fair science: Women in the scientific community. New York: Free Press.

Colman, A.M., A.B. Garner and S. Jolly, 1992. Research performance of United Kingdom university psychology departments. Studies in Higher Education 17 (1), 97–103.

Committee of Vice-Chancellors and Principals [CVCP] (1991), The state of the universities, London.

Cooley, P.L. and J.H. Heck, 1981. Significant contributions to the finance literature. Finance Management 10, 23–33.

Creswell, J.W., 1986. Concluding thoughts: Observing, promoting, evaluating and reviewing research performance. In: J.W. Creswell (ed.), Measuring faculty research performance, New Directions for Institutional Research 50, San Francisco: Jossey-Bass.

Crewe, I, 1987. Reputation, research and reality: The publication records of U.K. departments of politics, 1978–1984. Essex Papers in Politics and Government, Aug.

Cronbach, L.J., 1951. Coefficient alpha and the internal structure of tests. Psychometrika 16, 297–334.

Currie, D., 1991. Focus on research, London Business School. British Academy of Management Newsletter 11 (September), 12–13.

Davis, D.E. and H.S. Astin, 1987. Reputational standing in academe. Journal of Higher Education 58 (3), 261–275.

Dembkowski, S., A. Diamantopoulos, and B.B. Schlegelmilch, 1994. Measuring the research performance of marketing academics: Issues, methods and future research directions. Marketing Education Review 2 (2), 42–52.

DeVellis, R.F., 1991. Scale development: Theory and applications. London: Sage Publications.

Dyl, E.A. and M.S. Lilly, 1985. A note on institutional contribution to the accounting literature. Accounting Organizations and Society 10 (2), 171–175.

Friedrich, R.J. and Jr. Michalak, 1983. Why doesn't research improve teaching? Journal of Higher Education 54, 145–146.

Garfield, E., 1979. Is citation analysis a legitimate evaluation tool? Scientometrics 1 (4), 359–375.

Gillett, R., 1987a. Serious anomalies in the UGC comparative evaluation of the research performance of psychology departments. Bulletin of the British Psychological Society 40, 42–49.

Gillett, R., 1987b. The UGC evaluation: A rejoinder to Philip Levy. Bulletin of the British Psychological Society 40, 361–364.

Gillett, R., 1989a. Research performance indicators based on peer review: A critical analysis. Higher Education Quarterly 43 (Winter), 20–38.

Gillett, R., 1989b. Determining the best departments by their best publications: A strategy best avoided. Scientometrics 17 (1), 121–125.

Gillett, R., 1989c. A sampling artifact in the UGC evaluation of research performance. British Journal of Mathematical and Statistical Psychology 42, 127–132.

Gillett, R., 1991. Pitfalls in assessing research performance by grant income. Scientometrics 22 (2), 253–263.

Glascoff, D., 1989. Redirecting faculty research and publication efforts through the use of a faculty development program: A case study of 'publish and prosper' using an incentive system. Journal of Marketing Education 11, 17–22.

Glenn, N.D. and W. Villemez, 1970. The productivity of sociologists at 45 American universities. The American Sociologist (August), 244–252.

Goldstein, E., 1979. Effects of same-sex and cross-sex models on the subsequent research productivity of scholars. American Psychologist 34, 407–410.

Helmreich, R.L., J.T. Spence, W.E. Beane, G.W. Lucker and K.A. Mathews, 1980. Making it in academic psychology: Demographic and personality correlates of attainment. Journal of Personality and Social Psychology 39, 896–908.

Hexter, J.H., 1969. Publish or perish: A defense. Public Interest 17, 60–77.

Honeycutt, Earl D. Jr., J.B. Ford and V. Howe, 1989. An investigation of marketing educators' activities and perceptions regarding teaching and research. Developments in Marketing Science 12, 253–257.

Hüfner, K., 1991. Accountability. In: P.G. Altbach (ed.), International HE: An encyclopedia 1. Chicago and London: St James Press.

Jauch, L.R. and W.F. Glueck, 1978. Evaluation of university professors' research performance. Management Science 22 (1), 66–75.

Jobber, D. and P. Simpson, 1988. A citation analysis in selected marketing journals. International Journal of Research in Marketing 5, 137–142.

Johnes, G, 1988. Research performance indicators in the university sector. Higher Education Quarterly 42, 54–71.

Johnes, G., 1989. Ranking university departments: Problems and opportunities. Politics 9 (2), 16–22.

Johnes, J. and J. Taylor, 1992. The 1989 research selectivity exercise: A statistical analysis of difference in research rating between universities at the cost center level. Higher Education Quarterly 46 (Winter), 67–87.

Jones, L.V., G. Lindzey and P.E. Coggeshall, 1982. An assessment of research-doctorate programs in the United States (five volumes). Washington, DC: National Academy Press.

Jordan, J.M., M. Meador and S.J.K. Walters, 1988. Effects of department size and organization on the research productivity of academic economists. Economics of Education Review 7, 251–255.

Jordan, J.M., M. Meador and S.J.K. Walters, 1989. Academic research productivity, department size and organization: Further results. Economics of Education Review 8 (4), 345–352.

Jöreskog, K.G. and D. Sörbom, 1989. LISREL 7: A guide to the program and applications. Chicago IL: SPSS Inc.

Jöreskog, K.G. and D. Sörbom, 1993a. LISREL 8: User's reference guide. Chicago IL: Scientific Software International.

Jöreskog, K.G. and D. Sörbom, 1993b. New features in PRELIS 2. Chicago IL: Scientific Software International.

Kaufman, G.G., 1984. Ranking of finance departments by faculty representation on editorial boards of professional journals: A note. The Journal of Finance 39 (Sep.) 1189–1197.

Kurtz, D.L. and L.E. Boone, 1988. Rating marketing faculties on the basis of editorial review board memberships. Journal of Marketing Education 10 (Spring), 64–68.

Laband, D.N., 1986. A ranking of the top U.S. economics departments by research productivity of graduates. Journal of Economic Education 17 (Winter), 70–76.

Le Grew, D., 1984. Pursuing productivity, excellence and other research snarks: A critique of current attitudes. Vestes 27 (2), 39–43.

Levin, S.G. and P.E. Stephan, 1989. Age and research productivity of academic scientists. Research in Higher Education 30 (5) 531–549.

Linsky, A.S. and M.A. Strauss, 1975. Student evaluations, research productivity, and eminence of college faculty. Journal of Higher Education 46 (Jan./Feb.), 89–102.

Long, J.A. and R. McGinnis, 1985. Entrance into the academic career. American Sociological Review 44, 816–830.

Lusch, R.F. and G.R. Laczniak, 1976. The marketing educator: A research productivity profile. AMA Educators Conference Proceedings, 106–111.

Luke, R.H. and R. Doke, 1987. Marketing journal hierarchies: Faculty perception 1986–1987. Journal of the Academy of Marketing 15 (1), 74–78.

Martin, R.A. and J. Irvine, 1983. Assessing basic research. Research Policy 12, 61–90.

Mager, G.M. and B. Myers, 1984. Blueprints for academic lives. U.S. Department of Education Working Paper.

McDowell, J.M., 1982. Obsolescence of knowledge and career publication profiles: Some evidence of differences among fields in costs of interrupted careers. The American Economic Review 72 (4), 752–768.

McGee, G.W. and R.C. Ford, 1987. Faculty research productivity and intention to change positions. The Review of Higher Education 11 (1), 1–16.

Merton, R.K., 1968. The Matthew effect in science. Science 159 (5 Jan.) 56–63.

Moed, H.F., W.J.M. Burger, J.G. Frankfort and A.F.J. Van Raan, 1985. The use of bibliometric data as tools for university research policy. International Journal of Institutional Management in Higher Education 9 (2), 185–194.

Moore, L.J. and B.W. Taylor III, 1980. A study of institutional publications in business related academic journals 1972–1978. Quarterly Review of Economics and Business 20 (1), 87–97.

Motes, W.H., 1989. What our doctoral students should know about the publishing game. Journal of Marketing Education 11 (1) 22–27.

Mulaik, S., L. James, J. Van Alstine, N. Bennett, S. Lind and C. Stillwell, 1989. Evaluation of goodness-of-fit indices for structural equation models. Psychological Bulletin 105, 430–445.

Neumann, Y. and E.F. Finaly-Neumann, 1990. The support–stress paradigm and faculty research publication. Journal of Higher Education 61 (5), 565–580.

Niemi, A.W. Jr., 1988a. Research productivity of American business schools 1975–1985. Review of Business and Economic Research 23 (2), 1–17.

Niemi, A.W. Jr., 1988b. Publication performance of marketing departments 1975–1985. Journal of Marketing Education 10 (Summer), 8–12.

Noe, R.A., 1988. An investigation of the determinants of successful assigned mentoring relationships. Personnel Psychology 41, 457–479.

Over, R., 1982. Research productivity and impact of male and female psychologists. American Psychologist 37 (1), 24–31.

Over, R., J. Over, I. Meuwissen and S. Lancaster, 1990. Publication by men and women with same-sex and cross-sex Ph.D. supervision. Higher Education 20, 381–391.

Pao, M.L., 1991. On the relationship of funding and research publications. Scientometrics 20 (1), 257–281.

Pellino, G.R., R.T. Blackburn and A.L. Boberg, 1984. The dimensions of academic scholarship: Faculty and administration views. Research in Higher Education 20 (1), 103–115.

Pollitt, C., 1987. The politics of performance assessment: Lessons for higher education? Studies in Higher Education 12 (1), 87–98.

Sherrell, D.L., J.F. Hair and M. Griffin, 1989. The dimensions of academic scholarship: Faculty and administrator views. Research in Higher Education 20 (1), 103–115.

Schlegelmilch, B.B. and A. Diamantopoulos, 1993. Gender differences in marketing academia: Evidence from a U.K. national survey. In: M. Levy and D. Grewal (eds.), Developments in marketing science 16, 508–515. Coral Gables: Academy of Marketing Science.

Soldofsky, R.M., 1984. Age and productivity of university faculties: A case study. Economics of Education Review 3 (4), 289–298.

Spector, P.E., 1992. Summated rating scale construction: An introduction. London: Sage Publications.

Thoreson, R.W., C.J. Krauskopf and J.G. Cox, 1975. Reputation, halo, and ratings of counseling programs. Journal of Counseling Psychology 22, 446–450.

Tong, H-M. and A.L. Bures, 1989. Marketing faculty evaluation systems: A national survey. Journal of Marketing Education (Spring), 11–13.

Traub, R.E., 1994. Reliability for the social sciences: Theory and applications. London: Sage Publications.

Tukey, J.W., 1977. Exploratory data analysis. Reading, MA: Addison-Wesley.

Twedt, D., 1980. A publishing strategy for marketing knowledge. Journal of Marketing Education (Nov.), 12–14.

University Grants Committe [UGC] (1984): A strategy for higher education into the 1990s. London, HMSO.

Ward, J., M.J. Bitner and D. Gourley, 1991. The outcomes of life in academe: Career tracking of marketing Ph.D. students. Journal of Marketing Education (Spring), 31–39.

Wayland, J.P., D.J. Urban and D.R. McDermott, 1992. The role of proceedings in the evaluation of faculty research standards in AACSB-accredited marketing departments. American Marketing Association (Summer), 313–317.

Weaver, P., 1989. Job satisfaction level of marketing faculty. Journal of Marketing Education 11 (Summer), 10–16.

Webster, D.S., 1981. Advantages and disadvantages of methods of assessing quality. Change (October), 20–24.

Webster, D.S., 1985. Institutional effectiveness using scholarly peer assessment as major criteria. Research of Higher Education 9 (1), 67–82.

Wheatley, J.J. and L.C. Wilson, 1987. The origins of published marketing research in the 1980s. American Marketing Association Educators Proceedings, Chicago IL, August, 260–265.

Whitley, R. and P.A. Frost, 1971. The measurement of performance in research. Human Relations 24 (2), 161–178.

Willaims, W.W., 1987. Institutional propensities to publish in academic journals of business administration. Quarterly Review of Economics and Business 27 (1), 77–94.

Williams, G., T. Blackstone, D. Metcalf, 1974. The academic labour market economic and social aspects of a profession. Amsterdam, London, New York: Elsevier Scientific Publishing Company.

Williams, A.J. and R.C. Vreeland, 1988. Corporate culture in the academic marketing department. Journal of Marketing Education (Spring), 39–43.

Wong, V., 1991. How European is our community? An analysis of research collaboration within the European Marketing Academy. EMAC Newsletter, 21–30.

Zuckerman, H. and J.R. Cole, 1975. Women in American science. Minerva 13, 82-102.